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## Controversies Eliminated in St. Louis

Under the proposed settlement ordinance in St. Louis all points which have been in controversy between the United Railways Company and the municipality will be eliminated. The principal long-standing difficulty which it was desired to remove through the negotiations between the two interests related to the mill tax under the ordinance which became effective in 1904. The city has endeavored to secure a judgment in court which would be enforceable against the company, and litigation in reference to the proposed tax has been continuous. Under the form of the ordinance upon which the company and the committee representing the municipality have now agreed, material concessions are made by each side, with the result that new conditions which are reasonable and workable are evidently to be adopted. While the city secures increased and definite compensation from the company, new conditions relating to transfers and additional facilities and a provision for municipal regulation are embodied in the agreement. Through a Board of Supervision the city is to undertake a direction of the affairs of the company which will bear upon questions of operation. The elimination of small differences between the company and municipality is a long step toward that ideal state of co-operation which is essential to the proper handling of the difficult questions of transportation in a developing city.

## Personal Relations with Patrons

The paper read by Raymond H. Smith before the Street Railway Association of the State of New York at its meeting this week points out very suggestively the advantage of the use of personal effort with individuals who may produce or influence increased traffic. The large railway system that reaches many communities scattered through a number of States must depend upon general advertising for a large part of its results, but the interurban line of comparatively small mileage is able to attain a closeness of relation with its patrons which is not possible for a company with extended mileage. Mr. Smith advises that the traffic man interest himself in the active development of the towns and villages reached, and there is no doubt that the influence of one individual, supported by a railroad company, can do a good deal to stimulate increased public concern in civic affairs. The suggestion is made in the paper that while it is natural to concentrate effort in directions that will produce quick results, the prospects that will yield returns only in the future should not be neglected. It is a weakness in any business organization if sight is lost of future possibilities which can be realized only by the expenditure of attention and money many years before any direct results can be seen. Ordinarily the promotion of a new line of interurban railroad is made possible because of faith in future development. Some measure



of the efforts of the officials of the property should be directed in avenues that can yield no tangible returns for years, but that nevertheless will advance the day of far greater traffic possibilities for the property.

#### Brake Setting and Energy Consumption

There is no doubt that wrong brake setting largely increases the total amount of energy required to propel a car. The waste from this cause is often not realized on the ordinary electric railway system because the motorman has so much extra motor capacity at his command that such a defect as dragging brake shoes is of no concern to him. It has remained for a large user of storage battery cars, the Third Avenue Railroad, New York, to determine with measurable certainty the real bearing of proper brake adjustment on the power requirements. All but one of this company's storage battery cars carry the same number and size of accumulators and consequently begin the day's work with the same supply of energy. If other conditions are equal each car should make approximately the same mileage with the same charge. It was soon observed, however, that the equipments of some of the cars were fully discharged long before they had made the calculated mileage possible under correct operating conditions. Investigation disclosed the fact that these losses were due to tight brakes and that merely by eliminating unnecessary brake friction the radius of action of one car was raised 60 per cent. The effect of the brake setting was also determined experimentally by means of drawbar tests by which variations of several hundred pounds in drawbar pull were noted. This trial is of special interest in view of the same company's decision to equip all of the cars on one of its conduit lines with coasting clocks. One can hardly expect that on city streets with obstructive wagon traffic such a device, even if watched with the greatest care, will effect so great a saving in energy as on elevated or interurban lines where many chances exist for coasting. Nevertheless, when the motormen realize that their methods of operation are being checked, they will appreciate the necessity of paying more attention to the setting of the brakes because the latter must strongly influence the coasting records.

#### Shortening Car Routes in Proportion to Traffic Density

One of the chief difficulties in the operation of large urban railway systems is to proportion the car service to the density of traffic. The advantages of avoiding car mileage which is either dead or characterized by exceedingly limited patronage are self-evident, and progressive transportation officials are devoting more and more time to the important problem of cutting down the volume of unprofitable service. The policy of shortening car routes in proportion to the traffic density gives promise of considerable success if the car service is controlled closely. There is no logical reason for running a heavy car of large carrying capacity to the extremes of a system where the density of population, and hence of patronage, falls off rapidly as the distance from the urban center increases. In one specific case it was found that the building of a loop in a square and the reduction of several through trips per day by shortening the route enabled the company to dispense with the purchase of two additional semi-convertible cars, without sacrificing the quality of service rendered. A cross-over already existed a short distance beyond the location of the loop, but it was found that with a car moving over the line every 60 seconds the

time required to change ends at the cross-over interfered with the schedules of the through cars. By cutting off about 2 miles of the through trip for certain cars the company found that the daily saving amounted to \$3.06 in wages, \$1.50 in power, \$2.50 in car and track maintenance, or about \$2,100 per year, with a further saving of about \$2,043 per year in interest, depreciation and taxes upon the two additional cars which would have been required had the old plan of operating every trip to the limit of the system been followed. The cost of building the loop was about \$6,000, so that its construction at an annual saving of about \$4,100 would pay for itself in less than two years.

#### THE ELECTRIFICATION OF RAILROADS

The annual electrical night of the New York Railroad Club gave remarkable evidence of the change in viewpoint that can be produced by practical experience. Time was when the active railroad men at such a gathering were of very dubious mind regarding the introduction of electric traction, looking at it either as a fad not to be encouraged by those engaged in the serious work of transportation or as a very disagreeable necessity which had unwillingly to be endured. Last week, however, the practical railway men voiced a very cheerful optimism, while the conservative rôle was left to the electrical engineers. Of a specially encouraging tone were the statements of Mr. McCrea, of the Long Island Railroad, and Mr. Murray, of the New York, New Haven & Hartford Railroad. The communication of the former was practically the first contribution which we now recall to have been made in this country to this much debated subject from a steam railroad transportation manager. As such it possessed peculiar interest because hitherto all of the discussions have represented primarily engineering points of view. Mr. McCrea spoke with enthusiasm of both the reliability of the electrical equipment and the results obtained from its use, and emphasized the point which we have often made, that the best results can be secured only when steam operation is forgotten and full advantage is taken of the transportation possibilities of the multiple unit system. Mr. McCrea went so far as to state frankly that the present service on the Long Island Railroad could not be duplicated with any degree of efficiency if the road were to revert to steam. In particular, a great increase of yard area would be necessary, and the terminal operation would become very troublesome. Altogether it was a most instructive and encouraging statement.

Equally optimistic was the report of Mr. Murray, representing another type of equipment operated under still different conditions. The New Haven road is now operating 100 miles of single track, including its yards, and is engaged in electrifying 272 miles more on the same system. Still further, it is working out the equipment of this large mileage on the theory of ultimate extension of the main line electric service clear through to Boston. The system had proved itself so thoroughly reliable that the delays due to electrical causes were very trivial. He emphasized this point by stating that if a transcontinental train were credited with only that proportion of delay which was the average delay rate of all the electric trains operating on his system that train could go from New York to San Francisco and back eleven times with just three minutes charged up for electrical delays.

It is certain that the earlier difficulties with electrical equipment have been pretty thoroughly overcome, and it seems to be



generally agreed both by practical railway men who have had experience with electric traction and by electrical engineers that the electric service has proved extraordinarily reliable. Mr. Gilliam, electrical superintendent of the New Haven road, emphasized especially the saving of time that is actually accomplished by the use of electric locomotives and in particular the saving in energy that could be obtained by judicious coasting. Each railway man in fact had full confidence in the system of electric traction he was using and was entirely satisfied with the results. If the situation was different and each operating manager and operating engineer thought that there might be merit in some other electrical system, but did not care particularly to recommend his own, there would be reason for pessimism. But the single-phase engineer is enthusiastic over single-phase operation and wishes all roads to standardize along that system. The three-phase engineer and the direct-current advocate feel the same way about the systems with which they are best acquainted. From an operative standpoint such a situation leaves little to be desired.

As to the extension of electrical service a particularly keen and pertinent suggestion came from Mr. Sprague, who deprecated the tendency to confuse necessary terminal improvements with the cost of electrification which would accompany them. True enough, the terminal improvements could not readily be made without electricity, but they were in and of themselves necessary and desirable, and the fact that electrification facilitated them is one which was to the credit of electric traction, rather than otherwise. It seems to us that in calling attention to this particular matter Mr. Sprague put his finger on the real difficulty of the electrification situation. There is no material trouble about getting reliable and efficient electrical motive power by any one of several now well-tried systems. If, however, the whole service about a city is to be electrified, concurrent changes of a very extensive character become desirable, not on account of electrification but as a part of the general improvement, and it certainly is not fair to consider the great expense of such improvements as in any way due to the electrification as such, nor is it right to discourage complete renovation of terminal facilities in terms that ascribe the chief expense to electrical equipment.

There is something of this error mixed up in many discussions upon the electrical equipment of steam railroads. It is of course perfectly true that if such electrical equipment is merely to do the same work as the steam equipment which it replaces the change may appear sometimes economically disadvantageous. On the other hand, there is very little doubt that if the operation of that same section of road, after electrification, is conducted so as to take full advantage of the traffic-developing possibilities of the electrical system the results will be astonishing in their favorable character. We should like to see the following experiment tried in some such case. Let a typical suburban division with a heavy passenger traffic on which the present owners claim to be sustaining a loss be leased to the local electric railway company at such modest price as would be appropriate for a service now losing money. Then let the electric railway company electrify and operate the line at its own expense and divide the net profits with the original owners as a bonus on the lease. We do not believe that any steam railroad would be willing to give up its alleged money-losing suburban service on any such terms, but it would be a most interesting experiment and profitable for the lessee.

Certainly electrification is coming along. Its progress is not

so fast as its friends would wish, but we have yet to hear of any road that has tried it being tempted to go back to steam.

#### FRANCHISE TAXATION IN NEW YORK

Taxes have been in force ever since governments were established, or as far back as there is authentic history, yet so far as evidence goes they are paid with no greater relish now than when the British government tried to tax the tea of the American colonists or when the ancient Israelites groaned under the imposts of Pharaoh. In 1899 the Legislature of New York State discovered, under the guidance of Theodore Roosevelt, a brand new subject for assessment and taxation, namely, public utility franchises, and ever since that time the courts of the State have been endeavoring to determine how much a franchise is worth and when it begins to have value. Light was thrown on the latter subject, so far as electric railway franchises are concerned, by a decision just rendered by the Appellate Division of the New York Supreme Court in the case of the assessment of the Hudson & Manhattan Railroad. The full and complete method of determining values as practised by the Tax Commission, however, is still as much of a mystery as is the moral code of the ancient mound builders. The court decided that the commission is not obliged to disclose the ways by which it reaches its conclusions of value. All that an aggrieved person can do is to assume the burden of proof that the final valuation placed upon his property is too high.

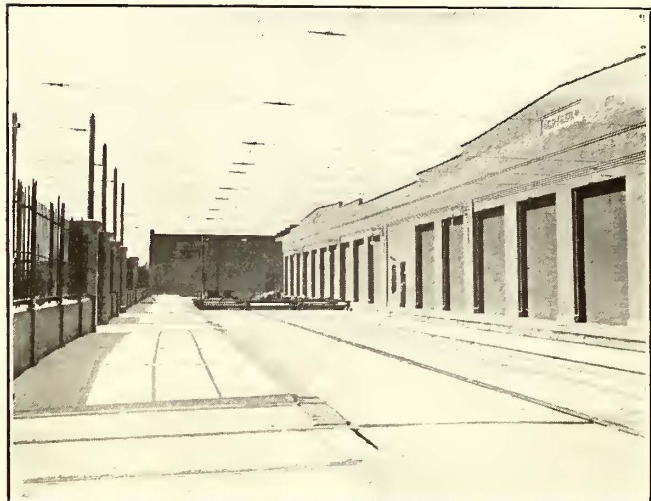
While in this respect the opinion is disappointing, we can derive from it some knowledge of the proper methods of valuating franchises for tax assessment purposes, although this information is mostly of a negative character. One principle enunciated by the court is that the net earnings rule is only one of many ways in which the value of property may be measured. In this particular instance the question of net earnings had no bearing upon the case because the suit was brought upon a franchise assessment made before the line was put in operation. Another point decided was that the uses to which a franchise is put, or is to be put, have an important bearing on its value. Thus, the evidence in the case under discussion indicated that although the Pennsylvania tunnel cost much more per mile than that of the Hudson & Manhattan Railroad it was assessed at a lower rate per mile. But the record did not show that the Pennsylvania tunnel was intended to be in itself a direct revenue producer or anything more than an additional convenience to the public or an advertisement and indirect benefit to the system of which it is a part. This fact, the court considered, was an important one and differentiated the Pennsylvania installation from that of the Hudson & Manhattan Railroad, which was a separate enterprise and was intended as a distinct revenue earner by itself.

We believe that the Tax Commission could very properly disclose its methods of determining the value of franchises—indeed, that it should be compelled by legislative act to do so. There is nothing of a similar mysterious policy in connection with real estate taxation. There any property owner can determine for himself with fairly close accuracy how his assessment compares with that of the owners of other property of the same character. But with the present esoteric methods of assessing franchise taxes great injustice may be committed by the Tax Commission with practically no means of redress on the part of the aggrieved persons or companies.



## CAR BUILDING AND REPAIR SHOPS OF THE CHICAGO RAILWAYS COMPANY

The Chicago Railways Company just recently has completed the installation of its car shops in a group of buildings which are particularly interesting because of their design and size. The reconstructed shops, exclusive of an adjacent carhouse, cover a ground area of 291,000 sq. ft. Of this area 112,100



Chicago Railways Shops—Front of Carpenter Shop, Showing Transfer Table.

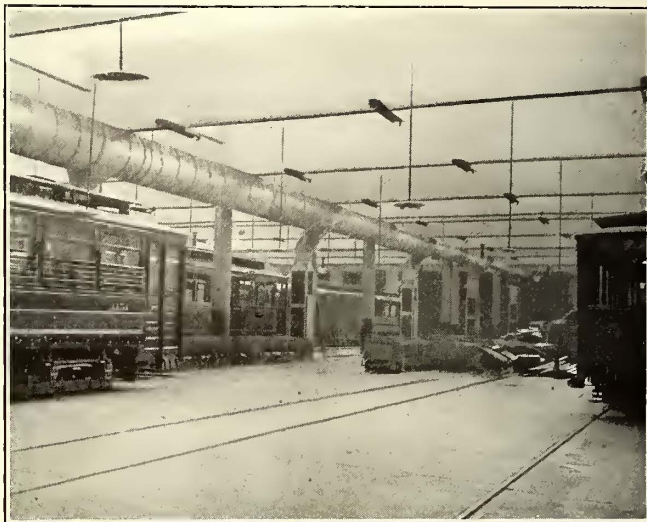
sq. ft. were added during 1910 by the completion of the wood-mill and erection shop. The design and construction of the large new shop buildings was carried out by the engineering department of the Chicago Railways Company in consultation with the Board of Supervising Engineers of Chicago Traction.

The Chicago Railways Company now has 2160 cars in regular service. All of the repair work on these and about 200

have been completed for the construction in these shops of 215 large double-truck semi-steel cars with turtle-back roofs and platforms arranged for prepayment fare collection.

### SHOP ARRANGEMENT

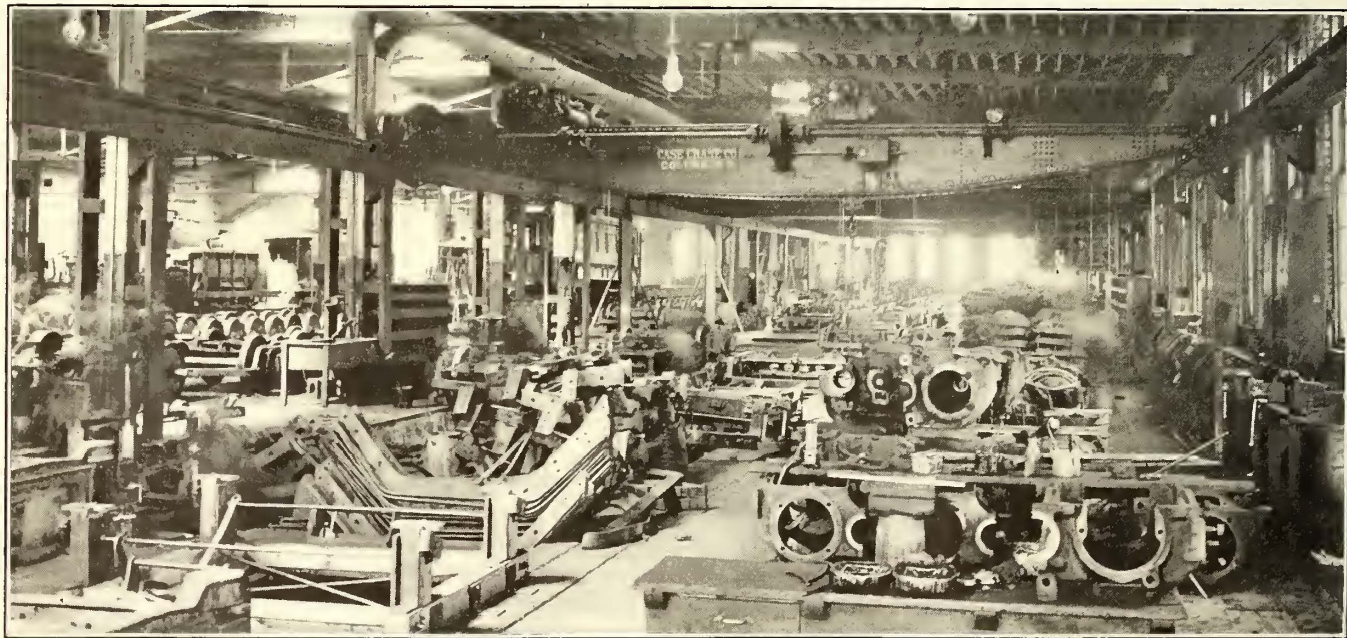
As shown by the ground plan on pages 492 and 493, the new and reconstructed shop plant occupies a piece of property approximately 350 ft. wide by 1600 ft. long, extending from Lake Street on the north to Madison Street on the south. This loca-



Chicago Railways Shops—Interior of Paint Shop, Showing Hot-Air Pipes

tion is one block west of Garfield Park. Three intermediate streets subdivide the group of buildings into four sections of approximately equal size, one of which is used as an operating carhouse. A private alley in which is a service track extends along the east side of all the shops. Quarters for the shop departments are subdivided as follows:

(1) Old shop section now rearranged—truck and wheel shop,



Chicago Railways Shops—Interior of Truck Shop

miscellaneous service cars is done at the newly reconstructed West Side shops, which regularly employ more than 700 men. In addition to the repair and maintenance work these shops now are rebuilding 328 old cars into modern pay-as-you-enter double-end rolling stock at a rate of 25 new cars per month. The approximate amount spent in reconstructing each car is about \$2,000, and the details of the work were described in the *ELECTRIC RAILWAY JOURNAL* of Nov. 27, 1909, page 1092. Plans

machine shop, electrical and armature shops, blacksmith shop and brass foundry, storehouse and offices.

(2) Buildings completed in 1909—carpenter shop, paint shop and miscellaneous auxiliary departments.

(3) Buildings completed in 1910—erecting shop, fender shop, wood mill, cabinet, pattern, broom and tin shops and a boiler house and dry kiln.

During the past year the machine-shop equipment and the

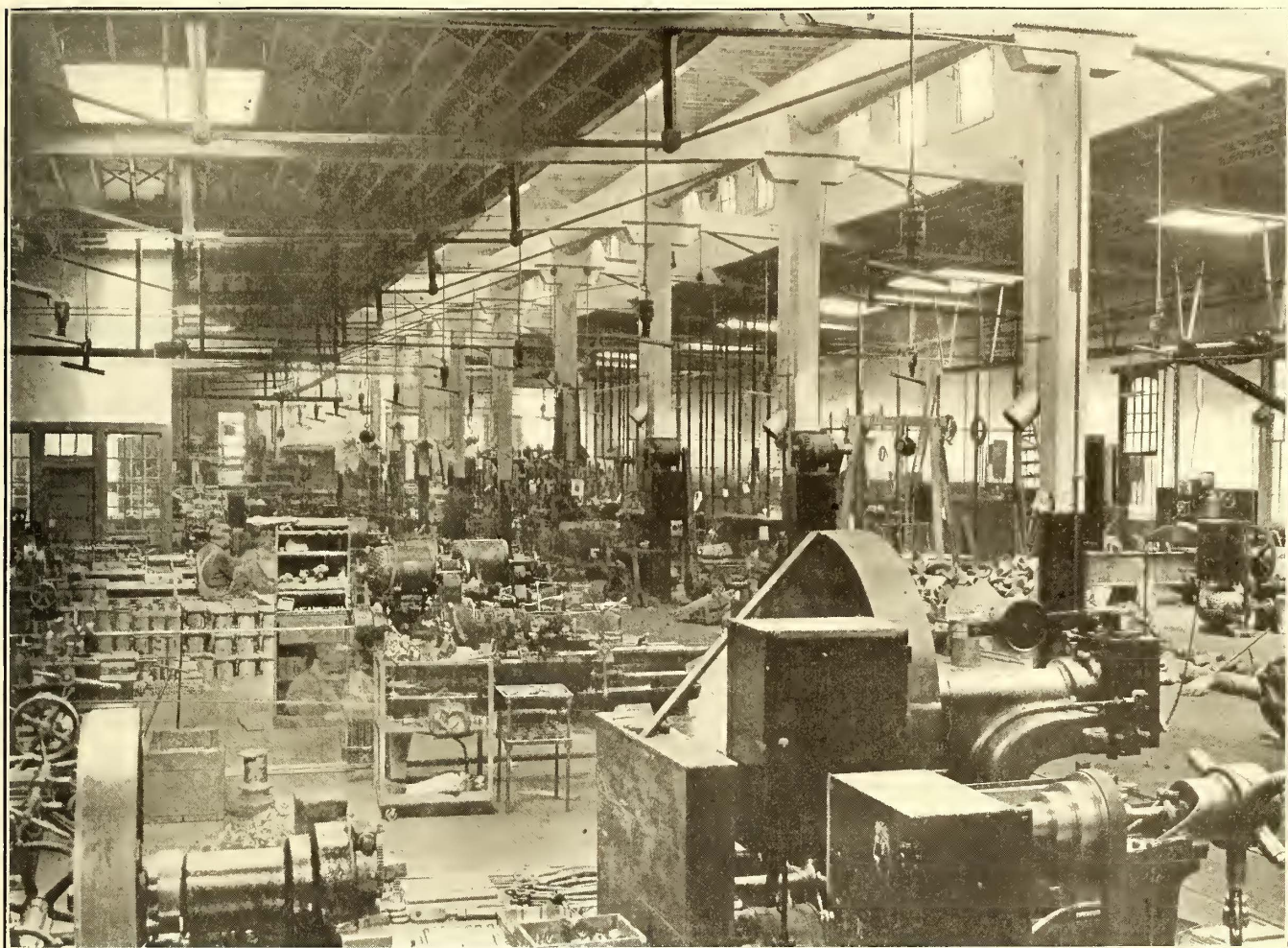


wood-mill equipment have been increased, by the addition of 49 and 56 motor-driven tools respectively. Independent motor drive with automatic control has also been installed on practically every other machine tool in these large shops.

#### TYPES OF BUILDINGS

Each of the three principal shop sections has been built according to a different design. That section inclosing the machine, truck and armature shops has brick walls surmounted by mill-construction wood roofs. The newer shop sections were built entirely of non-combustible material, except for window frames, sash and a few doors. They have concrete substructures, concrete and hollow-tile roofs and brick side and partition walls. Some of the controlling features of design in these buildings will be described.

The carpenter and paint shop building is notable for its wide bays. It has a saw-tooth roof. The height from the floor to the ridge of the saw teeth is 33 ft. Each of the two subdivisions of the building has its roof subdivided from side wall to side wall into three spans, 48 ft., 60 ft. and 48 ft. in length respectively. The original design for the roof included steel trusses covered with metal lath and plaster, but the estimates showed the construction cost to be such that the design was changed to include reinforced concrete girders, which were built at less first cost and require no maintenance expense. The reinforced concrete girders supporting the saw-tooth roof rest on two intermediate rows of concrete columns incased in steel cylinders 17 in. in diameter. Use was made of the steel cylinders for inclosing the reinforced concrete columns because



Chicago Railways Shops—Reconstructed Machine Shop with Motor-Driven Tools

#### CARPENTER AND PAINT SHOP BUILDING

The first of the newer buildings to be erected was that occupied by the carpenter and paint shops. This has over-all dimensions of 316 ft. x 223 ft. for the main portion, and it also has an addition 316 ft. long with an extreme width of 51 ft. The main portion of this shop is halved by a fire-resisting wall. Only one opening connects the two subdivisions and that is protected by a vestibule and two sets of automatic double fire doors. This shop building is set back 55 ft. from the street lines at each end to make room for transfer tables. The two tables connect with all of the tracks through both subdivisions of the building and those tracks which extend across the streets to other buildings. The location of the transfer tables outside of the building walls relieved the company from making large openings in the dividing fire wall inside the structure. These were considered dangerous from the fire-protection standpoint. The plan as adopted brought about a large saving in insurance premiums and greatly reduced the liability for loss of shop and equipment by fire.

of the protection from injury which they would afford to the concrete.

The roof girders are simple beams with the roof framed in at 17-ft. intervals. The 60-ft. supporting girders have a maximum cross-section of 16 in. x 17 in. and the slab beams are 10 in. x 20 in. in section with a broadened upper flange to provide for compression stresses. Each roof slab is composed of small reinforced concrete joists formed by spacing 12-in. x 12-in. x 4-in. hollow tile on 16-in. centers, reinforced with Kahn bars and covering it with 1 in. of concrete to afford a smooth base for the roofing.

The carpenter shop section of this building has nine through tracks each carried over a continuous concrete pit. The track rails weigh 85 lb. per yard and are bolted to cast-iron chairs embedded in the pit walls. The carpenter shop floor is concrete. In the aisles between the pits a ¾-in. wash-water pipe terminates in a faucet at every fourth column. No pits have been built in the paint shop section of this building, but the concrete floor is sloped to drains located 50 ft. apart.



A two-story subdivision in one corner of the carpenter shop incloses on the first floor the foreman's office and a general locker and washroom, and on the second floor a toilet room and two sets of fans and coils for the indirect heating system supplying the paint and carpenter shops.

Adjoining the paint and carpenter shop building are a finishing room and stockroom, one story high, with floor dimensions of 50 ft. x 158 ft., and a two-story section 26 ft. x 158 ft. The ground floor of the latter section is used for glass storage and the second floor accommodates sign and curtain rooms and toilet facilities. These additions are built of fireproof materials throughout and have roofs composed of 5½-in. reinforced concrete and tile slabs of the same design as that of the main portion of the building.

In the carpenter and paint shop building with its saw-tooth roof the pivoted windows are operated by the Pond mechanisms.

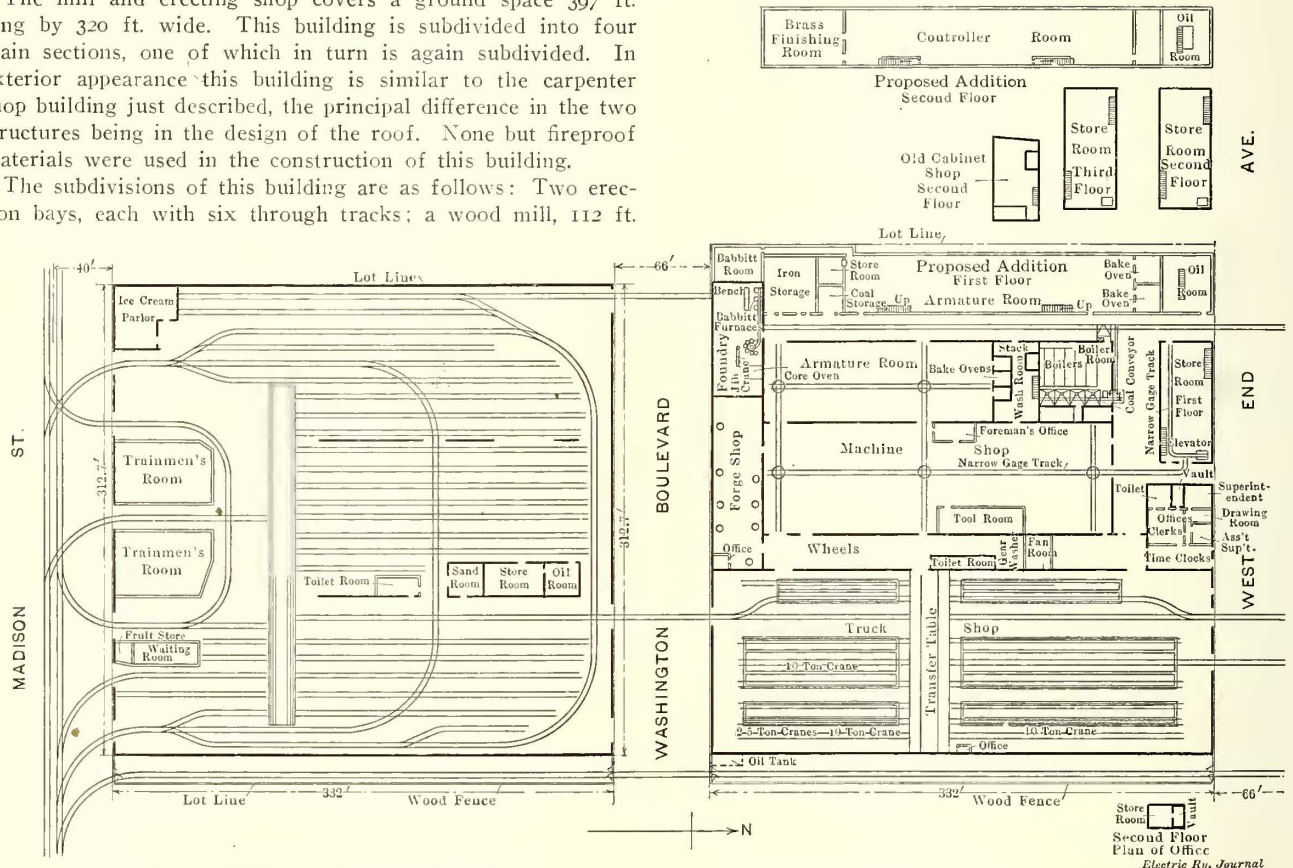
MILL AND ERECTING SHOP BUILDING

The mill and erecting shop covers a ground space 397 ft. long by 320 ft. wide. This building is subdivided into four main sections, one of which in turn is again subdivided. In exterior appearance this building is similar to the carpenter shop building just described, the principal difference in the two structures being in the design of the roof. None but fireproof materials were used in the construction of this building.

The subdivisions of this building are as follows: Two erection bays, each with six through tracks; a wood mill, 112 ft.

of the three shop sections. The fan room in the mill building is typical. It incloses two 108-in. Sturtevant fans driven by independent motors. The heated air discharged by these fans is distributed through two lines of galvanized-iron pipe carried the length of the mill building. These connect with branch pipes which discharge the air downward into the aisles between the wood-mill machinery. The heat outlets in the paint shop terminate in square frames inclosed in brass screens. Where these outlets are close to the tracks the paint on the cars is protected from heat by sheet-iron plates which deflect the hot air along the aisle. An idea of the appearance of the heat distribution pipes may be obtained from the view of the paint shop on page 490.

The steam for heating the buildings is generated by two boiler plants, one located in the reconstructed machine shop building and the other at the north end of the new wood mill. The new boiler plant has one Stirling high-pressure boiler of 200-hp capacity, which furnishes steam at 150 lb. and is con-



Chicago Railways Shops—Portion of Shops South of West End Avenue

wide by 265 ft. long; fender shop, 100 ft. x 112 ft., and a two-story bay, 28 ft. wide by 370 ft. long. An annex at the Lake Street end incloses a dry kiln, ash storage, boiler and fan-rooms. The relative arrangements of these subdivisions of this large shop is shown in the general plan.

Because of insurance requirements about one-third of the total skylight area was raised high enough above the roof to include balanced windows between the roof of the building and the tops of the monitors. These pivoted windows provide an exhaust for smoke in case of fire. They are operated by fixtures supplied by the Dearborn Hardware Company. Plain glass has been inserted in these skylights in order to satisfy the requirements of the Chicago Board of Fire Underwriters. Wire nettings have been placed underneath all plain glass.

HEATING AND VENTILATING

All the shops are heated with hot air distributed by fans located on mezzanine floors in the different buildings. These fans take fresh air from above the roofs and force it through steam coils into distribution ducts supported close to the ceilings. There are three fan rooms, each centrally located in one

connected with two low-pressure boilers through a reducing valve so that it may assist these boilers or be substituted for them in feeding the heating system. The boiler furnaces exhaust into a concrete-steel stack 125 ft. high. Mechanical coal and ash-handling systems are provided for the boilers of both of these plants.

Drainage for all of the shops has been installed according to a general plan. Six-in. vitrified-tile branches connect with 12-in. mains leading to catchbasins outside of the buildings.

The coatroom and toilet rooms of the reconstructed shops have been fitted up in particularly neat shape. Each of the shop buildings has a large locker room, in all of which are about 700 all-steel lockers built by the Lyon Metallic Manufacturing Company. Sanitary drinking fountains, as illustrated, are placed in each coatroom and at other central locations about the shops. The toilet and washrooms have high-grade white-enamel fittings, concrete floors, and are well lighted and ventilated. Particular care is taken to keep the toilet and washrooms neat and clean. The skylights over the toilet room are fitted with 18-in. Burt ventilators.



Compressed air for general use is furnished by a system of mains and branches which are fed in each of the three shop sections by a 3 V. S. compressor. Each of these air compressors has a capacity of 225 cu. ft. per minute. The reserve supply of air is stored in eight large tanks, connected with which is a single governor that controls all three pumps, thus starting and stopping them in unison according to the fall and rise of the air pressure in the main storage tanks. The control board is located close to the air pump, which is in the machine shop section. This board is provided with switches so that any one of the pumps may be shut down without interfering with the operation of the others.

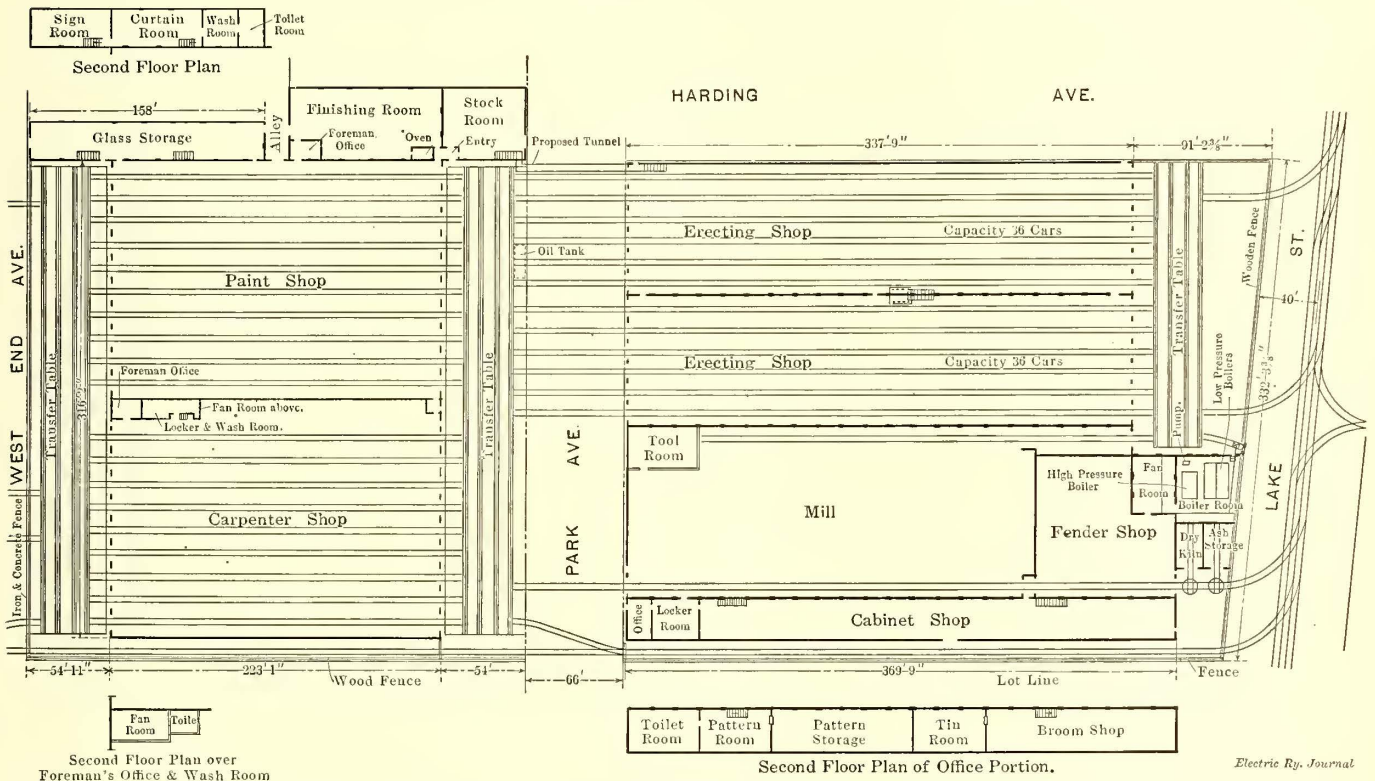
ELECTRICAL DISTRIBUTION

On account of the large number of tools with individual motors, aggregating 600 hp, and the general use of electricity for every possible service in these shops the design and construction of the electrical distribution system were executed with particular regard for continuity of service. The current supply is received at a central board located at the north end of the wood-mill building. In this building the distribution is made from four panel boxes conveniently located. A similar plan

TRANSFER TABLES

Reference to the ground plan will show the general arrangement of the shop sections and the layout of the transfer and work tracks. The shops may be entered from the north over four tracks leading from a double-track line on Lake Street. Two of these tracks connect with a transfer table at the north end of the north shop section and the other two extend through and by this building section to reach the other shop sections directly or by way of two intermediate transfer tables, one at either end of the carpenter shop section.

Three of the four transfer tables at these shops are of recent construction. Two of these are at opposite ends of the carpenter shop building and the third is connected with the track layout of the erection shop building. The runways for these transfer tables are shallow pits paved with concrete and located about 12 ft. from the faces of the buildings. The tables are of sufficient length to handle 60-ft. cars. Each table consists of a cast and structural steel frame supported on eight wheels resting on four track rails. Two pairs of these wheels are connected through gears to a railway motor equipped with two pinions. This motor is fed through an R-28 controller and drives four of the eight wheels on the table.



Chicago Railway Shops—Portion of Shops North of West End Avenue

is followed in each of the other shop buildings. The conducting mains from the central switchboard are lead-covered cables inclosed in tile conduit laid beneath the shop floors and terminating in the local distribution panel boxes in each bay or subdivision of each building. The panel boxes are made of sheet steel inclosing black-slate panels on which are mounted individual circuit breakers for each machine-driven tool. The leads from the panel boxes to the tools are inclosed in galvanized-iron pipe with threaded joints and elbows.

With the exception of the machine, fender and cabinet shops, which are illuminated by mercury vapor lamps, all of the shops are illuminated by inclosed arcs with clear globes. The lamps which furnish the general illumination are controlled from the panel boards earlier mentioned. Local illumination is furnished by clusters of incandescent lamps. Sockets for portable clusters have been placed on each column and are connected with the distribution panel through wires protected in steel conduit. The yard space on three sides of each of the buildings is illuminated by arc lamps hung from ornamental brackets on the side walls.

NEXT ARTICLE

In the next issue of this paper an extended description will be published of the departments of the new shops of the Chicago Railway Company, not described in the foregoing article, the equipment of these departments and some details of the shop practice of the company.

MEETING OF INTERURBAN RULES COMMITTEE POSTPONED

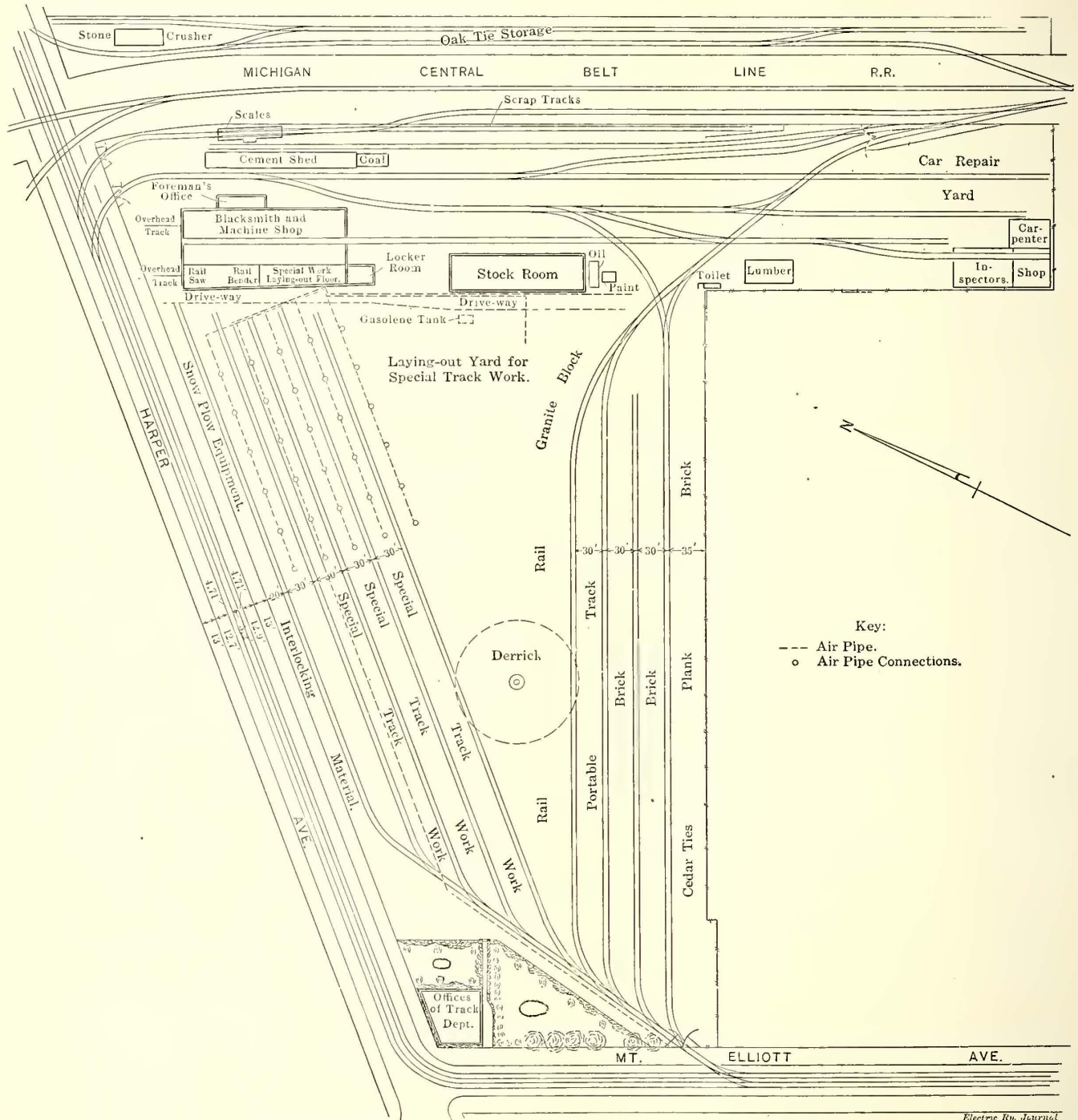
J. W. Brown, superintendent of transportation Aurora, Elgin & Chicago Railroad, Wheaton, Ill., has announced that the meeting of the interurban rules committee of the American Electric Railway Transportation & Traffic Association has been postponed one week. Mr. Brown, who is chairman of this committee, had set the dates of April 4 and 5. It was found, however, that these dates were inconvenient for F. A. Boutelle, superintendent Puget Sound Railway. The dates of April 11 and 12, however, were found to be satisfactory to all the members of the committee. The meeting will be held in Chicago.



**HARPER AVENUE YARDS OF THE DETROIT UNITED RAILWAY**

The Detroit United Railway has a large tract of land at Harper and Mount Elliott Avenues on which it has completed important improvements. The property includes the main yard of the track department and the accompanying illustration

The office building, which has just been completed, is two stories in height and is of red wire-cut pressed brick. The entrance way, which faces Harper Avenue, is paneled in marble and green tile and has mosaic flooring. It opens into a large lobby, which is paneled in oak. The floor of the lobby is of mosaic design. A general information room, which is opposite the doorway, contains the telephone switchboards at which an operator is present day and night throughout the year. The



Harper Avenue Yards of the Detroit United Railway

indicates the convenient arrangement of the buildings and the track layout.

The buildings located on the property comprise an office building, smith and machine shop, carpenter shop, storerooms, lumber sheds, stone crusher, inspectors' shop, etc. The office building is located at the corner of the two avenues and is surrounded by grass. Shrubbery and beds of flowers will improve the plot further. For facility in the handling of material and supplies all the other buildings are located on the east end of the property adjoining the belt line of the Michigan Central Railroad.

offices of the superintendent of tracks are at the right of the doorway. These offices are finished in mahogany and all others in the building are of oak. All the floors are of oak.

At the left of the entrance is a time-keeping office through which the private office of the chief timekeeper is reached. The hallway extends from the entrance lobby to the rear of the building, where the office of the city roadmaster is located.

The stairway which leads to the second floor is between the general information room and the hallway. At the left of the stairs on the second floor is the blue-print room. This is equipped with a large electrical blue-printing machine. At the



right side at the head of the stairs is the office of the assistant superintendent of tracks, and adjoining it is the private office of the engineering department. The drafting room is also on the second floor.

A fireproof vault, 16 ft. square in area, extends from the basement to the first and second floors. Heater and fuel rooms and a cement testing laboratory with complete equipment for testing cement are in the basement, the walls of which are of white-lime brick in order to improve the light. Toilet rooms are in the basement and on each floor.

The company has installed recently in the smith and machine shops a rail bender manufactured by the Cleveland Punch & Shear Company, an Imperial type No. 10 air compressor made by the Ingersoll-Rand Company, of New York, and a shaper made by the Morton Manufacturing Company, of Muskegon Heights, Mich. This shop is equipped thoroughly for the fabrication of the special track work used on the system. It has air compressors, an air hammer, a planer, drills, etc. The company has also ordered a 26-in. x 16-ft. Schumaker & Boye lathe and a Newton combination cold saw and cutting-off machine. In the arrangement of this shop a large floor has been provided on which special track work is laid down. For convenience in handling large pieces of work in and out of the shop, the west side of the building is a series of large sliding doors. The private office of the shop foreman is contained in the building.

With the arrangement of the stone crusher, the material is handled only once. The storage bins are built above the ground and the stone crusher machinery is sunk below the ground level. As the concrete, granite, old brick, etc., are hauled from the various shops, they are unloaded directly into the jaws of the crusher, and after the material is crushed, it is elevated into the storage bins. It is then emptied by means of gravity chutes into dump cars and is taken to suburban lines of the system, on which it is used for ballast.

The carpenter shop is well equipped with lathes, drills, band and circular saws, etc.

The entire track layout was arranged in order to permit the economical handling of materials. The yard is filled level to the track rails with cinders. A ladder track runs into the property from Mount Elliott Avenue. Nine tracks branch from the ladder track and along them are stored various materials, such as special track work, granite block, rail, ties, planks, brick, etc. The arrangement of this material is shown in the accompanying illustration. The north tracks running from the ladder track about the west side of the machine shops, and on these tracks and in the open space adjacent special work is assembled in the same way as if it were being placed in the street. This work is checked by an engineer so that the positive correctness of the work can be proved before it is sent to the place of installation.

In the open space between the tracks there is a large stationary derrick for loading and unloading materials on cars. The company has for the handling of heavy material a 30-ton locomotive crane manufactured by the Industrial Works, of Bay City, Mich., and several derrick cars. At the end of the property adjacent to the Michigan Central Railroad tracks there are several tracks which extend north and south. Cars can be run on these tracks into the shops for repairs or on to a scale in order to be weighed. By means of the south track running from the ladder track which extends from Mount Elliott Avenue a loop is formed with the tracks adjacent to the Michigan Central Railroad track so that a car can be run through the yards to Harper Avenue and be headed toward the business district of the city. A storage track on the extreme east side of the property opens on Harper Avenue and all the white oak ties are handled on this track and stored adjacent thereto.

John Kerwin is the superintendent of tracks of the Detroit United Railway.

## ELECTRICAL NIGHT AT THE NEW YORK RAILROAD CLUB

The meeting of the New York Railroad Club held in the Engineering Societies Building on March 17 was the annual "electrical night" of this body. W. J. Harahan, assistant to the president of the Erie Railroad, explained, as chairman of the electrical committee, that this committee had considered it unnecessary to submit a formal report during the present year, in view of the fact that the report submitted one year ago covers conditions as they now exist, almost no changes having been made in systems or methods of operation during the past few months. He stated, however, that experience had shown that all of the systems have points of merit. Each one seems particularly well adapted for certain service requirements. Last year's report was published on page 527 of the issue of this paper for March 26, 1910. The committee consisted of Messrs. Harahan, Fritch, Warren, Vaughan, Davis, Wildin, William McClellan, Mailloux and Katte.

Although no formal papers were presented, Mr. Harahan read a communication from J. A. McCrea, general superintendent of the Long Island Railroad, giving an outline of the experience of this railway with electrical operation.

Mr. McCrea said that if a man had had transportation experience or understood the theory of moving traffic he was apt to have an advantage in taking up electric operation over a man who attempted to handle multiple-unit service as though it were steam. The use of any motive power except electricity could hardly be considered now in connection with the western terminals of the Long Island Railroad. The traffic had developed along lines made possible by multiple-unit train service. If the company to-day should for any reason be forced to abandon electricity as a motive power it would mean a complete revolution in the train service and either the enlargement of the Flatbush Avenue (Brooklyn) station to two or three times its present size, at an almost prohibitory expense, or, what was more probable, the abandonment of much of the service because it would not be possible under the restrictions of steam operation. The Long Island Railroad began electric operation in 1905 and now has about 62 route miles of road and 164 miles of track electrified. The change to electricity was made gradually and no sudden change in the operating methods of the company was required. The points in multiple-unit electric operation which most impressed one who had been identified with steam operation were (1) regularity and reliability of service; (2) the possibilities of running with close headway and great increase of speed in local service, and (3) the very marked reduction in amount of switching and lay-over time at a terminal.

Referring more in detail to the reliability of the electrical equipment, Mr. McCrea said that in five years there had been but one serious delay to the electric operation on the Long Island, and this was due entirely to something over which the company had no control, and the same sort of an accident might have crippled steam service. A leak in a gas main in Brooklyn had filled a manhole in the high-tension conduit line with gas, which was ignited. The cables were badly damaged and service was not re-established for some five or six hours. Motor failures on the road that caused delay had been practically unknown, and experience was rapidly eliminating the troubles with the maintenance of the third, or conductor, rail. Very little delay also was caused by either electrical storms, to which the Long Island is subject in summer, or by snowstorms. A marked feature of the electrical operation is the increased speed of local trains, due to rapid acceleration and the possibility of running with close headway on account of the constant speed of trains of the same class.

In discussing terminal operation Mr. McCrea said that in the average steam terminal it was rarely possible to place, load and dispatch more than five or six trains per hour from any one track. In fact, this would be a high average. But with multiple-unit equipment, even under adverse circumstances, it was possible to get the number of movements out of one track up to 8 or 10 trains per hour, the equipment of some four

The Columbia Power, Light & Railway Company, Bloomsburg, Pa., has adopted the merit system and established club rooms for the employees.



or five of them being that of trains that had come in and unloaded their passengers on that track. This performance was further emphasized by the fact that the time of the day when the terminal is taxed to its capacity is usually during the rush hours in the late afternoon and it is necessary to fill out by adding cars to all trains that come into the terminal, which, in the case of multiple-unit operation, must be done on the station track and not in the coach yard as with steam. A multiple-unit shifting crew makes but half the number of movements as compared with steam service. A crew usually consists of a motorman and a conductor; sometimes a helper or yard brakeman or car inspector is added. This crew is very flexible, being able to move with great rapidity from one track to another and easily accomplishing the work of two yard engines. If 60 minutes are assumed as the maximum time which will be taken by a commuter per trip this would correspond to a distance from the terminal of about 24 miles by the best local steam service, with the stops averaging from 1 mile to 2 miles apart. A multiple-unit electric train would cover under these conditions a 25 per cent greater distance in the same time, or, say, 30 miles, or it would make the 24 miles in 45 minutes. It has been remarkable, Mr. McCrea said, to see the manner in which enginemen and trainmen educated in steam service have adapted themselves to the new conditions of electric service. At first it was difficult for them to make their part of the schedule, but this changed rapidly and now he thought it entirely proper to say that the increased speed of multiple-unit service had even accelerated the passengers in loading and unloading. Part of this condition, of course, was due to high platforms, but also part, probably, to the knowledge of passengers that after a train had started there was no chance to get on or off the train.

Finally, in steam service most railway men know from various reports the cost per passenger car mile, but this figure rarely entered seriously into the daily routine of the superintendent or train master. With multiple-unit service it was entirely different. The cost per car mile stared him in the face, and no matter where he was when he saw an empty car or a train on which one or two cars could be cut off, the figure of the power cost of 6 cents to 8 cents per car mile for moving that identical car would come up before him, and he had a definite knowledge that this power cost, at any rate, might have been saved, with several other cents per mile as trailers to every car mile that was run.

The next speaker was Prof. George F. Swain, of the department of engineering, Harvard University, who spoke on the reports of the Massachusetts Joint Board on Electrification, which were published on page 225 of the *ELECTRIC RAILWAY JOURNAL* for Feb. 4. Professor Swain was a member of the committee which made the majority report. He explained the reasons which led the majority to believe that while electrification was desirable for the public and possessed many advantages over steam it should not be forced upon the railroads. The electrification of the lines in the Metropolitan District of Boston was an economic and financial rather than an engineering problem. Professor Swain concluded with a strong plea against the compulsory electrification of railroads except where it was absolutely demanded by considerations of the public health and safety. The State had no right to demand electrification otherwise unless it was willing to guarantee a return on the investment.

H. Gilliam, electrical superintendent of the New York, New Haven & Hartford Railroad, said that that company was now operating electrically for 33½ miles on the main division between New York and Stamford and 7½ miles from Stamford to New Canaan. The present equipment comprised the use of high-speed gearless locomotives, motor cars and freight locomotives, all designed for direct-current and alternating-current operation and capable of operation in single or multiple units. As an instance of the saving in time which is afforded by handling trains with electric locomotives, the speaker said the company had found that an electric locomotive could be taken off one train and coupled to another ready for starting in

about one-half the time that was required merely to back up a steam locomotive. The "coasting" possibilities of electrical equipment had long been understood, but not until recently had advantage been taken of this quality in cutting down power consumption. The grades on the New Haven system were very slight, not exceeding 0.4 of 1 per cent. Nevertheless some recent coasting tests on freight trains had shown that in the 33½ miles between New York and Stamford current was applied for 12 miles only, equivalent to 17 minutes in a 50-minute run. Coasting ought to be encouraged by a bonus system for the engine men. The heating and lighting of the electrical equipment also required much less attention and was better than in the steam service.

William McClellan, consulting engineer, New York, said that, while there had been very little progress in electrification from an electrical engineer's standpoint, yet steam railroad men were studying the problem more closely than ever. Steam operators were now satisfied that all of the systems usually considered were absolutely reliable, but there was still great doubt in their minds as to which would become the ultimate standard. It was no longer necessary for the adherents of the different types to call attention to complexities which experience had shown were not at all serious. Electrification on a broad scale was not a local problem, so far as the choice of the systems was concerned. In this country one could regard all the railroads practically as part of one great network. Therefore, it would be hazardous to consider just one situation, say a terminal and yard electrification, without bearing in mind the later extension of electrification for a considerable distance along the main line. In conclusion he said that it would be very desirable if the electrification of steam railroads in and about our large cities were discussed harmoniously by joint boards which would consider the broader aspects of the problem rather than to have legislatures compel electrification which the railroads could not afford.

Frank J. Sprague, consulting engineer, New York, did not believe we would arrive at any one system in the near future. All engineers who had experience in electric operation were most enthusiastic about the particular system for which they had been responsible. The Italian engineers, for instance, greatly favored the three-phase system, just as the New Haven engineers favored single-phase and the New York Central engineers favored direct current. It was unfortunate that the cost of the great terminal improvements had been confused with the cost of electrification. These improvements were an absolute necessity and furthermore they could not have been made on so grand a scale if electricity had not been available. Only a few of the railroads of this country were prepared for electrification. There were thousands and thousands of miles where the money could be spent to much better advantage, as in duplicating tracks, rectifying the alignment, improving the track and rolling stock, etc. He referred to the electrification, considered three years ago, of the Sierra Nevada mountain division of the Sacramento branch of the Southern Pacific Company. He had studied this situation carefully, but the tenders received from the electrical manufacturers upon the equipment required were so diverse that he did not dare to recommend electrification at that time. But he thought the time was fast approaching when the problem would have to be taken up again. Referring to the Chicago electrification problem, Mr. Sprague said that the municipality and railroads should get together so that electrification could be carried out co-operatively by the different railroads; that it would be very undesirable and uneconomical if each railroad should build an independent power station and transmission system.

W. S. Murray, electrical engineer, New York, New Haven & Hartford Railroad, did not believe that there was any trunk line situation *per se* in this country whose electrification could not fittingly, properly and economically be taken care of by the single-phase system. Its capital investment and operating expenses were such that the economy of the two combined would give the best net return to the railroad. The New York, New Haven & Hartford Railroad was now operating 100 miles



of line measured as single track and including yards from Woodlawn to Stamford. It had in its immediate budget the electrification of the Harlem division, comprising, with the Harlem yards, about 200 more miles of track. To this should be added the New York, Westchester & Boston Railway two and four-track system under construction and comprising another 50 miles and the Hoosac tunnel with 22 miles of single track. This total of 372 miles of track to be operated by single-phase current was a pretty strong argument in favor of standardizing trunk lines according to this system. He still believed that direct current was the right thing to perpetuate in the larger cities and for the interurbans between those cities, but it was not suitable for heavy trunk line high-speed traffic. The New Haven problem was worked out on the assumption that ultimately there will be an electric line for the entire distance of 232 miles between New York and Boston. As to the reliability of the system, if a train was given a delay rate which was the average delay rate of all electric locomotives operating on the New Haven system, that train would go from New York to San Francisco and back eleven times with but three minutes delay from electrical causes.

W. B. Potter, chief engineer railway department, General Electric Company, said that he would like to refer briefly to the possibilities of the self-propelled car for replacing steam service under certain conditions. After mentioning the success of the McKean gasoline motor car, he described the gasoline-electric car of his company. One of the first cars of this type had run for about 45,000 miles with less than three hours' total delays. The cost of operating such a car, considering reasonable interest and depreciation charges, was about 20 cents a mile. One advantage of the gasoline-electric car was that, as 600-volt motors were used, the rolling stock could be operated over ordinary electric lines merely by adding the usual trolley-pole equipment. These cars are started rapidly by means of compressed air.

W. F. Zimmerman, New York, referred briefly to the experiences which he had had on the Spokane Inland Empire Railroad. Although this company operated part of its lines by direct current and part by single-phase current, the conditions were so different that it was impossible to compare the costs with any degree of fairness. The same fact held true in comparing the cost of the single-phase long-distance service with that of the steam railroads in the same territory. Steam railroads did not hesitate to use diverse types of locomotives for different kinds of service, and a similar flexibility ought to be considered in electrification problems. There was no reason, for instance, why the Pennsylvania Railroad should not use one system between New York and Philadelphia and another between Altoona and Pittsburgh.

A. H. Armstrong, General Electric Company, said that most of the call for standardization came from those who were advocating one system, and that system was not the direct-current system. He then mentioned some personal observations made by him on a simple-type steam locomotive. While this locomotive was in operation it consumed 40 lb. of steam per brake horse-power at the rim of the drivers and used 5 lb. of water per pound of coal. There were required per brake hp-hour 8 lb. of coal, containing not more than 12,000 B.T.U. per pound. So far as fuel consumption was concerned, this result could hardly be bettered by electrification after considering the transmission and conversion losses. The locomotive's standby losses, however, greatly increased the effective fuel consumption. Thus the locomotive required from 300 lb. to 500 lb. of coal an hour even when standing on a siding. Taking all losses into account, the actual fuel consumption was about 12 lb. per brake hp-hour. The small radius of action of the steam locomotives must also be considered in the electrification problem. Steam locomotives cannot run much more than 150 miles before they must be inspected, and their annual overhauling requires from four to five weeks. On the New York Central & Hudson River Railroad the electric locomotives are inspected every 1200 to 1300 miles, which means that they could easily run from New York to Chicago

without any inspection whatsoever. In one case he found that over a run of 1000 miles the freight trains could be moved in 36 hours less time if the railroad were electrified.

The meeting then adjourned after the usual vote of thanks to the speakers of the evening.

## ANNUAL CONVENTION OF MAINTENANCE OF WAY ASSOCIATION

The twelfth annual convention of the American Railway Engineering & Maintenance of Way Association was held at Chicago on Mar. 21, 22 and 23. During the week of the convention the Road & Track Supply Association held an exhibition of railway appliances and supplies at the Coliseum. The exhibits of the manufacturers were complimented by a large attendance. The proceedings of the Maintenance of Way Association consisted almost entirely of the discussion of reports of standing committees prepared in advance and distributed to the members. Among the reports discussed this year are those covering a large number of subjects interesting to electric railroads. An abstract of some of these reports follows:

### RAIL

The rail committee of the Association held a number of meetings at various steel plants and met during the year with representatives of the rail manufacturers. Its report reviewed statistics of rail failures, including information on the use of open-hearth and special alloy steel rails. One point emphasized was that the differences in the production of ingots and the finished rail made from them may annihilate all advantages derived from any particular rail section. The design of a rail section is not, therefore, the main cure for poor material. During the last year experiments and tests have been carried out under the direction of the committee and the results as obtained by M. H. Wickhorst, engineer of tests, form an appendix to the committee report. The expense of the tests was borne entirely by the American Railway Association. The committee stated that it hoped to have enough information during the coming year to enable it to make further recommendations with regard to improving rail specifications. It is not attempting to design a new rail section, but is obtaining information on the relative strength of rails with thin and with heavy heads. A tabulated statement of the different practices in connection with rail rolling in American mills was submitted. This tabulation was compiled by Robert W. Hunt & Company. The committee recommended a standard location for borings for chemical analyses and for tensile test pieces.

### MASONRY

The committee on masonry suggested changes in the definitions as included in the association's manual of recommended practice. Waterproofing of masonry was studied by the committee and its report contained a detailed tabulation of the service obtained from different waterproofing compounds and materials, together with their costs for installation. The conclusions of the committee, based upon the supposition that the structure is well designed and that the foundation is good, were:

(1) That monolithic concrete construction may be used without danger of cracking for abutments of any length that the working conditions will permit, provided the length does not exceed about three times the height.

(2) That where abutments with wing walls are not of monolithic construction joints should be provided at the intersections of the wing walls and the body of the abutments.

(3) That reinforced concrete abutments may be built in units of any length that economic conditions will permit.

(4) That monolithic concrete construction may be used for arches where the conditions will permit, otherwise the arch ring should be constructed with radial joints.

### RULES AND ORGANIZATION

The committee on rules and organization suggested changes in some of the rules contained in the Maintenance of Way rule book. One of the proposed new rules was as follows:



"Employees must exercise care and watchfulness to prevent injury to themselves, other employees and the public, and to prevent damage to property. In case of doubt they must take the safe course. They must know that all tools and appliances are in safe condition before using. They must move away from tracks upon approach and during passage of trains, and, so far as practicable, prevent the public from walking on tracks or otherwise trespassing on the right-of-way."

#### BALLAST

The ballast committee discussed the proper thickness for track ballast, character of subgrade, number of ties, stiffness of rail, and asked for more time to study the subject of the proper thickness of ballast, suggesting the advisability of making independent investigations with some instrument designed for the purpose of measuring the actual pressures transmitted by the ballast.

#### TRACK

The track committee studied and reported on revisions in the manual regarding the adjustment of curves with consideration as to easement curves. It recommended that "ordinarily an elevation of 8 in. should not be exceeded. Speed of trains should be regulated to conform to the maximum elevation used," and "in ordinary practice it is recommended that the elevation be run out at the rate of 1 in. in 60 ft., but this will be modified by the same conditions that would vary the length of the easement curve used." "Tie plates are recommended in all cases where economy in maintenance will result from their use." The committee recommended for publication in the manual "general instructions for ordering and contracting for frogs, crossings and switches." It suggested that the subject of specifications for manganese steel in frogs, crossings and switchpoints should be further investigated so that the committee might be in a position to recommend a specification that would meet with the approval of the association. The following statements in the opinion of the committee seemed warranted by a study of replies to circular letters concerning track fastenings with treated ties:

"(1) Tie-plates with some form of fastening which can be removed and replaced at will without injury to the wood fibers are desirable. Your committee feels that such a fastening has not as yet been fully demonstrated.

"(2) In shoulder tie-plates the holes for outside fastenings should be so placed that the base of the rail bears only against the body of the fastenings.

"(3) Tie-plates should be flat-bottomed, as projections of any kind tend to destroy the tie. One striking photograph is shown of a treated bridge tie entirely sound except where the projections of the plate have injured the fiber. This effect would perhaps be lessened if the tie-plate were independently fastened to the tie by screws other than the rail fastenings, and by use of the principle mentioned in paragraph 5.

"(4) The bearing surface of tie-plates should be proportioned by each road to the resistance of the wood most largely used for ties on its line. In general, plates 6 in. wide for hard woods and 7 in. wide for soft woods should be sufficient, but some roads report trouble with plates of these widths.

"(5) A tie-plate thicker through the whole or a part of the middle of its length than at the edges, with only a central bearing, is suggested for trial as theoretically sound. There would be less tendency for such a plate to rock under the action of the passing load and less pressure tending to force first one edge and then the other into the tie, and the plate would be strongest where the bending moment is greatest. The essentials of such a plate are the thicker central portion and the central bearing of the rail."

#### WOOD PRESERVATION

The report of the sub-committee on the revision of the manual recommends certain revised specifications for creosote oil which are summarized as follows:

(1) The definition of creosote oil restricts its origin to coal tar, and allows an admixture of refined coal tar to the creosote oil.

(2) Fixes the per cent of insoluble matter at 2 per cent. This

is necessary to control the amount of free carbon in the oil when coal tar is added thereto.

(3) Places an upper limit of 1.10 on the specific gravity. This limit is placed arbitrarily. Inasmuch as the gravity of oil for paving blocks has been fixed at from 1.10 to 1.15, it would seem that the oil for treatment of ties and timbers should not have any higher gravity than the paving-block oil. As experience develops, it will be possible later to fix intelligently a limit of the amount of refined coal tar that may be mixed with creosote oil without affecting the viscosity to an extent that will prejudice the penetration.

After some discussion, the statement of the per cents of the various fractions was kept at the present standards.

The committee recommends an additional paragraph to the recommended practice providing for accurate tests of the life of ties, in an especially selected and carefully inspected test track. The sub-committee for piles and timber to be treated proposes an addition to recommend practice providing for the framing of timbers before treatment.

Last year's report on strength of treated timber mentioned certain tests of ties treated with crude oil. Subsequent tests on the same ties are reported and show that the temporary softening of the surface had disappeared upon exposure, but that the reduction of the spike-holding power in the treated ties still remains.

In a tabulation of the average cost of cross ties purchased in 1909 it was shown that for all kinds of ties the average cost was 49 cents per tie to steam roads and 50 cents per tie to electric roads.

Many species of timber unfitted for use as ties because they lack decay-resisting qualities or immunity to insect attacks are made available for the purpose by the use of a preservative treatment. Even in the case of wood that is naturally more or less durable, such treatment is often economical, the added life in service more than paying for the increase in the original cost. Of the seventy-eight species of timber which the different specifications of the steam railroads of the United States permit to be used as cross-ties over one-half are acceptable for such use only after the application of a preservative.

The steam railroads treated more ties after purchase in 1909 than in 1908 or 1907, although the total number of treated ties reported by them was 1,959,000 less in 1909 than in 1908. The number purchased by them already treated was 3,485,000 less than in 1908. The electric railroads reported 835,000 treated ties, of which 582,000, or 69.7 per cent, were treated before purchase and 253,000, or 30.3 per cent after purchase. Fifty-one million five hundred thousand gallons of creosote and 16,250,000 lb. of zinc chloride were used in preserving timber in the United States in 1909. Small quantities of crude oil, corrosive sublimate, coal tar and water-gas tar were also used. Since timber treating began on a commercial scale in the United States the domestic supply of creosote has never been equal to the needs of the industry. With the development of wood preservation in recent years the insufficiency of the home production of creosote has become more marked.

A paper on the strength of ties treated with crude oil, and another on the electrical resistance of timber as affected by treatment with preservatives, were included in the report of the wood preservation committee.

#### BUILDINGS

The committee on buildings submitted specifications for roofing various structures with different classes of materials. It summed up its conclusions by saying that the annoyance and indirect expense occasioned by leaking and short-lived roofs was never compensated for by any possible saving in first cost. A paper on the tests and investigations at the underwriters' laboratories written by William H. Merrill was included in the report, as was a report of tests on roof covering by George W. Riddle.

#### TIES

The report of the committee on ties included no recommendations and consisted largely of statistics, a discussion of metal and composite ties and reports of service obtained from metal



ties. These reports included communications from a number of electric railway engineers, some of which follow:

Utica & Mohawk Valley Railway: Nov. 1, 1910, M. J. French, engineer maintenance of way, reported: "We have used this year 1433 Carnegie M-25 steel ties, under 80-lb. A. S. C. E. T-rail, with concrete construction and brick pavement, in the village of New Hartford, and we have used 2414 steel ties of the same type, under 60-lb. T-rail, with concrete bitulithic pavement, in the village of Whitesboro. We have also used four sets of switch ties, fifty-six ties in all, of the same section, under 80-lb. A. S. C. E. T-rail, with concrete construction and bitulithic pavement. We have had no renewals on account of failures or for any other cause and are more convinced than ever that the steel ties with concrete and T-rails give us the best type of track construction for paved streets. We have used with the ties placed this year the Carnegie No. 23 type of rail fastening and have found it very satisfactory."

Joliet & Southern Traction Company: This line has 300 steel ties in use in paved streets. L. D. Fisher, superintendent, advised on Nov. 2, 1910: "The metal ties used by this company are all laid in concrete covered with brick pavement and have now been down three years. The track is in perfect condition and we have had no occasion to open up the ties since they were laid."

Boston Elevated Railway Company: A. L. Plimpton, Nov. 5, 1910, stated that his company had installed the following steel ties:

1905-760 Lorain Steel Company ties. (That company's catalog No. 13, p. 160.)

1908-94 Carnegie ties. (Section M-14-1/2-lb. per ft., 7 ft. long.)

1909-1570 Carnegie ties. (Section M-14-1/2-lb. per ft., 7 ft. long.)

1910-2235 Carnegie ties. (Section M-14-1/2-lb. per ft., 7 ft. long.)

As an experiment the company has made about 600 reinforced concrete ties, none of which, however, has as yet been put in the ground.

Virginia Railway & Power Co., Richmond, Va.: In a prior report this company stated it had several thousand Pennsylvania and Lorain Steel Company steel ties in use; also several hundred Carnegie steel ties.

On Oct. 31, 1910, Calvin Whiteley, Jr., chief engineer of railroads, wrote: "We have adopted the metal ties for all city work in concrete. We have been using the ties made by the Lorain and the Pennsylvania Steel companies, but have finally adopted the Carnegie tie M-25. My objection to using this tie heretofore was on account of the method of attaching the rail to the tie. I have solved this, however, to my own satisfaction by using the Carnegie tie with the Lorain brace. The 150 metal ties recently put in our car shed on Robinson street were of the Carnegie type, and the 400 on Main Street of the Lorain type."

Denver City Tramway Company: This company installed 2500 Carnegie ties during May, 1908, in connection with concrete paving. John Evans, chief engineer, stated Nov. 3, 1910: "There have been no further installations of such ties, or repairs, or other data, on those already installed by us. It might be well to note, however, that we have had more trouble with the maintenance of street paving where the steel ties are than where wooden ties have been used, presumably due to increased rigidity and vibration."

Oklahoma Railway Company, Oklahoma City: In 1909 this company advised it had about 4 miles of 6-in. base Carnegie steel ties in use in concrete street railway. W. E. Haller, former general manager, wrote Nov. 8, 1910: "We now have about 10 miles of steel tie, concreted paved construction, in city streets. We are using the Carnegie steel tie, section M-25, 6-in. top, and Section M-21, 8-in. top, for joint ties; all ties 6 ft. 8 in. long fitted with No. 23 new style clips and bolts, the present track standard being 100-lb. A. S. C. E. rail, with Carnegie ties spaced 3-ft. centers, and with twisted bar reinforcement in the concrete bottom underneath the ties. We recently made an examination of some of the construction in-

stalled one year and eight months ago, which is still in a perfect state."

Brooklyn Heights Railroad Company: Previous reports stated that this company was using Carnegie steel ties to a limited extent. On Nov. 2, 1910, C. L. Crabbs, engineer maintenance of way, wrote: "There have been no further developments in connection with the use of metal and composite ties since our last report. We have discontinued, for the present, the use of the metal tie, and have had no occasion to make renewals of those already installed."

Cleveland Railway Company: This company has laid 1 mile of track with steel ties manufactured by the International Steel Tie Company of Altoona, Pa. These ties are 6-in. "I" beams arranged in pairs, with concrete blocks and steel plates under the rails between each pair of the ties. The plates are slotted to receive three metal clips on either side of the rail. Wedges are driven back of the clips to hold them in place. The joined pairs of ties are 30 in. apart, while the spacing between pairs is 19 in. The plates are 12 in. wide by 30 in. long and 5/16 in. thick. The ties, plates, clips and wedges weigh 188 lb. per pair. The track is laid with 80-lb. A. S. C. E. rail, ballasted with 12 to 16 in. of screened rock.

The committee was informed that this company is using a number of Carnegie steel ties in concrete.

ELECTRICITY

The committee on electricity was instructed to consider during 1910 and submit recommendations on the following subjects: (1) Clearance; (2) transmission lines and crossings;

DATA REGARDING THIRD-RAIL CLEARINGS, REVISED OCTOBER 17, 1910.

Name of Company.	Top or Under Contact.	Pro-tected.	Uses Steam Equip-ment.	Mileage Planned in Opera-tion.	Mileage for Immed. Future.
Albany Southern.....	Top	No	Yes	52.00	....
Aurora, Elgin & Chicago.....	"	"	"	88.00	....
Baltimore & Ohio.....	"	Yes	"	8.70	....
Boston Elevated Ry.....	"	No	No	24.09	....
Brooklyn Rapid Transit.....	"	"	"	82.50	....
Northwestern Elevated, Chicago.	"	"	"	60.00	....
Central California Traction.....	Under	Yes	Yes	45.00	....
Grand Rapids, Grand Haven & Muskegon.....	Top	No	No	41.26	....
Hudson & Manhattan.....	"	Yes	"	14.50	5.35
Interborough Rapid Transit.....	"	Partly	"	199.94	....
Lackawanna & Wyoming Valley.....	"	No	Yes	44.00	....
Long Island R. R.....	"	Yes	"	147.50	....
Metropolitan West Side, Chicago.	"	No	No	49.28	....
Michigan United.....	"	"	Yes	82.00	....
Northern Elec. Ry., Chico, Cal..	"	"	"	130.00	....
Penna. Tunnel & Terminal Co.....	"	Yes	"	83.00	9.60
Puget Sound Electric Ry.....	"	No	"	37.50	....
Philadelphia & Western.....	Under	Yes	"	22.00	....
Scioto Valley Traction Co.....	Top	No	"	65.82	....
"South Side Elevated, Chicago..	"	"	No	46.41	....
Southern Pacific R. R.....	"	....	....	....	139.00
West Jersey & Sea Shore.....	Top	No	No	143.00	....
Wilkes-Barre & Hazelton.....	"	"	"	29.50	....
N. Y. C. & H. R. R.R.....	Under	"	"	131.40	114.20
N. Y. C. & H. R. R. R., Utica to Syracuse.....	"	"	"	105.76	....
Detroit River Tunnel Co.....	"	"	"	18.50	....
Phila. Rapid Transit Co.....	"	"	No	17.65	....
Totals .....	....	....	....	1,769.31	268.15

\*Type not determined.

(3) insulation; (4) maintenance organization; (5) electrolysis and (6) relation to track structures. Sub-committees were appointed to consider each of these subjects. The report of the main committee includes twenty printed pages of bibliography with definite references to the literature on railway electrification. The sub-committee on clearances reported in part as follows:

"It has been the experience of steam railroads operating a portion of their territory by third rail that, in spite of rigid requirements that equipment be not allowed to extend beyond the line of maximum equipment, cars frequently have to be cut out of service in the electrified territory because of heavy loading, defective springs or other reasons causing the equipment to project beyond the limiting lines. Principally on account of this reason it is thought that the distance of 1/2 in. between the outline of maximum clearance for structures and the outline of maximum equipment is too small, and that if structures and equipment are allowed to approach so close there will be trouble from fouling in the event of adverse conditions. We have,



therefore, recommended a distance of  $1\frac{1}{8}$  in. apart for these two vertical and horizontal lines and a distance varying from  $13/16$  in. to  $15/16$  in. apart on the inclined part of the diagram which takes care of the side inclines at approaches to the curves, and specified that 'equipment shall under no circumstances project beyond line of maximum equipment except as provided for on curves of 800 ft. radius and less. Structural variation, end play and wear of equipment shall be provided for by the equipment manufacturer inside this line.' "

A table prepared by this committee showed that 1769.31 miles of track are now operated in the United States with third-rail current conductors and that 268.15 miles of additional electrification with third rail has been planned for the immediate future.

A sub-committee on transmission-line crossings submitted a report of twenty-one printed pages stating that:

"It is necessary to consider all phases of the question, as well as all voltages, but since the probability of danger to life or property is mainly confined to the immediate vicinity of the power line, and particularly to the space over or under the same, this report will deal with the so-called 'crossings,' and not with the construction of the power line *per se*. The crossings of trolley contact wires will not be included, because the conditions governing their construction are radically different and the protective measures possible for transmission lines could not be enforced."

Before discussing the responsibility of transmission companies or the features calculated to insure a greater degree of safety, the possible accidents which better transmission-line crossings would tend to prevent were stated to be as follows:

"(1) Injury or death from direct contact with a live wire.

"(2) Injury or death from indirect contact, i. e., contact with an object harmless in itself but which is in contact with a live wire.

"(3) Fires, caused by either direct or indirect contact.

"(4) Interference with the operation of signals, and, therefore, with the safe and convenient movement of trains.

"(5) Interruption or interference with the service of telegraph and telephone lines not included in the above classes.

"(6) Electrical interference with the proper operation of other power circuits.

"(7) Mechanical obstruction of tracks by large cables."

The possible causes for these accidents also were enumerated and it was stated that nearly all of the foregoing causes of accidents might be very successfully guarded against, in the design, workmanship, and maintenance, and by providing the necessary clearance between the power line and adjoining tracks, buildings, trees, etc. Several suggestions have been made as to the proper divisions, and discussion of this feature is especially requested. Merely as suggestions the following were given for consideration:

(A) By Voltage and Circuit: (1) All constant-potential circuits up to and including 6600 volts and all constant-current circuits not exceeding 10,000 volts. (2) 6600 to 24,000 volts, a. c. (3) 24,000 to 44,000 volts, a. c. (4) Over 44,000 volts, a. c.

(B) By Voltage: (1) 220 to 5000 volts. (2) 5000 volts and over. Attention was called to the fact that voltage might not be the governing feature, as amperage in some cases was more important.

An introductory discussion of specifications for transmission-line crossings comprised the major part of this sub-committee report. This discussion considered the stresses in the overhead structures due to various classes of loading and presented tables of the maximum wind velocities for different parts of the country with attendant wind pressures. The function of a cradle net or guard wire was discussed, and it was stated that the general use of cradles would involve the presence of many unsightly structures over public thoroughfares and railroad rights-of-way, particularly if the types used in Europe, where the cradle has attained its greatest development, are to be followed.

Consideration was given to the reasons and method of grounding the wire supports and to the size and material of

wires, choice of insulators, pins, tie wires, clamping devices and preservative treatment of the parts of the crossing structure. The physical properties of wires that might be used for transmission-line crossings were presented in tabular form, together with the mathematical discussion of the catenary and illustrations of cable and wire-clamping devices now in use on electrified steam roads.

A sub-committee of the committee on electricity reported on a maintenance organization for electrified roads. Letters of inquiry were sent out to those roads qualified to answer, the replies to which enabled the sub-committee to report in part as follows:

"While many roads addressed did not reply, a sufficient number of replies were received to afford very interesting study with a view of reaching conclusions and making possible recommendations in the future. It was found that on one road the entire construction work, including the rearrangements of tracks and the building of power houses, substations, transmission lines, third rail, equipment, etc., was done under the direction of a new organization, separate and distinct from either the construction or maintenance organization on the railroad, the work being done by contract or by company forces under the direction of its new staff, working as closely as possible in harmony with the existing maintenance and operating organizations. When the plant was ready for operation separate organizations were created for the maintenance of equipment, power houses and transmission lines, and for third rail and appurtenances. This was subsequently modified so that these three separate organizations were brought under the jurisdiction of the operating department, which already had jurisdiction over the maintenance of track and other structures.

"In a second case, while a new organization was created to design and supervise the installation, much of the work was performed by the existing construction department, and after the work was finished the maintenance was assigned to existing branches of the service, which were enlarged and modified to meet the new conditions."

The committee emphasized the fact that the classification of expense accounts as established by the Interstate Commerce Commission and by various State Commissions placed in the maintenance of way the expense of maintenance of transmission lines, contact lines, power houses, etc., so that it seemed to be exceedingly logical that the actual supervision of the work of maintenance should be done under the supervision of the maintenance of way organization.

The report of a sub-committee on relations to track structures included diagrams of the third-rail clearance lines and equipment clearance lines of a number of typical roads operating by third rail.

#### CONSERVATION OF NATURAL RESOURCES

A report on this subject contained a considerable amount of historical matter and sub-committee reports on (1) tree planting and general reforestation, (2) coal and fuel oil resources and (3) iron and steel resources. That committee has carried on its lines of investigations and held itself in readiness to cooperate with the National Conservation Commission and its kindred and subsidiary organizations. The report included recommendations to the legislatures of the separate states regarding protection of timber against fire.

#### MAINTENANCE OF WAY LUMBER

A special committee on rules for grading and inspection of maintenance of way lumber made a report of 60 printed pages, covering its subject in a very thorough way and illustrating its definitions with halftone engravings. Specifications for various timbers and rules for grading and dressing different woods were presented.

#### ROADWAY

The report of the committee on roadway was largely confined to the collection of formulas for the determination of the size of waterways and a tabulation of these formulas in such a manner that they may intelligently be compared. It also considered the introduction of factors suiting local conditions. Its report included an index to literature on the subject of waterways for culverts and allied topics.



## ELECTRIFICATION OF RAILROADS DISCUSSED AT BOSTON

An extended discussion of steam railroad electrification was the principal feature of the annual meeting of the Boston Society of Civil Engineers, which was held at the Boston City Club on March 15, with President Henry F. Bryant in the chair. Electrification with reference to Boston conditions was considered by Prof. George F. Swain, of the Joint Commission on Metropolitan Improvements, and Prof. Dugald C. Jackson, president of the American Institute of Electrical Engineers. W. S. Murray, electrical engineer of the New York, New Haven & Hartford Railroad, also spoke.

Prof. Swain delivered an extended address in justification of the recent report of the majority of the Joint Commission to the Legislature. This report, which was published in abstract in the *ELECTRIC RAILWAY JOURNAL* for Feb. 14, 1911, determined that it was inadvisable to enact any legislation at present compelling the steam railroads at Boston to electrify. He felt that the petition of the New York, New Haven & Hartford Railroad now pending in the Massachusetts Legislature for authority to purchase the Boston, Revere Beach & Lynn Railroad and build a tunnel under Boston Harbor to connect the northern and southern railway systems meant the real beginning of electrification at Boston. Electrical operation of the harbor tunnel and approaches must be presupposed, and with this initial work extension would be made as conditions determined and in line with the best all-around development of the entire district.

President Dugald C. Jackson of the American Institute of Electrical Engineers paid a high tribute to the manner in which the New Haven organization has overcome the difficulties inherent in adapting electricity to heavy railroad service. He took issue with the majority report of the Joint Commission against legislative stimulation of electrification at Boston, and stated that the Boston radial lines of travel were not all individualized; that the traffic density showed almost twice as many passengers per mile as at New York; that less investment per train mile would be required to electrify at Boston than was the case at New York, and that caution was necessary in considering the conditions at New York as controlling at Boston.

He doubted whether the railroads themselves would oppose a requirement to electrify certain lines. There was a vast difference between electrifying on a step-by-step basis and attempting to change over the motive power of the entire metropolitan district at one time. In reality only portions of the Boston territory were ripe for electrification; but it was time that certain routes were thus treated. Prof. Jackson emphasized the fact that in the reports of the minority members of the Joint Commission electrification was favored by the men whose duties have for years led them into closest supervision of and relation with the transportation companies. Closing, he stated that perhaps electrification was not a luxury after all, in view of the economic cost to the city of the smoke nuisance with its attendant dirt.

Mr. Murray concurred with Prof. Swain in regard to the general problem of electrification at Boston. He stated that he was personally an enthusiast on the subject of electric motive power, but that a problem as large as that at Boston was not to be solved by the childish plan of crying for a thing because it was good. The fixed charges in such work were literally tremendous. The New York Central, Pennsylvania and New Haven electrifications in New York were essentially trunk line propositions, and where the train density was very high the fixed charges could be carried much better. At Boston there were many devious routes radiating from the city, and these imposed much expense in connection with a change in motive power. The light amount of traffic on many of these lines made the policy of mandatory electrification unwise and unjustified from a reasonable point of view.

Regarding systems of electrification, Mr. Murray said both the direct and the alternating current systems had their appropriate spheres of usefulness, but that for trunk lines, long distances and train service requiring large units of power

alternating current was fundamentally necessary, the problem being essentially an island proposition. Mr. Murray said that in his experience he had never found it difficult to obtain adequate judgment by railroad officers upon electrical matters, assuming proper initial presentation. The company has a system capable of extension to Boston, in accordance with the desires of its president. Touching upon the advantages of alternating current service, Mr. Murray said that the only power plant the company has is located at Cos Cob, 18 miles north of the Woodlawn junction with the New York Central Lines. If direct current distribution had been used it would have been necessary to install a substation every 6 or 8 miles in order to enable each train to get its full quota of power. It was not true that the saving in locomotive repairs and fuel paid for the fixed charges on electrification unless the traffic density was very high. The savings were chiefly in fuel and locomotive repairs, combined with a decided increase in the traffic capacity of the equipment. The actual drop in voltage between Cos Cob and the Harlem River yard, 25.6 miles, at peak load gave a resulting potential of over 9000 volts, which enabled all schedules to be made. On "Football Day" the output at Cos Cob would rise to 20,000 hp, and the actual average loss in distribution for the entire day would be only 3 per cent, with a momentary drop of about 14 per cent at Woodlawn. Confidence could be placed in electrification, but engineers must do what they can to check the popular clamor for it.

Mr. Murray showed a large number of lantern slides exhibiting improvements in construction within the New Haven electrified zone, and concluded by briefly describing various features of the Hoosac Tunnel electrification. Two insulators are used in series in this tunnel, the insulation being sufficient to withstand 300,000 volts. One insulator pair tested after three months' exposure to steam locomotive operation withstood 60,000 volts even when incrustated with soot and dirt, and when cleaned showed practically its initial insulating qualities.

## MEETINGS OF JOINT FREIGHT AND EXPRESS AND SIGNAL COMMITTEES

A meeting of the joint express and freight accounting committee of the Accountants' and the Transportation & Traffic Associations was held at Congress Hall, Chicago, on Feb. 25. There were present Co-chairmen Walter Shroyer, auditor Indiana Union Traction Company, Anderson, Ind.; P. P. Crafts, general manager Iowa & Illinois Railway Company, Davenport, Ia., and members, E. L. Kasemeier, auditor the Ohio Electric Railway Company, Springfield, Ohio, and George H. Harris, manager railway department Birmingham Railway, Light & Power Company, Birmingham, Ala. The classification suggested at the 1910 convention to cover this branch of electric railway business was taken up and certain changes recommended. Another meeting of the committee will be held later, and undoubtedly further revision will be made and presented to the 1911 convention for suitable action. No inquiry forms will be sent out by the committee this year.

A meeting of the signal committee of the Engineering Association was held in Chicago, March 22. Those present were: J. M. Waldron, signal engineer Interborough Rapid Transit Company; C. D. Emmons, general manager Fort Wayne & Wabash Valley Traction Company; John Ross, assistant superintendent of tracks Detroit United Railways, and G. H. Kelsey, superintendent of power Indiana Union Traction Company. L. E. Gould, *ELECTRIC RAILWAY JOURNAL*, was made temporary secretary. Upon invitation, representatives of manufacturers in attendance at the steam railroad signal convention were present, and each manufacturer was permitted to address the committee and describe his apparatus. There were also a number of visitors from among the steam railroad signal engineers, and the total attendance was 22. Two sessions were held. At the conclusion of the meeting the committee voted to request each manufacturer to furnish it with a written description of his apparatus and his recommendations.



## MEETING OF THE CENTRAL ELECTRIC ACCOUNTING CONFERENCE

The regular meeting of the Central Electric Accounting Conference was held on March 11 in the rooms of the Springfield Commercial Club, Springfield, Ohio.

President S. C. Rogers, former treasurer of the Mahoning & Shenango Railway & Light Company, called the meeting to order. G. H. Long made a short address of welcome. A. F. Elkins, the secretary, read the minutes of the last meeting and then presented his report as treasurer. The report of the executive committee was then presented. It stated that the most important business for consideration was the recommendation for a successor to Mr. Rogers as president, owing to his resignation from the Mahoning & Shenango Railway & Light Company. In the natural order C. E. Thompson, vice-president, should succeed to the duties of president, but he did not feel that he was able to give the office the attention that it deserved and had therefore written to the committee that he found it impossible to consider the subject of assuming the responsibilities of the work of the conference this year. The committee therefore recommended that Mr. Elkins be elected president to succeed Mr. Rogers, and that Walter Shroyer, auditor of the Indiana Union Traction Company, be elected secretary and treasurer to succeed Mr. Elkins. The committee recommended that a vote of thanks be given to Mr. Rogers for his services and that he be made an honorary member of the conference. It was decided to postpone action upon the recommendations of the committee until the close of the morning session.

E. L. Kasemeier, auditor of the Ohio Electric Railway, presented the report of the committee on uniform comparative statistics. Mr. Kasemeier said that owing to changes in the committee and the lateness of his notification regarding the work it had not been possible to prepare a written report. It was suggested that the committee be continued, to report at the next meeting of the conference. Mr. Shroyer presented the report of the membership committee, which has taken up the matter of securing new members. The committee hopes to do some effective work in the near future.

The report of the committee on constitution and by-laws was then presented. The committee recommended changes to provide for the election of two vice-presidents. There was some discussion regarding a plan to hold meetings semi-annually instead of quarterly.

A. J. White, Ohio Electric Railway, then read his paper on "The Traveling Auditor." An abstract of this paper was published in last week's issue, page 467.

The resignation of Mr. Rogers as president was then accepted, and the secretary and treasurer was instructed to cast a ballot for the election of Mr. Elkins as president and Mr. Shroyer as secretary and treasurer. Mr. Rogers said that he retired from the presidency of the conference with sincere regret.

Mr. Elkins thanked the members for his election as president. At the invitation of Mr. Kasemeier the members then adjourned and visited the offices of the Ohio Electric Railway.

The afternoon session was called to order at 1:40 p. m. and the discussion of Mr. White's paper was taken up. L. T. Hixson, auditor Terre Haute, Indianapolis & Eastern Traction Company, said that it had been found desirable to have agents deposit their receipts in the bank subject to the check of the company. Agents sent a duplicate deposit slip with their remittance slip and no check whatever was used except from the main office.

F. K. Young, auditor Scioto Valley Traction Company, suggested the use of certificates of deposit.

J. D. Maynes, auditor of receipts Illinois Traction System, stated that there were three reliable methods of remitting cash—the purchase of a bank draft, through an express company, or through the designation of depositories for company funds. Under the latter method accounts were opened in the name of the company and conductors and agents at the terminals and all conductors whose run ended at the terminals deposited through

the agent into this account. A four-end deposit slip was used; one end was retained by the man making the deposit; one was sent to the office of the auditor and constituted a receipt from the bank; one was received by the bank and forwarded to the office of the treasurer, and the other end was retained by the bank. The deposit in these cases was subject to draft by the treasurer of the company at the end of 30 days.

Mr. Elkins said that interviews with bankers showed that they were very glad to have the currency deposited with them by agents and would issue certificates of deposit or stamped duplicate deposit slips.

Mr. Shroyer said that certificates of deposit were used on the lines of the Indiana Union Traction Company. The banks appeared to be glad to issue such certificates.

Mr. Rogers suggested that it would be better organization to have agents employed by the treasury or accounting departments than by the operating department. On the Mahoning & Shenango Railway & Light Company each man that handled funds was an employee of the treasury department.

Mr. White said that on some of the divisions of the Ohio Electric Railway relief agents were held who were capable of going to any station and taking care of it for a brief period if necessary.

Mr. Elkins said that agents of the Columbus, Delaware & Marion Railway were appointed under a blanket bond issue by the American Surety Company. When an agent or conductor was employed he was required to fill out an application blank which was forwarded to the surety company and an interim certificate was issued immediately. That held for 30 days and was renewed automatically until the bond was either issued or rejected. When the bond was received it must be signed by the agent and witnessed by a notary public.

Mr. Maynes called attention to the balance sheet and special report used by a traveling auditor of the Illinois Traction System. The special report had been adapted to meet his requirements from a form put into effect on the Rock Island System by W. H. Burns, the general auditor. Mr. Maynes receives a copy of every order for ticket stock and keeps a general ticket stock ledger.

O. I. Davis, local auditor Dayton, Covington & Piqua Traction Company, then read a paper on "Method of Accounting of Freight Claims." An abstract of this paper was published in last week's issue, page 463.

Mr. Rogers called attention to a decision of the Interstate Commerce Commission holding the initial carrier of an inter-line shipment responsible for the settlement of claims.

Mr. Davis thought it would facilitate the rapid adjustment of claims if the delivering carrier took up the matter as promptly as possible. It was known often that the initial carrier was not to blame.

Mr. Young said that on the Scioto Valley Traction Company the freight department handled all the claims and when they were approved for payment he paid them.

Mr. Shroyer said that on the Indiana Union Traction Company the accounting department handled all claims and investigated them. After the investigations were complete the papers were referred to the general manager for his approval.

Mr. Rogers said that it was the practice on the Mahoning & Shenango Railway & Light Company to have the claim department investigate freight claims and make a requisition, which was approved by the general manager.

Mr. Maynes said that the Interstate Commerce Commission had ruled that the question of claims was purely a matter for the accounting department. The traffic department was interested in a claim only when the question as to the application of rate arose, or when a question was asked as to the classification of a shipment. The question of damage or loss was a question of fact to be determined.

Mr. Elkins appointed a committee composed of Gus A. Keohler, H. B. Cavanaugh and J. M. Brick to draft resolutions regarding the death of R. H. Carpenter, Western Ohio Railroad.

President Elkins said that Mr. Maynes had written a letter to



him asking that the conference consider the advisability of conferring with the Interstate Commerce Commission in regard to the promulgation of rules and instructions concerning the filing and retention of records. Mr. Maynes said that he had had some correspondence on the subject.

The following members were admitted: George L. Ford, auditor of the Evansville Railways; C. W. Witt, auditor of the Indianapolis, New Castle & Toledo Railway; F. Pantel, auditor of the Chicago, Lake Shore & South Bend Railway.

A special committee was appointed to meet with the committee of the Central Electric Railway Association at Columbus on March 22 to take up the question of the affiliation of the Central Electric Accounting Conference with the Central Electric Railway Association. The members of the special committee of the Central Electric Accounting Conference are: Chairman, A. F. Elkins, auditor Columbus, Delaware & Marion Railway; E. L. Fasemeier, auditor Ohio Electric Railway; Walter Shroyer, auditor Indiana Union Traction Company; H. B. Cavanaugh, auditor Cleveland, Southwestern & Columbus Railway; L. T. Hixson, auditor Terre Haute, Indianapolis & Eastern Traction Company, and J. D. Maynes, auditor of receipts Illinois Traction System.

The conference has accepted the invitation of the accounting department of the Illinois Traction System to hold the next meeting of the Central Electric Accounting Conference at Springfield, Ill., and the date of the meeting has been fixed for June 10. After the meeting at Springfield the members of conference will be taken over the lines of the Illinois Traction System.

### INTERLINE ACCOUNTING\*

BY L. T. HIXSON, AUDITOR TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION COMPANY

We might liken the traction business to a manufacturing institution or a mercantile establishment. Our commodity is passenger and freight service, and in order to get the best returns on the investment the sales of this commodity, at profitable prices, must be brought to the highest mark. Of course, one difference between our business and the manufacturing or mercantile business is that traction rates are fixed by law. We are also prone to consider the territory as limited. In endeavoring to overcome this territorial limitation a number of traction lines have adopted a plan for interchanging both passenger and freight business, commonly known as the "interline" system. Inasmuch as the passenger is enabled to proceed to destination without the annoyance and delay caused by purchasing a ticket at the end of each line and his baggage may also be checked through to destination, there is no question that this system encourages long-distance travel and promotes shipments of freight to greater distances. The transportation of freight is expedited by through billing with auditor's settlement for the reason that it is necessary to take only a memorandum of freight passing the junction, instead of rebilling.

These interline arrangements are in reality reciprocity agreements—the managements of the roads mutually agreeing to secure as much traffic as possible for stations on all the lines interested.

After such arrangements have been made, schedules which will make close connection prepared and proper joint tariffs provided, the matter of tickets next presents itself. These tickets should be uniform as to size and conditions in order that the passenger and conductor may become more familiar with these conditions, knowing that they are the same on all lines, thus making a special study of each ticket unnecessary. If the tickets are uniform in size they are more easily filed in the auditor's office.

I am pleased to state that the Central Electric Traffic Association has accomplished a great deal in regard to preparing the joint tariffs, and the interline tickets now in use are practically uniform. The present Central Electric Traction Association

mileage book contract contains some exceptions on various roads, and this book would be more desirable if all its conditions could be made uniform.

The next step is the accounting for such interline tickets or freight bills. In some instances the auditor of an interurban line will object to entering into interline arrangements, giving as a reason for such objection that the work in his office would be greatly increased. Of course, it is true that any additional business transacted through the office will cause more work, but the amount of such work occasioned by interline accounting is quite often greatly magnified. If the office is properly organized along the same thorough lines followed for the local business, and the plans are outlined before the actual work starts, the anticipated difficulties will very largely disappear. In fact, the more interline business there is transacted through an office the less friction there is, inasmuch as it is possible to specialize more highly.

The interline accounts as now handled by the greater number of the member companies of the Central Electric Railway Association consist of tickets, baggage, mileage and freight. A number sell tickets over steam roads and boat lines and some also transact freight business with them.

The settlement of these accounts has been very greatly facilitated by the rules adopted by the Central Electric Accounting Conference, and by the periodical meetings at which various difficulties are cleared up.

Among the rules which have been of great benefit is the one prescribing uniform blanks for use in reporting to various companies. Prior to the adoption of this rule there were scarcely two roads using blanks of the same size or form. At present practically all reports from other lines may be filed together, being of one size.

It is the custom for the road issuing an interline ticket to require its agent to make a coupon for each line interested; a copy of the waybill covering interline freight shipments is also furnished each line transporting such freight. However, the matter of interline baggage has evidently not been considered of sufficient importance for the interested companies to require the line issuing revenue baggage checks to provide a copy for the intermediate road. The revenue from this source is comparatively small, but, nevertheless, an accurate account should be kept. This additional stub or copy of interline revenue baggage check was recommended in a paper presented at a meeting of the Central Electric Accounting Conference during the past year, but no definite action was taken.

The agreement as to manner of making settlement has been of great benefit, but has not been carried far enough to bring the best results as to final settlement. It provides that the issuing road shall render reports to the connecting lines for tickets sold over those lines and for revenue baggage forwarded; that the road receiving freight shall make reports to all lines interested; that the road accepting mileage not of its issue shall bill on the road issuing such mileage. These reports are to be made monthly, not later than the fifteenth day of the following month, and are to be accepted as rendered, adjustments to be taken up in the following month's account. Up to this point there is uniformity, but in making the final settlement there is a decided lack of uniformity. Some roads settle by drawing a check in favor of the other line for the entire amount to the credit of that road without making any deduction for debits and expecting in like manner a check for the amount due. Other lines settle by net balance, the debtor line issuing checks to cover, while another plan (followed by the largest companies) is to settle by balance by the use of drafts, the company to which this balance is due making no protest draft on the debtor company. The latter plan is especially satisfactory inasmuch as it enables the creditor company to collect the amount due any time after the agreed date (the twenty-fifth of the following month) and also has the further advantage that all interline drafts may be taken up through the cashier's account or petty cash and one voucher made each month to cover. The draft plan would be generally adopted but for the objection on the part of the executives of some of the lines

\*Abstract of paper read at meeting of the Central Electric Railway Association, Columbus, Ohio, March 23, 1911.



interested, although I am at a loss to see any reason why the president of a company should object to settling accounts in this way or to any other accounting detail which is for the purpose of facilitating the transaction of the business in the auditor's office and has no bearing on public policy and causes no increase in expense. It would certainly be well to secure uniformity in this matter of settlement and thereby enable the auditor to handle interline accounts in the easiest manner possible.

In reviewing the steady development of interline accounting since 1906 and the many improvements which have been made in order to systematize it thoroughly we have every reason to congratulate ourselves that many of the obstacles which at first seemed insurmountable have been overcome. The advantages of such a system are bound to win favor with all those who give the matter due consideration, and we may feel reasonably assured that the plan will be constantly extended and found of great advantage to all lines entering into through passenger and freight business.

### ASPHALTIC OILS AS ECONOMICAL WOOD PRESERVATIVES\*

BY FRANK W. CHERRINGTON, WOOD PRESERVING DEPARTMENT, INDIAN REFINING COMPANY

This paper will be limited to a discussion on asphaltic oils and the effort now being made to establish their claims as economical, efficient and practical wood preservatives. Asphaltic oils were first tried as substitutes for creosote oil on account of the excessive cost of a high-grade creosote at interior points. In the spring of 1902 the Santa Fé Railroad placed in an experimental track in Texas ties treated with asphaltic crude oil. The conditions in this track were such that untreated loblolly pine ties would not last over 18 months, nor the long-lived long-leaf pine ties for much more than two years. The ties placed in this track were given all the asphaltic oil which they could absorb—some of them took as low as 8½ lb. per tie and others as high as 60 lb. per tie. In all cases this was the maximum quantity of oil the ties would absorb, being dependent, of course, upon the structure of the wood treated. These ties have been examined annually during the past nine years. The last report stated that all of the asphaltic-treated ties were found in a state of perfect preservation with no signs of decay. These ties have already lasted over four times the life of untreated ties and are still perfectly preserved. In several specimens examined the sap wood was filled with the oil clear to the heart wood and after nine years of constant service under abnormal conditions the heart wood was found to be as sound as the day the ties were treated. At the same time that these ties were inserted in this experimental track 196 untreated ties of white oak were placed in the track. Practically all of these were found rotten and removed after six years' service.

These tests were so encouraging that in 1908 the Santa Fé Railroad employed asphaltic oils exclusively on a large scale at its plant in Albuquerque, N. M. Since that time it has treated 750,000 ties annually with asphaltic oil. These facts conclusively prove the efficiency, value and practical application of asphaltic oils for wood preservation.

The asphaltic crude oils found in sections of the country other than California and New Mexico are highly inflammable and very volatile and, in their crude state, are not applicable for use as wood preservatives in any process. For these reasons it is necessary to refine the asphaltic oils appearing in such unlimited quantities in the central United States. By submitting the crude oils to refining, the residuum secured is very similar, and in most cases superior, to the oil used in the West for the preservation of ties. After years of exhaustive research Indian Timberasphalt has been placed on the market as a representative of what may be accomplished in the refining

of the asphaltic oils which are so plentiful in the central regions of the United States. It may be purchased at about 3 cents per gallon, f.o.b. refineries, in practically unlimited quantities. This is an approximate cost of less than one-half the purchase price of high-grade creosote and one-tenth the cost of other coal-tar products.

The crude asphaltic oils of the West are exceedingly viscous and hard to handle by either the pressure or the cheap open tank equipment, but the refined asphaltic oils of the central United States have been found to be most excellent for use in these ways. A plant was recently erected in Cincinnati consisting of two tanks equipped with steam coils and suitable lids for protection against inclement weather, a boiler and boiler pump, a stiff-leg derrick and derrick slings with which to handle ties in bunches of 25 at a lift. This plant has a capacity of 15,000 ties per month and did not cost more than \$3,000 complete.

The process used consists of immersing mixed oak, beech, elm, gum, maple, etc., in hot Indian Timberasphalt oil at a temperature of 215 deg. Fahr. for from 8 hours to 10 hours, dependent upon the previous seasoning of the timber. The steam is then shut off and the ties are allowed to cool in the asphaltic oil over night, when a drop in temperature of from 20 deg. to 30 deg. Fahr. is recorded. The long hot bath at 215 deg. Fahr. heats the tie throughout and has a tendency to kill any germ life which may be present in the untreated tie. It expands and expels any air which may be contained in the wood cells and it boils out the moisture and sap juices. As the oil cools over night the cellular spaces within the tie contract, forming a vacuum which draws the oil into the wood by means of atmospheric pressure. In this way the asphaltic oil takes the place of the air, moisture and sap which had previously been expelled in the boiling period.

The working tanks are carefully calibrated and readings of tank gages and tank temperatures are taken before the immersion and after the withdrawal of the ties. These readings are corrected to 60 deg. Fahr. As the number of ties and thus the number of cubic feet entering each charge are known, it is an easy matter to calculate the injection per tie or per cubic foot. This method of determining the injection of the preservative per cubic foot has heretofore been considered impossible with the open tank process. The checking of the results secured from the calibration of the tanks by weighing individual ties has resulted in actual proof of its success. The average injection secured by this process at the above plant has been found to range between 2 gal. and 2½ gal. per tie. The penetration secured on ties of mixed oak, beech, elm, gum and maple, etc., has been found to be most excellent on timber which has been air seasoned from 4 months to 6 months. The actual costs of operation of a plant of the above capacity and design are as follows:

Two and a quarter gal. of oil at.....	\$0.035	\$0.07875 per tie
Rental of ground.....		.003 per tie
One ton of coal at.....	2.50	.005 per tie
Labor and superintendence—		
Six men at \$1.75.....	10.50	
One superintendent.....	3.00	
One engineer.....	2.50	
Incidental.....	.75	
	\$16.75	.0335 per tie
Equaling a total of.....		\$0.12025 per tie

These figures are based on actual operations at the Cincinnati plant.

The first cost of construction of such a plant could be easily reduced by many electric traction companies to \$2,000 or \$2,500 by placing the treating tanks near their power house, from which exhaust or surplus steam could be utilized for heating the oil. In this way the expense of boiler installation would be saved, besides reducing the cost per tie for treating by the elimination of fuel. If it were desired to lower the capacity of the plant from 15,000 to 7500 ties per month, the first cost of erection could be reduced still further by eliminating one of the treating tanks.

\*Abstract of a paper read at meeting of the Central Electric Railway Association, Columbus, Ohio, March 23, 1911.



Full-sized, No. 1, first-class ties of the species named may be secured along the right-of-way of any traction company, loaded on cars, at a maximum price of 30 cents each. In other words, by the erection of a plant costing approximately \$3,000, full-sized, No. 1, first-class treated ties, of mixed oak, beech, elm, gum or maple, may be secured at a total cost of 42 cents each, f.o.b. lines. Such ties would not have merely a superficial treatment, but would contain from 2 gal. to 2½ gal. of heavy asphaltic oil injected in a 24-hour treatment. This would prolong their life many years beyond the eight years which is now being obtained from untreated white oak ties, the average cost of which is 55 cents.

To sum up: Well-preserved railway ties, with a 24-hour treatment and containing a maximum injection of heavy asphaltic oil, in quantities of 2 gal. or 2½ gal. per tie, with a resultant life at least equivalent to that of white oak, may be secured at approximately four-fifths the cost of standard first-class white oak ties. These comparative figures are based on the actual costs of treated ties to individual traction companies who do their own treatment.

**WHEEL TURNING\***

BY H. S. WILLIAMS, ENGINEER, PETER SMITH HEATER COMPANY

It is quite usually considered that the greatest economy in steel wheels is obtained if the flange is not allowed to wear thin and is turned frequently. In fact, in the report of the Committee on Equipment of the American Electric Railway Association for 1909, the following statement is made in Vol. 1, page 161, regarding the subject: "It is very common practice for interurban companies to allow the flanges to run until they are dangerously sharp. This is false economy, as in this way so much metal has to be removed in turning again to bring the tread and flange to its proper shape that the loss of metal is much greater than would be necessary were the wheels turned at the proper time."

It is the object of this paper to controvert this statement and to prove from the standpoint of economy that more mileage may be obtained from a wheel if the flange be allowed to wear as thin as safety will permit than will be obtained by frequent turning. In other words, greater mileage can be obtained by few turnings with deep cuts than from frequent turnings with light cuts.

In wheel turning, the factor which usually determines the period when a wheel should be taken out and restored to its original section is flange wear. The matter of tread wear cannot be taken into account when discussing economical turning,

to be removed in order to obtain it. These restored flange sections are based on the A. E. R. A. standard. It will be readily seen by an inspection of this figure that the amount of steel worn from the flange becomes greater and greater for each succeeding 1/16 in. of wear until ¼ in. has been worn off, after which it remains nearly constant. It is fair to assume that the mileage varies according to the amount of steel worn from the flange, therefore, the last 1/16-in. wear will give greater mileage than the first 1/16-in. By noting the various amounts of steel taken from the tread to restore the original section, it will be seen that for each successive 1/16-in. flange

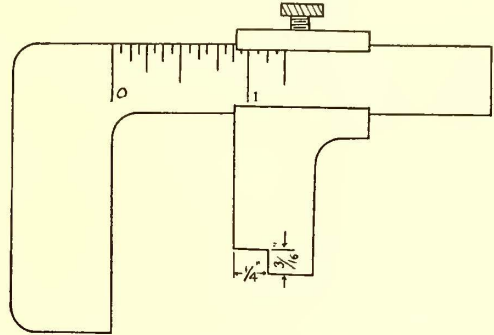
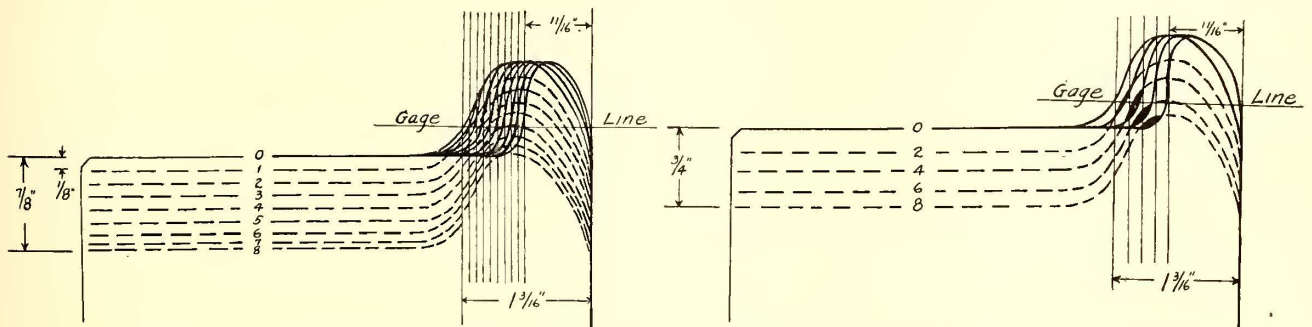


Fig. 3—Caliper Gage for Measuring Depth of Cut

wear the amount of tread turned off remains nearly constant until the tread is restored for 3/8 in. of flange wear, thereafter the amount gradually grows less until at a thickness of 5/8 in. no greater depth of cut is necessary to restore the complete flange. This is true because at approximately 5/8 in. a cut of 7/8 in., or the total depth of the flange, is necessary. So, if it were safe to wear a flange to a thickness of less than 5/8 in., a great deal of service could be obtained from the wheel and at no loss of metal except for tread wear.

To illustrate this point let us assume that each 1/16-in. wear which takes place on the flange as measured at the gage line represents 10,000 miles. Then, the restoration of the flange after the first 10,000 miles will require the removal of 1/8 in. of metal. For each succeeding 10,000 miles the additional depth of cut gradually grows less until at the point corresponding with 7/16 in. wear, or 70,000 miles, it will be necessary to turn off but 3/64 in. of metal to obtain another 10,000 miles of service. Compare this with the depth of cut taken off for the first 10,000 miles and the economy of this practice is apparent.

Therefore, the greater economy is obtained by allowing the



Figs. 1 and 2—Sections of Wheel After Successive Turnings—Usual and Proposed Practice

because tread wear will be practically constant and it is the position of the junction of the flange and tread that determines how deep a cut is necessary. The depth of cut is also dependent upon the shape of the flange and how thoroughly the flange is restored.

Fig. 1 shows a number of superimposed flange sections, which show characteristic wear. The amount of wear in each flange differs from the one next in size by 1/16 in. measured on the gage line. In the same figure is shown the restored section for each flange and the amount of steel which will have

flange to wear as thin as practicable. This has been regarded from the standpoint of the life of the wheel only, but the saving is all the more pronounced when the expense of frequent removal and turning together with the loss of equipment from service is taken into consideration.

It is common practice to leave a portion of the old groove in re-turning to show as a witness mark in the restored section. When the flange is worn thin the witness mark will naturally come quite high on the restored flange. Consequently advantage may be taken of this fact to save metal in turning and a relatively deep groove may be left with advantage. One benefit derived by leaving a deep witness mark is

\*A paper read at meeting of the Central Electric Railway Association, Columbus, Ohio, March 23, 1911.



that it helps to keep the point of the flange round and so avoids sharp flanges. It is the writer's experience that a groove as deep as  $1/16$  in. may be left at any point which is  $3/8$  in. or more above the tread of the wheel.

The saving effected by this practice is illustrated in Fig. 2, which represents the same conditions as Fig. 1, but the flange wear is taken at depths of  $1/8$  in. instead of  $1/16$  in. for the sake of clearness. By this figure it is demonstrated that in restoring a flange after a wear of  $1/2$  in., a cut of  $7/8$  in. is necessary if the full section is restored while a  $3/4$ -in. cut is needed if a  $1/16$ -in. groove be left. Thus  $1/8$  in. of the tread is saved.

In order to insure economical turning, to guard against taking deeper cuts than necessary and avoid making too light a cut (which would require a second), it is good practice to use a gage with which to caliper the flange and to determine exactly what depth of cut should be taken. A form of gage which has been used with success is shown in Fig. 3. In using this gage it is necessary to caliper the flange at several points about its circumference and to use the smallest measurement. Then by reference to a table which may be readily prepared, either by a graphic method or by experience, the exact cut may be immediately determined.

In the inspection of steel wheels a standard gage should be adopted similar to the M. C. B. wheel defect gage but modified to suit electric railway conditions. The use of such a gage takes away from the inspector any exercise of his own discretion and allows no excuse for permitting a flange to be worn below the limit. It will also settle any differences of opinion in case wheels of foreign line cars are thought to be unsafe.

The minimum thickness to which a flange may be worn with safety is a matter to be determined largely by local conditions. A sharp or vertical flange may be as dangerous as a thin flange. The wearing of flanges, aside from reducing the strength, also decreases the gaging distance between wheels and thereby introduces a liability to trouble. It has been the writer's privilege recently to see a number of cases of extremely thin flange wear. One road operating a 20-ton car at approximately 40 m.p.h. had a large number of wheels on which the flange was worn to a thickness of from  $3/8$  in. to  $1/2$  in. on the gage line. On another road a flange was completely stripped from the wheel, and the thickness of metal at the line of fracture was  $1/4$  in. This wheel was taken from a 6-ton car, operating in city service. Several similar cases have been seen, which go to show the extremes to which a steel wheel may be subjected. It would seem good practice, however, to limit the wear on wheels in city service to  $5/8$  in. and on interurban cars to  $3/4$  in., and in some cases, where the cars are heavy and travel at high speed, to establish a limit of  $7/8$  in.

The question of economical wheel turning and standard inspection practice has a large bearing on the practicability of the steel wheel. Unquestionably if right shop methods are employed the life of the wheel may be greatly prolonged.

### CONFERENCES ON INTERURBAN OPERATION

The Indiana Railroad Commission held conferences with representatives of various interurban railroads during the week beginning on March 14. The purpose of the examination was to ascertain what steps the roads have taken regarding the recommendations contained in the circular of the commission issued on Jan. 27, of which an abstract was published in the issue of the *ELECTRIC RAILWAY JOURNAL* of Feb. 4, 1911.

The provisions of the new laws respecting the commission were also discussed briefly. The provision for separate compartments for motormen, according to the representatives of the companies, will entail considerable expense, since nearly all the cars will have to be remodeled or partitioned in a manner to comply with both the recommendation of the commission and the provision of the new law. Some representatives said they could partition a car for about \$22.50, while others thought the expense would average \$75 per car.

The block signal question will be taken up on April 18.

### THE USE OF SAND ON INTERURBAN CARS\*

BY WALTER H. EVANS, SUPERINTENDENT OF MOTIVE POWER INDIANA UNION TRACTION COMPANY

The use of sand was taken up originally by electric railways because of its long association with the operation of steam locomotives, but in interurban electric railway operation, where each axle is a driving axle, very little sand, if any, is really necessary to start an electric car. It is true that we sometimes see wheels slip or spin in starting, but this is usually an indication of an excess of power rather than of lack of sufficient adhesion between the wheels and the rail, and when the power is reduced the car starts in good shape. Hence a discussion of this subject becomes almost entirely a question of using sand as an auxiliary in retarding or stopping an interurban car rather than in accelerating it. It is consequently a braking proposition pure and simple, with particular reference to emergency stops to prevent accidents or personal injury.

The tests which have been conducted on brakes in steam railroad service have demonstrated the following points:

(1) The shortest reliable stops are made by a retarding power which is most quickly developed and is maintained to the highest possible limit during the entire stop, without skidding the wheels.

(2) The lengths of stops made when the air brakes were applied and the engine was reversed were longer than those made with the brakes alone and were extremely injurious to the tires, on which the skidding formed flat spots. These tests should show the inadvisability of using the reverse in conjunction with air brakes on electric cars.

(3) Sand is of assistance in braking if judiciously used, but if applied to the track after the wheels begin to skid will produce flat spots and will not unlock the wheels. A large amount of sand is not so effective as a moderate amount. In fact, in connection with one series of tests of passenger trains consisting of a locomotive and six coaches, one running at 50 m.p.h. and the other at 60 m.p.h., the report says: "The difference in the lengths of the stops with and without sand was inappreciable and no proof exists that the sand was markedly beneficial."

While it is hardly to be expected that these results will obtain to the same extent in the operation of interurban electric cars, they may serve to direct attention toward what may prove a very profitable line of investigation to electric railway service generally. Undoubtedly the satisfaction to be secured from the use of sand will depend very largely upon the efficiency of the sanding device itself and the character of material with which it is supplied. Owing to the restricted conditions on an interurban car it is usually very difficult to install the older types of mechanical gravity sanders with anything like a satisfactory arrangement. This difficulty is augmented by the very sharp curves and other track conditions which usually prevail on an interurban line. This has led to the general use of pneumatic sanders because they are more readily applied than gravity sanders and have the advantage of distributing the sand evenly and expeditiously at the proper point on the rail, directly ahead of where the front pair of wheels makes contact with the rails. The sand should be applied only in sufficient quantities to give maximum traction and braking power, and it is especially important that the application should be just previous to or at the time of the application of the brakes and before the braking power is high enough to skid the wheels. This condition applies particularly to emergency brake applications and is one of the especial points of advantage of the pneumatic type over any of the gravity sanders.

The pneumatic sander, however, requires very careful installation and arrangement of the piping connections to insure reliable and positive results under all conditions. It is also very necessary to use a device requiring the minimum amount of air and sand as well, as the tendency is to overload the com-

\*Abstract of paper read at meeting of Central Electric Railway Association, Columbus, Ohio, March 23, 1911.



pressor with minor pneumatically operated devices, which were not taken into consideration when the capacity of the air compressor was determined. The flexible connections between the sand box, usually carried inside the car, and the discharge pipes attached to the trucks are generally sources of considerable trouble and require careful attention.

The type of sand valve should also be such as to avoid useless waste of air and it should be located conveniently near the brake valve so that the two operations of applying sand and setting the brakes can be done in emergencies at practically the same time.

The character of the sand is worthy of more important consideration than apparently it usually receives, as in some cases the sand is entirely lacking in essential qualities and has a tendency not only to defeat the object for which it is applied, but actually to create a more serious condition. The best material to use is good sharp quartz sand, thoroughly dried and screened so as to be free from dirt, soil or gumbo. Dirty sand is more susceptible to moisture and consequently the tendency to clog up the pipes is greater, aside from the harm it may do after reaching the rail. In this territory lake sand has been found quite satisfactory and is extensively used in pneumatic sanders on account of its fine even grain and freedom from foreign matter. It is also easily dried and screened and is generally economical.

The question of economy in the cost and use of sand is one that has apparently received but little consideration, although in some cases the amount of sand used on certain roads has been reduced one-half compared with the preceding year, although the same general operating conditions prevailed. Here is a splendid opportunity for educational work. It is not sufficient to leave matters of this character to the individual notion of every man to carry out as he sees fit, but the very best way should be determined and the men instructed accordingly.

## THE DEVELOPMENT OF LONG-DISTANCE TRAVEL\*

BY T. J. GORE, GENERAL AGENT INDIANAPOLIS INTERURBAN JOINT TICKET AGENCY

Long-distance travel over interurban lines has increased so rapidly within the past three years that its future development and the best methods of handling this business have become a most interesting subject. This problem has been presented and solved to a greater extent, I believe, at the Indianapolis Joint Ticket Agency than at any other interurban ticket office within the boundaries of this association. On July 1, 1905, the Indianapolis Joint Ticket Office was opened, with myself as agent, and one ticket seller. We were not in operation long, however, before, passengers began asking for tickets to points beyond our local lines, and this suggested the scope and future possibilities for interline business over interurban roads. At this time our issues consisted of only a few local card tickets and no fare sheets of connecting lines; therefore we were unable to sell through tickets. The demands for interline tickets were so numerous and persistent that the matter was taken up with the Terre Haute, Indianapolis & Eastern and the Indiana Union Traction companies relative to furnishing our office with a supply of Stromberg and skeleton tickets so that we could sell tickets to points beyond our local lines. These tickets were furnished, and later by writing to the general managers of several of the interurban lines in Indiana, Ohio and Michigan, requesting them to supply our office with copies of their local fare sheets and advising them of the intention of compiling a joint fare sheet which would enable us to sell tickets to points on their lines, prompt responses were received with copies of their local tariffs. From these tariffs I compiled joint fare sheet No. 1, which was the first joint tariff ever published by interurban lines. This was the beginning of the sale of interline tickets in our territory. As soon as the public learned that

through tickets could be purchased our long-distance travel began to increase.

At this time a charge of 25 cents was made for each piece of baggage handled, but all cars were not equipped for handling baggage. In fact, it was not the desire to handle baggage at all, but it did not take us long to discover that to secure business we must handle baggage free. The sales of interline tickets for the first year amounted to \$32,199, which was not a bad showing. Our interline sales, however, continued to increase. In 1907 the sales were \$48,390, an increase over 1906 of \$16,191. In 1908 the sales were \$72,865; in 1909 they were \$98,783, and in 1910 they were \$176,616. These amounts do not include the sales of the Central Electric Traffic Association mileage books, but purely interline business which the traction lines had not been getting before. The sales of the Central Electric Traffic Association mileage books at this office in 1910 amounted to \$30,500.

To handle this large increase in interline business at the Indianapolis joint ticket office we had to increase the number of ticket clerks and enlarge our ticket office. We have now six ticket sellers during the winter months and eight during the summer months. It was also found necessary to install an information bureau, so many were the public inquiries relative to time of cars, fares and connections to foreign lines. As an indication of the public interest in this regard, our average telephone calls for information over two 'phone systems will at times reach 2000 calls in 24 hours—besides the thousands of questions answered and connections looked up at our information window by the information clerk. This information is now found indispensable to our patrons.

Our ticket office has been enlarged to twice its original size. We now have a selling frontage extending 30 ft. and during the heavy summer travel all this space is necessary. In my opinion, we have the best equipped modern ticket office in the State, including any steam road ticket office. With all the help it requires to handle the business the office is maintained and operated at an expense of less than 1 per cent of the total sales. We have 34 different forms of interline tickets, which enables us to ticket a passenger to any point on traction or steam roads. We also have 403 destination local card tickets. Our local ticket case is most modern and convenient and is said to be the largest local case ever made for traction or steam lines. We are now selling tickets over 36 different interurban lines, four steam lines and three of the largest boat lines. We are selling tickets to St. Louis, Kansas City, Omaha, Des Moines, Buffalo, Cleveland, Detroit, Toledo and intermediate points—in fact, to any point to which a passenger may desire to go. We never allow a passenger to leave our ticket window for lack of the proper ticket, as we keep on hand a supply of the old reliable skeleton tickets with enough coupons attached to ticket a passenger to South Africa and return!

The interurban lines are keeping up with this great development of interline business and, I believe, realize the substantial revenue they are deriving from this source, and are providing through limited parlor cars to care for the accommodation of these passengers. Out of Indianapolis we now have daily eight through limited trains each way between Indianapolis and Ft. Wayne, distant 136 miles; six limited trains each way between Indianapolis and Louisville, distant 114 miles; three limited trains each way between Indianapolis and Dayton, distant 109 miles; two limited trains each way between Indianapolis and Goshen, distant 146 miles. These long-distance through runs are mentioned to illustrate the traffic arrangements which have been made for through service over foreign lines.

From my personal observation after six years of close contact with the traveling public I am convinced that the more long-distance runs established, with finely appointed cars, the greater the through travel is bound to become. The public seems to welcome such accommodation—and, in fact, demands it.

The Central Electric Traffic Association is the mainspring of all the development of the long-distance travel. Through this association our joint tariffs are compiled and placed in

\*Abstract of paper read at meeting of the Central Electric Railway Association, Columbus, Ohio, March 23, 1911.



all ticket offices of companies that are members of the Central Electric Railway Association, throughout Indiana, Ohio, Illinois, Michigan and Kentucky. So great has the distribution of these tariffs become that copies have reached the Pacific Coast. Last September a ticket was sold by the San Pedro, Los Angeles and Salt Lake Railroad from Long Beach, Cal., to Louisville, Ky., routed via Chicago—Monon Railroad to Indianapolis, and via the Indianapolis, Columbus & Southern Traction Company from Indianapolis to Louisville. Another ticket was issued by a steam line from Los Angeles, Cal., to Indianapolis, routed via Chicago, then the C., C., C. & St. L. from Chicago to Peru, and the Indiana Union Traction Company from Peru to Indianapolis. The popularity of interurban travel is such that some passengers when purchasing tickets at steam road ticket offices request that they be routed via a traction line from the first junction point. The extent of new territory opened up for interurban business within the past two years has necessitated the revision of our present Joint Fare Sheet No. 3, and the Traffic Association will have a new joint tariff completed within the next two months which, in my opinion, will be the means of increasing our interline business fully 50 per cent. It would seem that no interurban road can afford to refrain from being a party to this tariff. The whole country is watching the development of the interurban lines, particularly in the Central States, the territory covered by this association. The interests of these various lines are mutual and, we may say, interdependent. Consequently, the more cordial their relations and their co-operation in building up through traffic the greater will be the prosperity to all.

### NEW YORK MEETING OF COMMITTEE ON POWER GENERATION

A meeting of the committee on power generation, American Electric Railway Engineering Association, was held in New York on Tuesday, March 21, 1911. Those present were L. P. Crecelius, chairman, superintendent of power Cleveland Railway Company; H. G. Stott, superintendent of motive power Interborough Rapid Transit Company, New York; R. A. Dyer, Jr., assistant general manager and electrical engineer Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y.; A. Wolff, superintendent of power United Railways & Electric Company of Baltimore; B. F. Wood, assistant engineer motive power department Pennsylvania Railroad, Altoona, Pa.; C. L. Gates, engineer of power stations Fonda, Johnstown & Gloversville Railroad, Tribes Hill, N. Y., and Norman Litchfield, secretary-treasurer of the association and engineer car equipment Interborough Rapid Transit Company, New York.

Chairman Crecelius brought up the question of forced draft and peak loads which had been carried over from the preceding year for further investigation. There was a general discussion as to what overload period could properly be defined as a peak load. Mr. Crecelius thought that the peak load problem might be attacked from the outside by the installation of current-checking devices on cars. His experience in Cleveland showed that the power consumption per car mile is less during the peak hours than at other times of the day. Mr. Stott said that the coasting recorders on the Interborough system were of greater benefit in reducing the kw-hours during the non-peak periods because the motorman could not do so much coasting when the trains were operated on the shortest possible headway. Mr. Stott added that the committee's report this year might consider the influence of substation arrangements, car-checking instruments and the like on reducing peak loads at the power station. This would be a supplement to the 1910 report, which had discussed only power station conditions.

Mr. Wood wanted data on the handling of several peaks of short duration. Mr. Dyer suggested that in some cases of this kind relief might be afforded by a slight rearrangement of car schedules. The subject of peak loads was then assigned to Mr. Wood and that of forced draft to Mr. Stott.

Mr. Wood brought up the question of stand-by losses. He suggested that the members assist Mr. Stott by investigating

the plants in their charge to note the hourly load curve characteristics and the amount of fuel used hour by hour so that a definite idea of efficiency per hour, day, week and month could be obtained.

Mr. Crecelius said he would take up one of the new subjects assigned by the executive committee, namely, the purchase of bituminous coal on the b.t.u. basis. This report will analyze the b.t.u. form of specification and the justification for certain penalties and premiums. Mr. Crecelius said that his experience in purchasing coal on a b.t.u. basis had taught him that his company had not been using the most economical coal in the past. Mr. Stott said that he had had a b.t.u. contract for nearly eight years. During the past year the average heat value had not varied more than 200 units from an average of 14,600 b.t.u.

Mr. Crecelius said that before buying on this basis the average heat value of the coal delivered in Cleveland was 11,879 b.t.u. The first year of the contract it averaged 12,742 b.t.u., the second year 12,763 b.t.u., the third year 12,780 b.t.u. There were bought 450,000 lb. of coal at a price which was 0.23 cent per ton less than the basic contract figure. This slight difference showed that the b.t.u. specification was entirely fair with regard to the premiums and penalties.

The next subjects were those of boiler sizes, insulated coverings for boilers, settings and baffling. Mr. Crecelius thought that larger boiler units might be advisable in view of their space-saving possibilities. Mr. Stott suggested a study of feed-water treatment. The report on boiler settings, sizes, baffling and arrangement of boilers with reference to the engine room (whether parallel or at right angles) was assigned to Mr. Wolff.

The subject of direct-current turbo-generators exceeding 500-kw capacity was assigned to Mr. Dyer for report.

Mr. Stott said it would be desirable to have some indicating means for knowing whether each boiler was taking its due share of the load just as one can tell what the separate units in the engine room and different substations are doing. On suggestion of Mr. Wood it was decided to formulate a standard boiler log sheet accompanied by suggestions concerning the apparatus which should be used to record boiler performance. This subject will be included in Mr. Stott's report.

It was determined to incorporate in the final report of the committee the opinions of the members on the most desirable voltage and frequency for turbo-generators from an operating standpoint. The subject of locating faults in high-tension cables will be referred to the power distribution committee of the Engineering Association. The meeting was then adjourned.

### CONVENTION OF THE RAILWAY SIGNAL ASSOCIATION

The Railway Signal Association, comprising the signal engineers of the important steam railroads in the country, met at Congress Hall, Chicago, March 20. Owing to this meeting there were many exhibits of signal apparatus in the Coliseum, which also held the exhibits made in connection with the meeting of the American Railway Engineering & Maintenance of Way Association.

The program of the Railway Signal Association included the presentation of reports of several committees and two papers. The first report was that of committee No. 1 on "Signaling Practice and Standards," and consisted of a report of a sub-committee on "Standard Symbols." The report of committee No. 10 on "Electric Signaling for Electric Railroads" consisted of a report of sub-committee B, which submitted a progress report of detailed specifications on material used in electric signaling. Other committees reporting were those on mechanical interlocking, power interlocking and automatic blocks.

In addition to the committee reports A. H. McKeen, signal engineer Oregon-Washington Railroad & Navigation Company, read a paper on "Portable Storage Batteries as Applied to Automatic Signals on the Harriman Lines," and L. Frederick Howard read a paper on "Principles Governing the Selection of Alternating-Current Signal Apparatus for Railroads."



**ECONOMICAL LIMITS FOR FLANGE WEAR ON STEEL-TIRED AND ROLLED-STEEL WHEELS\***

BY JOHN SIBBALD, MASTER MECHANIC FONDA, JOHNSTOWN & GLOVERSVILLE RAILROAD

It is general practice to compare wheel performances on the basis of the number of miles obtained per sixteenth-inch reduction of the wheel rim. On the road both the tread and flange wear away. In the shop it is necessary to reduce the

be easy-moving and side bearings should have clearance. The proper design of special work also has an important effect on flange wear.

When local conditions do not increase the effect of the factors just mentioned, the most important factor causing flange wear is the difference in diameter of wheels in the same pair. Through a difference in hardness of the wheels, or a difference in brakeshoe pressure or loading, one wheel of a pair of wheels generally wears faster than the other. The larger wheel tends to run ahead and crowd the flange of the smaller wheel against the rail. A difference of 1/16 in. in diameter has the same effect as a curve of 2,400 ft. radius. Of course the coning of a new wheel lessens this effect, but this observation is directed against wheels whose treads have been worn flat. The relation between the difference in diameter and the number of miles "per sixteenth of flange wear" is shown by the curve,

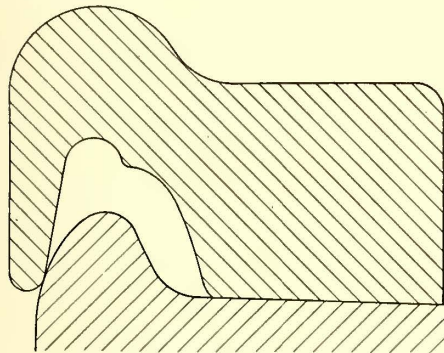
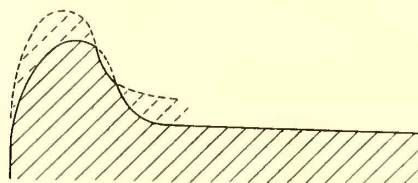


Fig. 1—Brakeshoe with Wide Flange Way



Figs. 2 and 3—High and Low Witness Marks

tread still more so as to obtain the original thickness of flange.

The greatest amount of flange wear is caused by the abrasive action of the brakeshoe. A "straight flange" as illustrated by Fig. 6 is characteristic of brakeshoe wear. The flange way of the shoe should be so large that no grinding action will occur at the fillet and it should be of such shape as to correct the

Fig. 4. This curve shows that the mileage per one-sixteenth flange wear decreases from 30,000 at 1/16 in. difference to 12,000 at 3/16 in. difference. Among the wheels under observation was one pair of equal diameter by which 130,000 miles per sixteenth of flange wear was made.

Our observations showed no relation between the flange thickness of different wheels and the diameter difference. For instance, some wheels having 1 1/16-in. flanges had a diameter difference of 3/32 in. while other wheels having flanges 7/8 in. showed a diameter difference of only 1/16 in.

As the flange wears away, it finally reaches a point where the wheels have to be removed for reshaping. This point is reached for economic reasons before the question of safety from the thickness of the flange becomes a consideration. Of course, a flange may have to be reshaped on account of a "straight" flange, from considerations of safety.

The thickness of rim removed from the small wheel

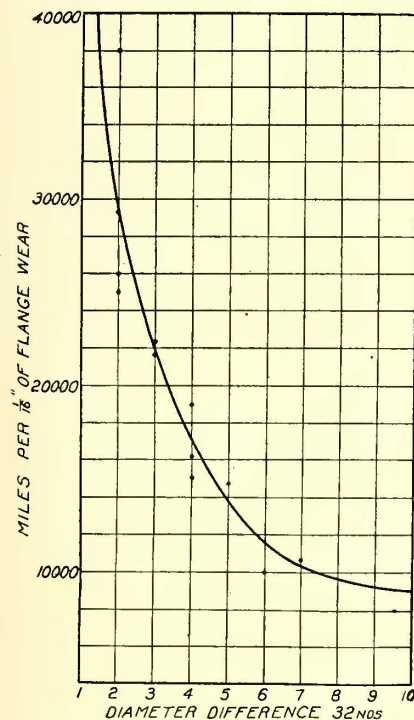


Fig. 4—Relation Between Flange Wear and Wheel Diameter

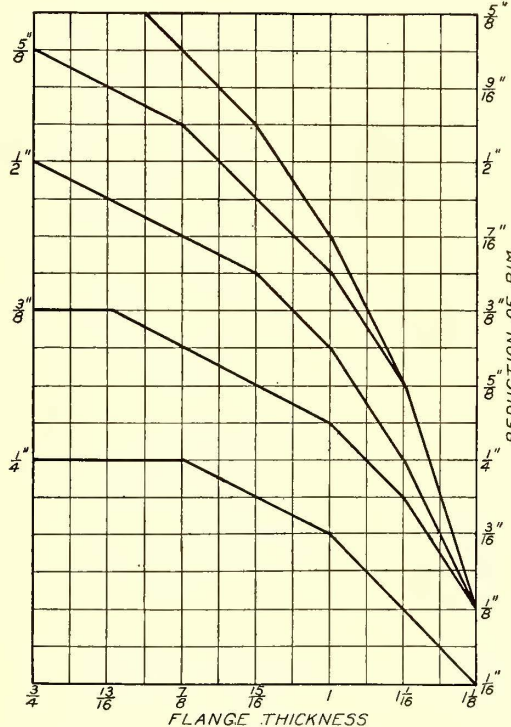


Fig. 5—Relation Between Thickness of Flange, Metal Removed and Height of Witness Mark

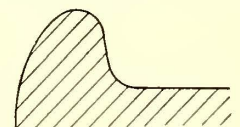


Fig. 6—"Straight Flange" Wear

tendency of the flange to form a sharp shoulder at the top. This is illustrated by Fig. 1. By the use of a brakeshoe having a wide flange way not only is flange wear reduced, but the average shape of the flange remains nearer the original standard.

Curve resistance also contributes to flange wear. It is of course a factor which cannot be eliminated, but it may be reduced by setting the curves at the proper elevation and having trucks in condition to swing freely. The center bearings should

depends upon two factors—first, the amount which has been worn from the flange, and, second, the amount of "witness mark" allowed. The expression "witness mark" may be illustrated by Figs. 2 and 3. In reshaping, a groove is frequently left as shown. Fig. 2 shows a witness mark extending down to 1/2 in. above the tread. Fig. 3 shows a witness mark 1/4-in. above the tread. The curves of Fig. 5 show the relation between the thickness of the flange and the metal removed for different heights of witness marks.

The rate of flange wear increases rapidly as the diameter

\* Abstract of paper read at quarterly meeting of Street Railway Association of State of New York, Syracuse, March 22.



difference increases. Fig. 4 shows that for economic flange wear the difference in diameter should not exceed 1/16 in. The limiting height of witness mark should be placed as low as possible. It is a matter of judgment just what height is safe. We use 1/2 in.

The thickness of flange does not of itself affect the economic limit of wheel wear. If a pair of wheels remained the same in diameter, it would be economical to wear them until the flanges had reached the limit thickness for safety. The point which the writer desires to make is that the difference in the diameters of wheels in the same pair rather than flange wear should be the criterion of wheel wear. So far as economy is concerned, the flange gage can be recommended only for its convenience. It is of course necessary for keeping the flange thickness above the safe limit for special work.

The writer regrets that while he recognizes diameter difference as the factor to be measured for limiting the economical wear of wheels, he is unable to offer a method for gaging it that has the simplicity of the flange gage. But if this idea is right sooner or later some of us will improvise a convenient gage.

**OPERATION OF OHMER FARE REGISTERS IN CITY SERVICE \***

BY J. E. DUFFY, SUPERINTENDENT, SYRACUSE RAPID TRANSIT RAILWAY

There is no subject of greater importance to a railway company than the proper collection of money due for transportation and the course thereof through the different channels until it finally reaches the treasury. This very important part of operation has received less attention than it deserves, taking into account the many improvements of cars, roadbed, machinery, etc.

If we follow the development in types of cars which we furnish for passengers from the 15-ft. or 20-ft. cars of a few years ago to the luxurious palaces on wheels which are now furnished on many roads for the comfort and convenience of their patrons, we can realize the extent to which this is true.

In the early days, a fare box was placed in the front part of the car and passengers were reminded by the jingling of a bell to deposit their fares therein. As traffic increased, conductors were employed and were given punches with which to punch holes in strips of paper, and the number of fares turned in at night by each conductor was checked against the number of holes that he had punched.

The next step was to place a register in each car with the intention that the conductor should register one on the dial for each fare collected and, when through with his day's work, count up the number that had been registered, not the number collected, and make his turn-in on the basis of the number of fares registered. This has been and is still the method most generally employed in following the nickel from the passenger to the treasury.

On many roads conductors are allowed to register all classes of fares upon the same register. On some roads the managers do not feel that it is necessary to register transfers, claiming that they are of no value, that, the cash fare paid by the passenger having been registered in the first instance, there is no necessity of accounting for that passenger a second time, even though he rides upon a different car.

In the writer's many years of experience he has used most of the methods suggested above. For several years after transfers first began to be used on the road with which the writer is connected cash, tickets and transfers were registered together on a single register. Later, a double register was used upon which cash and tickets were registered together on one side, and transfers alone on the other. Either of these methods made possible the substitution of paper for cash and

many dishonest conductors in the employ of the company, no doubt, took advantage of this fact.

In 1907 the company inaugurated the practice of registering only cash fares or their equivalent. This practice continued for three years, but owing to the impossibility of checking conductors accurately, since the transfer passengers were permitted to ride without anything being shown on the register, the management felt that a change should be made and that each class of fare should be registered and accounted for separately.

Many claims had been made by the Ohmer Fare Register Company relative to its method of registering and accounting for fares, and it was decided to give this system a trial. The first Ohmer registers were installed in January, 1910, and the installation having been completed by March 1, 1910, we have now had a full 12 months' experience with this system.

In view of the many inquiries received as to the success of the trial, it is our purpose to give to the members of this association the benefit of our experience. It is not intended to draw any conclusions as to the superiority of this system over any others, but to show the facts as found in the records on file, from which the figures appended are taken.

This company installed 140 five-fare machines, registering 5-cent and 3-cent fares, transfers, tickets and passes. Each of these registers carries a rental of 12 cents per day whether in use or not. A supplemental installation of 36 registers was made in the open cars, and these, being in use for only six or seven months in the year, carry a rental of 16 cents per day. The Ohmer Fare Register Company installed and during the past 12 months has maintained these machines at

Fig. 1—Ohmer Register—Conductor's Daily Report

its own expense, one of its representatives making Syracuse his headquarters. It is this representative's duty to inspect the registers from time to time to see that they are in perfect operating condition and also to remedy such defects as are brought to his attention through reports or complaints from the railway company.

Prior to the installation the register company sent its representatives to Syracuse to instruct our employees in the method of operation that it recommended, and every one of our conductors was compelled to attend the classes and receive instructions in register operation before he was permitted to work on a car equipped with this type of register.

This register accomplishes the following:

1. It makes a separate registration for each fare collected, the different kinds of fares being registered separately.
2. It keeps a separate printed record of the collections of each conductor.
3. It shows a separate indicator for each kind of fare registered. The fares registered are simultaneously indicated on various places about the car, on the platform, on the inside of partitions and on special compartments of interurban cars, etc.
4. It makes a total registration of all fares, irrespective of class.
5. It is easily and rapidly operated.
6. It indicates the direction in which the car is moving.
7. It prints the number of fares in each class on each half-trip.
8. It prints the trip number.
9. It prints the month and the day.

\*Abstract of paper read at quarterly meeting of the Street Railway Association of the State of New York, Syracuse, March 22, 1911.



- 10. It prints the number of the register.
- 11. It prints the number of each conductor and shows the time at which he takes and leaves the car.
- 12. It prints the line number over which the car is run.
- 13. It fixes the work and responsibility of each conductor and removes all occasion for dispute. From the register record it shows the various fares in detail which are collected upon interurban cars running over city lines. This register is so contrived that it is always locked until put in service and cannot be put in service until the conductor's number is printed on the statement in the register.

The following instructions were issued to conductors for operation of the Ohmer system:

them. Always see that the register cord is properly adjusted; in damp weather this cord shrinks, and must be loosened at the stop end, to permit the register to operate freely.

7. Always see that the pointers on the rod arc set to the fare you have collected before you pull the cord.

8. Conductor will not move the rod, or change the "fare indicator" until he has collected a different class of fare from the last one registered.

9. Give the cord a steady pull until the bell rings. Never jerk it.

IMPORTANT

10. At the end of each half-trip first turn the passenger indicator wheels to zero; see that the knob drops back to orig-

W. Form 722 1M 1-10-11

KEY \_\_\_\_\_

Operated Register \_\_\_\_\_ Days    Percentage \_\_\_\_\_ %

Name \_\_\_\_\_ Badge \_\_\_\_\_ Month \_\_\_\_\_ 191

DAY	REVENUE TICKETS		CASH 5c		CASH 3c		TRANSFERS		NON-REVENUE TICKETS		TOTAL	TOTAL	REMARKS
	OVER	SHORT	OVER	SHORT	OVER	SHORT	OVER	SHORT	OVER	SHORT	ERRORS	PASSENGERS	
1													
2													
3													
4													
5													

Fig. 2—Ohmer Register—Individual Conductor's Monthly Record

1. Before starting the car from the carhouse see that the time wheels (on left side of register) are properly set.

Hour-wheel—First wheel next to register case on left side.

Minute-wheel (Tens)—Second wheel from register case on left side.

Minute-wheel (Units)—Third wheel from register case on left side. This wheel also shows a. m. and p. m.

Use the star on center wheel for zero when necessary.

2. Conductors will use the numbers on the "day of month wheel," the first wheel next to register case on right side, to indicate the line over which the car is run, using the following line numbers: 1, Wolf and Valley; 2, Wolf and Salina; 3, Court and Salina; 4, Rockwell and Liverpool; 5, Midland and Butternut. Let the month-wheel stand as set by the inspector, who will see that the register record is properly dated at the opening and closing of each day's work.

Turning to zero will lock your register and before it can be operated set the "time wheels" and see that the line number is set correct, then take an impression.

11. On changing lines, while using same car, take two impressions, the first impression to show your present line number; second impression to show the number of line to which you are changing.

12. Count and record the amount of your change on trip sheet before going on duty. When through with your day's work, count your money, deduct the amount of change with which you commenced from the cash on hand and turn in the balance to the receiver, marking amount of day's collection on trip sheet. Turn in all tickets in envelope provided for that purpose, but do not count them. Transfer returns will be made as outlined in general order No. 698. On trip sheets fill in date, car number, run number, key number, conductor's and

W. Form 742 5C 1-21-11

1911

General Average for the Year \_\_\_\_\_

Name \_\_\_\_\_ Key \_\_\_\_\_ Badge \_\_\_\_\_

MONTHS	REVENUE TICKETS		CASH (5c)		CASH (3c)		TRANSFERS		NON-REV. TICKETS		TOTAL	DAYS	PASSENGERS	PERCENTAGE	NUMBER OF	REMARKS
	OVER	SHORT	OVER	SHORT	OVER	SHORT	OVER	SHORT	OVER	SHORT	ERRORS	WORKED	CARRIED		TICKETS DISCIPLINED	
January																
February																
March																

Fig. 3—Ohmer Register—Individual Conductor's Yearly Report

3. See that the total passenger indicator wheels stand at zero, and that the "direction" flash indicates properly. This is set by pulling out the knob at the top of the register on right side, and turning to the right until it drops back into its original position.

4. Insert your "identification key" as far as it will go in the upper keyhole on the right side of the register, and do not remove it, except when relieved or at the end of run.

5. Take the impression key from the key holder, insert it in the bottom keyhole on the right side of register, then turn slowly to the right, one complete revolution, remove the impression key and return it to the key holder.

6. Register each fare separately as collected; never bunch

motorman's name and badge number. Make a separate report for each regular or extra run.

13. You will keep no record of passengers carried, with the exception of policemen, firemen and badge employees. This information you will furnish, together with time and record of transfers issued, upon trip sheet.

14. Your ability as a conductor will be judged by the accuracy of your turn-in, as compared with the register report. Each 5-cent fare, ticket, transfer, 3-cent fare and pass over or short will constitute an error.

15. You must not correct errors in classification by registering fares in the wrong class. Report such errors to the office for correction.



16. Note: The register makes all records of fares collected, reducing your bookkeeping to a minimum, giving you more time for the operation of your car and the proper care of passengers.

## RELIEF

It is necessary to take an impression when leaving or when being relieved, as well as at the time of taking the car. Always remove your identification key at the time of relief or at the end of a run, but never remove it at any other time. The succeeding conductor must observe the rules above.

Insert identification key, see that trip-wheels are at zero, and direction flash is correct, time wheels show correct time upon taking car, and line number is correct.

Thereafter observe rule No. 10.

On being relieved between terminals, conductor will set his leaving time, see that line number is correct, and take an impression, letting trip-wheels stand to cover the load, except Minoa cars, where trip-wheels will be turned to zero at East Syracuse, time wheels set, and line number changed. See rule No. 11.

The following classification will be observed in registering fares:

Five (5) cent fares under 5-cent denomination.

Revenue tickets under ticket denomination.

Transfers under transfer denomination.

Three (3) cent fares under 3-cent denomination.

Non-revenue tickets, which consist of coupon passes and employees' tickets, will be registered under pass.

Note:—If the register or operating device becomes impaired or inoperative, report the fact promptly to the office or inspector, making a note of same on trip-sheet.

## UNREGISTERED FARES

You will note that the instructions require that the conductor shall count the amount of money in his possession before going on duty and when through with his day's work shall deduct an equal amount and turn the balance over to the company. This means that the conductor turns in not only all the fares registered, but also all the fares which through error were not registered. These unregistered fares, although belonging to the company, in this way reach the treasury, which they did not do under the old system of registration upon the so-called counting machines.

The radical change which this method brought about was something that our conductors could not quite understand at first, and it took them some time to recover from its effects. On account of three years' experience in not registering transfers it was quite easy for the conductors to forget to register this class of fare, and as a result the first few months' operation showed a decided overage in transfers.

The Ohmer system does not compel the dishonest conductor to register fares, but if the system is used as directed it can be stated with justice that it does get to the treasury of the company all of the money which belongs to it, with the exception that the company has to bear the loss that is occasioned by conductors returning too much change to passengers; by money being lost after being collected; or by conductors spending money after making collections and keeping no account of the expenditures. When making the turn-in, the amount of money with which the conductor started is deducted, without taking into account the payment of a bill, the loan of money to some one else, or the purchase of tobacco, sandwiches or other articles, but these discrepancies are usually disclosed by the register record.

It is not expected that conductors will not make mistakes in operating this type of register, or in making returns as directed by this system, and it is the practice of the superintendent to see every conductor personally who is 20 or more fares short in a day's work. Many times conductors remember that they spent some money on the day in question and others, who feel a proper interest in their work, upon their attention being called to a shortage, recognize the justice of the claims of the superintendent that they do not register the fares unless they collect them, and, if they collect them, they

are the property of the company and the company should receive the money.

Fig. 1, illustrated herewith, shows the report turned in to the superintendent's office each day, indicating the work of each conductor and the number of fares over or short in each classification. These reports are transferred to an individual conductor's record (see Fig. 2, published herewith), showing his work for each day of the month and the number of fares over or short. From this sheet is formulated the conductor's monthly record, showing the total number of errors, the number of days worked, number of passengers carried and the grade for the month.

This grade is ascertained by division of each conductor's errors by the number of days that the conductor worked, giving an average number of errors per day, which, deducted from 100, gives a balance which is taken as the conductor's grade. These grades are posted upon the bulletin boards at the end of each month for the purpose of creating among the conductors an honest rivalry in striving to reach the top of the list. This always appeals to the man who has an interest in his work, but has no effect upon the dishonest or careless man. This has been demonstrated very clearly to us by the fact that the same men are nearly always at the top of the list, and the same men are nearly always at the bottom of the list, as long as they remain in the service.

The general average grade of all conductors employed by the company gives an interesting result, showing that the conductors who are far below the general average are those who are careless and indifferent in the operation of this system.

The monthly records are transferred to a yearly record (published herewith, Fig. 3) of each conductor, showing the grade, the overs and shorts in each classification by months, so that each conductor's record folder contains a sheet showing his work for each day of the month and also a sheet showing his work for each month of the year, making it very easy to find the grade of any conductor for any desired period.

During the first few months of operation of this system it was very discouraging in view of the fact that the net differences for each month were shortages instead of overages as they should have been, provided the register company was correct in its claim that many fares which were the property of the railway company were being lost on account of conductors making the turn-in on the basis of the number of fares registered instead of the number of fares collected.

The net overage or shortage of each classification for each month is shown in Table I.

TABLE I.—NET OVERAGE OR SHORTAGE.

Month.	Revenue Tickets Short.	Cash 5 Cents Short.	Cash 3 Cents Short.	Transfers Over.	Non-Revenue Tickets Short.
March .....	1571	2310	242	509	1045
April .....	1100	1102	*31	1332	818
May .....	1101	866	*49	1955	932
June .....	1476	*110	*95	1400	525
July .....	2368	324	*134	657	107
August .....	2191	393	*272	1016	125
September .....	1478	776	*4	736	938
October .....	1766	*220	48	506	640
November .....	1649	*1972	49	444	559
December .....	1384	*2239	251	885	645.
January .....	1082	*2296	106	597	741
February .....	1056	*1159	*6	953	515

Table II gives the month's general average, shortage or overage per man per day:

TABLE II.—NET RESULTS PER MAN PER DAY.

Month.	General Grade.	Number of Errors.	Net Short or Over.	Net Short or Over per Man per Day.
March .....	92.90	41,069	4659 short	.618 short
April .....	94.17	33,193	1657 "	.232 "
May .....	94.04	34,633	895 "	.128 "
June .....	93.83	36,596	396 "	.055 "
July .....	92.60	43,134	2008 "	.265 "
August .....	93.74	40,971	1421 "	.19 "
September .....	93.93	38,340	2452 "	.345 "
October .....	94.75	29,286	1128 "	.149 "
November .....	94.33	30,279	159 over	.02 over
December .....	94.56	31,290	844 "	.115 "
January .....	94.76	29,240	964 "	.133 "
February .....	94.87	25,835	547 "	.083 "

The first eight months' operation showed a net shortage for each month. In November a small average was shown, and



this has continued each month up to the present time. This is, no doubt, accounted for by the fact that the conductors had by this time become familiar with the operation of this register and system, and that the new men were taught by conductors who had had months of experience in its operation.

It is sometimes discouraging for the superintendent to call in to the office one of the conductors in whom he has explicit confidence and tell him that he is, according to the report, 20, 40 or 100 fares short, and receive for a reply, "I took out only the amount of money with which I started and turned in to the company the balance." Cases have happened wherein old and supposedly honest conductors have been as high as \$6 short in one day. One specific case may be cited where a half-dozen different conductors, who were very seldom short, were called to the office and charged with being from \$1 to \$6 short on a certain Saturday and the only conclusion that could be arrived at by the company was that a pickpocket had been at work. On one of the busy trips at night one of the conductors discovered a man with his hand in his pocket, extracting some of the money, and it was supposed that this man had made this his business on many busy trips during that day.

While there were many misgivings upon the part of conductors when this system was put into effect, most of the conductors at the present time are satisfied with the operation of this system and feel that no injustice is done them, because of the fact that they are sure that they have all the money that belongs to them and that they have turned in to the company its due, whether registered or not registered, and that there is no occasion for their being considered dishonest.

Where a man shows a low grade month after month, and this low grade is caused by shortage, it can be determined readily that this man is careless in the handling of the com-

## BUILDING UP OF INTERURBAN TERRITORY, AND METHODS OF STIMULATING SUMMER TRAFFIC\*

BY RAYMOND H. SMITH, GENERAL MANAGER ALBANY SOUTHERN RAILROAD.

Up to within a comparatively few years ago very little thought was given to the stimulation of traffic, the idea being that the business would grow with the population. Increase in the earnings of a property is now considered as great a field for effort as the reduction of operating expenses. This augurs well for the industry, the component parts of which must be developed with due relation to each other in order to attain the highest state of efficiency. It has been thoroughly demonstrated that every territory responds to intelligent efforts to increase its growth, the degree of response varying with the character of the country, the energy applied to the work and the methods adopted. One of the first steps in the building up of a territory is the preparation of the territory itself. In order to be attractive, it must have virtues which will be conducive to its growth, and if it is without virtue of any kind the situation is as hopeless as the predicament of the traveling man who is sent on the road with articles entirely devoid of merit. In persuading people to build or reside along an interurban railroad, the advantages claimed are usually twofold, i. e., advantages for the promotion of agricultural and manufacturing enterprises, and attractiveness from a residential viewpoint, which is brought about by scenic beauty, reasonableness of land values, adequacy of railway service, low fares and good sewerage, water and lighting facilities. The traffic man should interest himself in the development of the towns, villages and territory served, for the reason that success in building up these places depends largely upon the facilities provided for the comfort of the inhabitants. A locality with a good water supply, sewerage and street lighting systems, and properly maintained streets and sidewalks, within a reasonable commuting distance from a city or center of employment, is a situation which would fire the ambition of any traffic man, while a place without these advantages is handicapped and develops slowly.

Sites which could have been made beautiful by virtue of their natural location have frequently been spoiled forever through inattention to the matter of laying out the property. Farmers with real estate, having no regard for the esthetic, will boldly stake out building lots, establish streets and allow nondescript buildings to be erected at fantastic angles and without regard to building lines, never realizing that a few such dwellings forever depreciate the value and delay the sale of the remaining property. Such situations are inimical to the interests of the railroad, and at every opportunity the traffic man should endeavor to convince the property owner that the few dollars expended for properly laying out the site will be returned many times over. This is a field of work which is very often overlooked by railroads for the reason that the results are slow of achievement and frequently become apparent in the earnings of the company long after the party performing the work has left the property. It is quite natural to direct one's energy in the course which will bring the quickest results, but in the earnestness of this effort preparation for the future should not be neglected. If a community in its infancy pays little or no attention to laying out its streets, etc., that particular place, 10 or 15 years later, will not be as great an asset to the railroad company as the locality where greater thought has been given to such details.

It is this thought of paving the way for future prosperity that the traffic man should instil into those charged with the affairs of the communities along his road. Civic pride is dormant in most small localities simply because there is no one sufficiently interested to look beyond the range of his own personal benefits, and if a street lighting system in a certain locality will be an aid in the upbuilding of that place, then it is the plain duty of the railroad to see that the authorities are

\*Abstract of paper read at quarterly meeting of the Street Railway Association of the State of New York, Syracuse, N. Y., March 22, 1911.

TABLE III.

	Passengers Carried.		Passenger Earnings.	
	1909.	1910.	1909.	1910.
January	2,748,632	2,999,676	\$107,699.02	\$119,193.11
February	2,573,332	2,732,588	100,700.99	108,698.56
March	2,777,167	2,999,267	108,970.32	119,264.76
April	2,685,428	2,919,525	106,216.31	116,124.90
May	2,921,951	3,118,423	114,972.77	122,741.90
June	2,965,974	3,123,450	115,740.23	123,161.34
July	2,929,736	3,225,549	112,604.85	125,840.13
August	2,864,522	3,134,489	109,768.23	121,901.11
September	3,108,670	3,294,083	124,038.29	133,439.58
October	2,943,124	3,215,983	115,713.02	128,141.42
November	2,887,065	3,125,094	114,378.39	124,648.58
December	3,081,281	3,321,070	123,589.46	134,316.33
	34,486,882	37,209,197	\$1,353,491.88	\$1,477,471.72
		2,722,315		or 7.89 per cent.
		\$123,979.84		or 9.16 per cent.

pany's money or that he is dishonest. In either case the company is better off without his services. It has been clearly demonstrated in this 12 months' experience that the conductors who have an interest in their work have very few errors. We have in mind some of the conductors on this system who have not fallen below a grade of 98 per cent in several months' operation of the register.

If a conductor through mistake turns in some of his own money and afterward discovers it and makes proper claim, the amount of money over is returned to him, provided the turn-in shows the amount over that he claims. Where a conductor shows a very low grade and this low grade is acquired by overage, he is called to the superintendent's office, the same as though it were shortage.

Mechanically, no trouble has been met and the maintenance service of the register company must be commended.

For the purpose of comparison Table III is submitted, showing the number of passengers carried during 1909 and 1910, and the amount of passenger earnings for the same period.

As a result of the merger of the Los Angeles-Pacific Railway and the Pacific Electric Railway, Los Angeles, Cal., it has been decided, for the sake of uniformity, to adopt as a standard color for all the cars of the consolidated company the vermilion in which all cars of the Pacific Electric Railway have been painted for some time. The cars of the Los Angeles-Pacific Company will be repainted in this color as the necessity arises for them to be sent to the shops to be overhauled.



made to realize the benefits which would accrue from such an improvement.

Time should never be spent in inducing a person to leave the city and locate at a point on the line where the fare, on account of the distance, is perhaps greater than he can afford, or the time required to make the trip is too great to be spared without inconvenience, in fact, where he will eventually become an unhappy, disgruntled commuter. After learning something about the person's work, mode of living and resources, a proposition should be submitted which, if accepted, will prove to be an actual benefit to him.

Co-operation with real estate men is absolutely essential. The knowledge that your files are open to them without charge and that the company's interest in real estate is not competitive but primarily for the purpose of building up the territory and increasing traffic will do a great deal toward increasing their interest in the property. The general public should also be continually reminded that the company has complete information regarding places for sale, etc., which is free to all. Much time is often spent in inducing wealthy people to establish summer homes along a railroad. Business of this kind is of limited value for the reason that such people are patrons but a few months in the year, generally travel in automobiles, and are not of as much financial benefit to the company as the ordinary laborer, who travels on the road the year around. Undoubtedly the fine houses are attractions, and are desirable in that they improve the tone of a place, but too much time should not be spent in encouraging this particular class of building.

The traffic man must know his territory thoroughly, and if possible should personally inspect the places for sale or rent. In inspecting property a camera is most useful, as oftentimes a few photographs of a place for sale will do more toward interesting a person than a considerable amount of literature.

The rather natural inclination on the part of real estate owners to raise land values when it becomes apparent that their property is marketable is a barrier to the rapid growth of a community, and a situation difficult to combat. To prevent fictitious values upon property, it is necessary to get in actual contact with the people and instill into them the idea that the community will fail to grow unless each does his share toward the encouragement of building operations by offering property for sale at a price which is fair to both buyer and seller. It can also be explained, with telling effect, that the company is in a position to direct a great many people to property in the market, and that in doing this it naturally recommends only such places as in its judgment are held at reasonable prices.

#### PARK AND AMUSEMENT RESORTS

As the park season is approaching, those who are operating amusement resorts look about to see what the new year has brought in the way of attractions for places of this character, and are deeply concerned over the outlook. In view of the thousands of dollars made in the amusement business, it is astonishing that each year does not bring with it a new stock of original devices and sensations, yet it is most apparent that in spite of the marketability of these devices they are woefully lacking. To be of continuous interest to the public a park must be kept in a constant state of rotation as far as attractions are concerned. There is a pressing need for new devices costing from \$500 to \$3,000 which will be a temporary source of amusement and can be replaced without loss as soon as the novelty wears off. Many of the expensive devices which have been successful in the very large cities would be unprofitable in the average run of parks for the reason that they require greater patronage than the smaller parks enjoy.

The theatrical question at the parks this year is: Shall vaudeville be replaced by stock, minstrels, etc.? Apparently vaudeville is on the wane. The country has been fed with this class of entertainment for many years, faces have become familiar to devotees of playhouses, and the acts themselves are limited as to variety. The popularity of moving picture exhibitions, given as part of the main program, has decreased the call for high-class vaudeville performers, who are being taken

into the semi-legitimate field. Good stock companies showing in cities have had no difficulty in making money in summer, and there seems to be no reason why the success of such companies at amusement parks is not to be expected. On the property with which the writer is connected the program for the coming season will be largely stock, with a limited number of minstrel and vaudeville performances. It is also the intention to give occasional amateur acts in addition to the regular performance in order to stimulate local interest.

The propriety of giving Sunday theater performances is a subject for discussion. The location of the park and the class of patrons served have much to do with the determination of the question. Viewed from purely a business standpoint, Sunday performances should be given if profit can reasonably be expected. The writer is of the opinion that under ordinary conditions it is advisable to discontinue theatrical performances on Sunday and draw as many as possible with band concerts and other attractions which do not in themselves constitute a flagrant breaking of the Sabbath day.

A combination ticket, entitling the holder to the use of many park attractions at a reduced rate if used on certain days when the traffic is light, can be sold to advantage, and the gift of a small number of such tickets to the holders of certain seat checks in the theater on light evenings can also be made a factor in increasing the business on dull days.

To encourage the people to visit the park early in the season is most essential, particularly when changes have been made and attractions added. New features which it is believed will be popular should be exhibited early, so that the complimentary remarks, which have an advertising value, will reach others early enough in the season to be productive of business. In park business as well as in railroading the pleased patron is a great advertising agent, and it is of the utmost importance to get him in action early in the season, and that care be taken that his first report to his friends is not that the resort is the "same old place." First impressions being the most lasting, the park should be at its best when the opening gun of the season is fired.

Negotiations are now under way to have several companies of the New York State militia, together with a representation from the cavalry and ambulance branches of the service, camp at Electric Park for a few days this summer. It is believed that the daily drills, sham battles and exhibitions of horsemanship, etc., which will be given by these people and advertised as a military tournament will be of great interest. It is also expected that an Indian camp will be maintained in the park for several weeks, these Indians to give daily exhibitions of their native water sports, dancing, etc. A feature which is worn out and of little interest in one place will very often arouse considerable excitement where it has never been tried, and it is possible that a baby show may also be given this season. The program also includes an elaborate three days' carnival with fireworks, athletic contests, aquatic sports, water parades, etc. These special affairs are given as early in the season as possible, in order to work up enthusiasm for the place which will encourage people to continue their patronage. A number of tents will be rented by the company, erected upon its park lake property, and leased to camping parties for the summer. The purchase of a few portable houses is also under consideration.

#### ADVERTISING TO PROMOTE BUSINESS

Judicious advertising is a most important factor in the promotion of business. Cards hung in the car above the center aisle are most effective. The human mind when at leisure will dwell upon the most unimportant things and some snappy advertisement on such a card will catch the eye of travelers when they are in their most receptive mood. Very little attention is given generally by companies to the advertisement of their wares on their own cars and property. This is probably due to the fear that these advertisements will be seen largely by those who are already patrons of the company; however, many use the cars who are not regular patrons, and signs displayed in the cars and on the company's right-of-way are undoubtedly productive of great good. Signs located on the right-of-way



should be near stations and be illuminated at night with current from the trolley or third rail. Companies organize strenuous summer campaigns for business, send out solicitors, spend large sums of money in advertising, and obtain a great volume of business under high pressure, just when they are least prepared to handle it. While this is profitable business, the work of building up the territory should not cease with the closing of the park season, but the campaign should be vigorously pushed into the all-year-around field.

The average commuter is somewhat sensitive, and in writing car advertising great care should be taken to avoid stirring up old grievances and calling forth bitter sarcasm. Pleased patrons are the best advertising agents of a company and their complimentary remarks are worth more than full sheet advertisements. People who are kindly disposed toward the road should be induced to express their appreciation in the presence of others. In case certain persons have been benefited by a change of any kind, a letter addressed to them in proper language will induce them in many cases to become boosters and advertisers of the road.

Summer vacation plans are formulated early in the year, and the company which waits until July or August to advertise the advantages of its road is too late to obtain the best results. Money is well spent in attractively worded circulars in the winter and spring, telling that the files of the company concerning houses for sale or to rent, camp sites available, etc., are at the disposal of the public, and indicating some of the plans of the company to make its property more attractive and giving such information regarding rates and timetables as will be of interest. Advertising is largely a study of human nature. To send out circulars which do not give all the information the recipient will need at that time is of questionable value: for instance, a circular describing the beauties of the road is interesting reading, but there is nothing in it which leaves a great impression, whereas if a person is told briefly that country life is less expensive and healthier than city life, that he can arrive at his work on a convenient train, and can do this for a certain amount per day, he has something definite to think about.

While the excursion business is not particularly remunerative, due to the low rates necessary and to the fact that it is generally handled when the tax upon the company's equipment is greatest, it has the virtue of keeping the equipment and men busy at certain times when they would otherwise be idle. Great care should be taken to see that so much excursion business is not taken on big days as to interfere with the proper handling of the regular traffic.

In the enthusiasm of handling large summer crowds, extreme care should be taken to see that the regular patrons are not forgotten, as neglect in this respect will cause the best advertising agents (the contented regular patrons) to become dissatisfied, and a few grumbling persons can do incalculable harm in discouraging others from living along the road.

Satisfactory transportation facilities constitute a great stimulus in the development of territory, as the desirability of a suburban home depends very largely upon its accessibility. To adopt a generous policy in regard to service and not be extravagant is one of the problems of the management, but the effect of an inadequate service is so direct that any interurban line desiring to build up its territory should give just as liberal a service as it can afford, taking into full consideration that it is paying large sums of money for advertising and that good service is one of the best forms of advertising. Almost every company makes trips which are unprofitable in themselves but are necessary in order to give a continuous headway. Just how far a company should go in this direction is for each manager to decide according to the ultimate returns to be expected from this liberal policy. To advertise the advantages of living along a road is of little avail if the disadvantages are very apparent in the actual service rendered. The additional expense of a liberal policy in respect to train schedule, particularly at a stage in the history of a property where great attention is given its development, is in a certain sense

advertising, although, unfortunately for the transportation superintendent, he is unable to shift this cost to the general expense account.

### THE JOINT USE OF POLES\*

Your committee met on Feb. 13, at Utica, N. Y., and on Feb. 28, at Syracuse, N. Y. The first meeting was more or less preliminary. Considerable discussion was had as to how far the committee should go in the matter. At this meeting reference was made to several forms which are now in use, including one which has been put forth recently by a company operating in New York State, and it was the consensus of opinion of the committee that none of these agreements quite covered the situation or was quite broad enough. Certain articles were finally drawn up which may form the nucleus of an agreement. The request of the New York Telephone Company to have a representative present at such time as might be designated by your committee in order that it might discuss with us a satisfactory agreement for joint occupancy was considered, and it was decided that this privilege should be given to the New York Telephone Company or any other company requesting the same privilege, at such time as the preliminary matters were disposed of and not until such time as the committee was in a position to know how far it could go in the matter of drawing up an agreement.

At the second meeting a very spirited discussion developed in regard to the matter of joint ownership, which also brought up again the question of the amount of authority the committee had. In order that something definite might be put before the executive committee it was decided to present an outline giving the points which we believed should be covered in any agreement which might be developed. You will note that this outline is very broad and refers to the matter of joint occupancy, whether the ownership of the pole line is joint or whether the occupancy is on the rental basis. The question of ownership, therefore, is entirely open, and it is one on which your committee must have further instructions if it is to proceed with the work before it. The definite conclusions of your committee are as follows:

First—In answer to the question as to whether joint occupancy is feasible, your committee is unanimous in agreeing that it is.

Second—Your committee does not approve of such joint agreements as it has had occasion to examine and submits for your approval the following outline showing the points which we believe should be covered:

#### AGREEMENT COVERING THE JOINT USE OF STRUCTURES OR POLE LINES Article 1.—Explanatory.

Par. 1. Should give definitions.

Par. 2. Should give reasons for entering into this agreement.

Par. 3. Should describe territory covered.

#### Article 2.—Franchise Rights.

Par. 1. Should show that parties must have franchise rights in order to become a party to this agreement.

Par. 2. Should state that no franchise rights would be surrendered by any party entering into this agreement.

#### Article 3.—Joint Privileges.

Par. 1. Should outline privileges to be accorded to the parties to this agreement.

#### Article 4.—Ownership.

Par. 1. Should show status of the ownership of the line.

Par. 2. Should designate the apportionment of the initial cost.

#### Article 5.—Installation.

Par. 1. Should apportion the expense of rearrangement of attachments and replacement of poles where same is changed for the sole convenience of any party.

Par. 2. Should cover the installing of apparatus and the apportionment of the attendant expenses.

Par. 3. Should show the apportionment of pole and the ar-

\*Committee report presented at the thirteenth quarterly meeting of the Street Railway Association of the State of New York, held at Syracuse, March 22, 1911.



rangement of attachments. (Refer to specifications and drawings in appendix "B").

Par. 4. Should cover performance of work and maintenance of attachments.

Article 6.—Operation.

Par. 1. Rules covering the operation of jointly occupied pole lines.

Par. 2. Should cover the care of fixtures and appliances.

Par. 3. Should cover the right of access to pole and pole lines by employes of the parties to this agreement.

Par. 4. Should specify the operating condition of attachments regarding safety, etc.

Par. 5. Should provide for special construction.

Par. 6. Should cover the change of pole structure or its location, or the location of line due to any cause whatever.

Article 7.—Maintenance.

Par. 1. Should show responsibility for maintenance.

Par. 2. Should show apportionment of expense.

Par. 3. Should provide for notice of required renewals and repairs.

Article 8.—Reconstruction.

Par. 1. This should designate the method for carrying out reconstruction plans.

Article 9.—Removals.

Par. 1. Should provide for notice of removals.

Par. 2. Should provide for the reapportionment of remaining interests.

Article 10.—Payments.

Par. 1. Should cover all details regarding payments when occupancy is on a mutual basis.

Par. 2. Should cover all details regarding payments when occupancy is on a rental basis.

Note—Whichever basis is used in the agreement, the fixed charges, taxes, etc., should be considered, as well as other expenses.

Article 11.—Liability.

Par. 1. Should cover liability during construction.

Par. 2. Should cover liability during operation.

Par. 3. Should cover liability for maintenance.

Article 13.—Arbitration.

Par. 1. Should provide for arbitration in case of disagreement between parties.

Appendix "A"—Special.

Par. 1. Being a blank form providing for this agreement to supersede one or more previous agreements.

Par. 2. Being space to provide for fliers or inserts which may be required by local conditions, to be numbered with sub-letters of the articles to which they refer.

Appendix "B."

The necessary specifications and drawings showing clearances, apportionment of pole space, method of attachment, etc.

(The remarks about drawings and specifications refer to possible future documents.—Eds.)

## THE NEW YORK SUBWAY PROPOSALS

Frank J. Sprague has made public a letter which he sent to George McAneny, chairman of the committee on rapid transit proposals of the Board of Estimate of New York, asking if the committee intended to consider the subway proposal submitted by himself and Oscar T. Crosby. Mr. Sprague concluded his letter as follows:

"In accordance with the tenor of our letter of Feb. 16, 1911, and the terms of our proposal of Jan. 25, 1911, we beg to notify you that we now withdraw the same as of the date of March 21, 1911. Should, however, the hopes of those now conducting rapid transit negotiations for any reason prove futile, we shall still be prepared to bid for the equipment and operation of any independent line which appeals to our judgment."

The members of the Public Service Commission and the officers of the Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company are still considering in conference the proposals of these companies.

## QUARTERLY MEETING OF NEW YORK ASSOCIATION

The thirteenth quarterly meeting of the Street Railway Association of the State of New York was held at the Onondaga Hotel, Syracuse, on Wednesday, March 22, 1911. There were over 60 delegates in attendance at both the morning and afternoon sessions.

### THE DINNER

The meeting was preceded by a dinner at the Hotel Onondaga on the evening of March 21. After the completion of the dinner President John H. Pardee called attention to the successful work of the entertainment committee and expressed the thanks of the association and its officers to the committee and C. Loomis Allen.

C. Arthur Benjamin, of Syracuse, was then introduced as the toastmaster of the evening.

E. J. Page, in response to a toast, said there had been a change in the attitude of public service corporations and that the people familiar with their affairs now realized that the assets of these companies were of two kinds. The first class was represented by stock, bonds and other evidences of indebtedness issued for property and the skill required to create the property. The company was entitled to dividends and interest, a fair return on the money and skill invested. The second class was composed of intangible assets. On the assets composed of franchises the public was entitled to a return in the form of good and safe service at as low a rate as was consistent with returns on the money and skill invested in the property.

Robert M. Searle, vice-president Rochester Railway & Light Company, and Thomas W. Meacham, of Syracuse, responded to toasts.

Mr. Pardee said that the progress of railways had been hampered by laws passed by New York and other States which said in effect to the projectors of new enterprises: "Gentlemen, if you lose you can charge the amount to profit and loss; if you win you can earn as much as you would get on any safe, secured loan." The extreme legislative measures that had been passed had demonstrated to the people that railways should be fostered and needed assistance in order to be of the greatest value in the development of the country. Any man who invested in a new railway enterprise risked absolute failure and was entitled to a large return on his investment. If less than a large return was to be allowed on railway capital the same restrictive laws should be applied to all necessities of life. Mr. Pardee thought, however, that the radical movement had been so extreme that its very excess had caused a reaction, and that the pendulum was now swinging backward. He predicted that as the public received a knowledge of the benefits resulting from railway development its attitude would change and that greater prosperity would be realized in the future.

### DISCUSSION ON STEEL WHEELS

The first order of business at the morning session was the presentation of a paper on "Economical Limit for Flange Wear on Steel-Tired and Rolled-Steel Wheels" by John Sibbald, master mechanic of the Fonda, Johnstown & Gloversville Railroad. This paper is published elsewhere in this issue.

The discussion on Mr. Sibbald's paper was opened by G. M. Cameron, master mechanic of the New York State Railways, who contributed the following notes:

"The question of determining the economical limits of flange wear of steel-tired and rolled-steel wheels is a very complicated one. One might make a careful study of the wheel and flange wear on a pair of wheels of a given truck and from this study develop a set of rules regarding the economical limits of wear, but the first exception to this rule would probably be found in the other pair of wheels belonging to the truck in question. As long as there are varying conditions which cause flange wear, there will be different economical limits to such wear. In fact, it is a question which calls continually for the exercise of good judgment. The number of turnings which a wheel or tire should have cannot, in my opinion, be predetermined if economy is to be obtained. Frequent turnings require lighter cuts, and undoubtedly result in cutting away less metal than



when but two or three turnings are made. The labor cost will be higher, however, for frequent turnings. It requires a careful consideration of each case, with a study of its own peculiar conditions to determine the proper number of turnings which will result in the greatest economy.

"The fact that flange wear is not uniform precludes the possibility of adopting any fixed rule regarding the economical limits of wear. The safe limit is not the same as the economical one. A flange can be worn pretty thin before it becomes unsafe, but when it is so worn it will require a deep cut in order to obtain a flange of the original dimensions. This will not prove economical. It is fortunate, however, that the economical limit comes ahead of the safety limit, as safety should have the first consideration and should never be sacrificed for the sake of economy.

"In determining the economical limits of flange wear the cost of getting wheels to and from the shop enters as an important factor. If cars are stored or housed near the shop, it would be more economical to have frequent turnings. If wheels have to be removed from trucks and shipped to the shop it would be more economical to have fewer turnings and wear the flanges thinner. Sometimes it proves to be a good policy to wye the trucks when the flanges of the leading wheels are found to be wearing thin. I do not believe this is a good policy unless wheels have to be shipped some distance for turning. It is better in most cases to watch carefully for signs of uneven wear, and when it appears take a light cut off all wheels so as to make them uniform.

"It is very important in turning that no excess metal be cut away. The man who does the turning is apt to estimate the depth of cut necessary to secure a flange of the proper dimensions. This estimate will, no doubt, be in excess of that required. The result will be a cutting down of the total mileage which the tire or wheel can make. The careful use of a flange gage will prevent cutting away an excessive amount of metal. Another good method consists of making a template of the tread and flange of a wheel or tire which is to be turned. This can be done by pounding a soft copper wire to the shape of the flange and tread. By the use of this wire a curve can be drawn which represents exactly the contour of the wheel or tire section. By taking another curve which represents the contour of a true or unworn wheel or tire section and placing it beneath the curve of the worn wheel in such a way that the two curves do not intersect, but are tangent at the point of greatest wear, the exact amount of metal to be cut away for securing a proper flange can be determined. This method is accurate, although somewhat tedious. We began using it some time ago in Rochester as a check on the machinist who turns the tires. If  $1/16$  in. excess cut should be made it would show a considerable effect upon the life or mileage of the tire, as the following figures will indicate: Take a standard 34-in. tire with a  $2\frac{1}{2}$ -in. rim, allow 1 in. thickness of rim when the tire is scrapped. If two turnings are properly made during the life of the tire, they will average about  $\frac{3}{8}$  in. per turning, or a total of  $\frac{3}{4}$  in. This leaves  $\frac{3}{4}$  in. for actual wear. If a mileage of 100,000 be assumed for this tire, an actual wear of  $1/16$  in. would represent a mileage of 8344, which is 8.3 per cent.

"Where steel tires are used the centers should be made of such a diameter as will permit wearing the tires to such a point that they must be discarded on account of lack of mechanical strength. This is dependent usually upon the proper motor clearance. Some roads are obtaining economical results with rolled-steel wheels by wearing them down to a certain size in interurban service and then transferring them to city service, where much more wear can be obtained. This is not practicable for the smaller systems.

"Rapid flange wear may be caused by mismated wheels. We have not experienced much trouble of this nature, but we make a practice of taping all tires before they are fitted to the centers. It may be caused by wheels varying in degree of hardness. This latter cause is found more frequently in rolled-steel wheels than in steel tires. The chief objection against rolled-steel wheels has been their softness after the first turn-

ing and the consequent rapid wear. I believe, however, that considerable advancement has been made recently in the manufacture of wheels and that they are now being rolled with a fairly uniform density of metal in the rims.

"Wheels should be properly placed on the axles in order to prevent unnecessary wear. It is not sufficient that they be spaced to the proper gage, but they should be spaced at equal distances from the center of the axle. Trucks should be kept square. We make a practice of checking up our trucks at the regular overhauling periods by the use of a special tram and gage. I might state, however, that we have not found many cases of trucks not being square. Another cause of rapid flange wear is the use of a flanged brakeshoe improperly set. It is not economical to wear away the flange for braking purposes. If a flanged shoe is used at all, care should be taken to secure the proper flange dimensions and see that the shoe is set so that it will not bind against the side of the flange. I believe that this is one of the most important items to watch when trying to secure economical flange wear."

Mr. Cameron was followed by F. J. Doyle, master mechanic of the Schenectady Railway. Mr. Doyle said that the taping and matching of steel wheels when first applied was an important feature in connection with flange wear. He had found a difference of  $3/16$  in. to  $1/4$  in. in a pair of wheels which had been mated and marked for the same axle. If these wheels had been applied excessive flange wear would have resulted. Even if the wheels were properly mated and mounted there was still another point to consider, namely, whether or not one wheel was a little softer than the other. The wheel manufacturers ought to look into both of these points.

R. A. Dyer, Jr., assistant general manager and electrical engineer of the Rochester, Syracuse & Eastern Railroad, said that it was not necessary to turn all the wheels on a car because one wheel had a sharp flange. He put single wheels back into the truck regardless of the diameter of the other wheels.

J. P. Barnes, electrical engineer, Syracuse Rapid Transit Railway, then read the following notes:

"The cost of turning wheels includes not only the cost of the operation in the lathe, but also the cost of removing the wheels and replacing them under the car. Obviously, the fewer times this expense is incurred, the greater will be the ultimate economy provided that the wheel mileage remains the same. We are operating rolled steel wheels under three distinct and different conditions:

"First, under 38-ton cars, in high-speed service, over an electrified steam road (between Syracuse and Utica); second, under 26-ton cars in high-speed interurban service (between Rome and Little Falls); third, under 20-ton cars in city and suburban service (in and around Utica).

"The first class uses 37-in. wheels, while the other two classes have 35-in. wheels. In the first class of service we obtain a mileage of 130,577 for the rolled-steel wheels; in the second class we obtain 176,214 miles; in city service the mileage is 106,829.

"Comparing the two classes of high-speed service, the total reduction of diameter before the wheels are scrapped is the same in both cases. The wheels are similarly handled in the shop, being turned in the same lathe and by the same workman. Why, then, do we get more mileage from the smaller wheel than from the larger? This seeming paradox must be explained by something outside of shop conditions. When we compare the two classes of service, we find the conditions to be as follows:

"The cars in the one class of service run through the city streets of Utica, while the cars in the other class of service run through the streets of Syracuse as well. The track work of the latter city was designed for the operation of city cars with chilled wheels. Therein lies the limiting condition of flange wear, and not at all in the consideration of ultimate economy. Danger of derailment sets the limit for flange thickness (or rather for flange thinness and sharpness) and renders it impossible to compare even these two neighboring roads on a common basis.



"Considering the matter of turning wheels, another interesting feature comes to light. The life of a wheel seems to be practically independent of the number of turnings given the wheel before it becomes too small for use. The following figures, taken from wheels in high-speed service under 38-ton cars, illustrate this very clearly.

"Wheels worn out after one turning made 139,898 miles (one pair).

"Wheels worn out after two turnings made 129,724 miles (one pair).

"Wheels worn out after three turnings made 131,829 miles (six pair).

"Wheels worn out after four turnings made 130,923 miles (seven pair).

"Wheels worn out after five turnings made 112,171 miles (one pair).

"It is noticeable that the wheels which wore out after three and four turnings respectively gave very close to the average mileage (130,577) of all wheels in this class of service; also that there was but 906 miles difference between these two groups of wheels. I am at a loss to explain this fact, and I should like to know if it is checked by observations on other roads. The matter of interdependence of flange limit and track conditions seems to me to be one of the salient points in considering the adaptability of the steel wheel for city service. This, together with the immunity from broken flanges on the one hand, and the noise in curves and flat wheel possibilities on the other, seems to open up an interesting chain of compromises. How far have these considerations controlled the fixing of flange limits in other localities?"

Mr. Dyer said that another kind of flange wear not mentioned was that due to the wear of the flange against the rail on curves. This wear varied, but seemed to be a factor of the speed more than anything else. On the Rochester, Syracuse & Eastern Railroad a great many of the thin flanges showed that the cutting and wear were apparently in radial lines as the wheel traveled along the rail. The wearing effect of the brakeshoe did not remove this appearance. Perhaps these lines were due to the low center of gravity of the truck, the weight of the truck and motors, the speed, etc.

Mr. Sibbald said that he had observed the radial lines on the wheels of his steam locomotives.

President Pardee asked about the relations between the swiveling of trucks and the wear of wheels. Would a roller-bearing bolster obviate some of this wear?

Mr. Sibbald stated that cars so equipped with roller bearings had shown an improvement in flange wear over other cars operating under the same conditions.

W. J. Harvie, chief engineer, Oneida Railway, said that the installation of ball-bearing center bearings had made a very material reduction in the flange wear. He found, however, that the ball-bearing side bearings were of comparatively little value. All the value was in the center bearing.

Mr. Doyle added that he had noted that the roller type center bearing reduced and also prevented flange wear.

R. E. Danforth, general manager Public Service Railway, Newark, N. J., remarked that a most noticeable improvement in flange wear was obtained by using ball-bearing center plates on short-wheel base trucks with outside-hung motors, as such trucks do not usually square to gage. Their tendency is to keep "nosing" all the time. The inequalities in the track caused a grinding action on the wheel flange, which was accentuated and exaggerated if the center plates were stiff. He had found in using a large number of center bearings that before long extensive repairs were necessary. He would therefore suggest to those who contemplated the use of ball-bearing center plates that they look into the matter of the life obtainable from the balls and ball race. Mr. Danforth inquired how the loading of the motors was affected where wheels of different diameters were used on the same car—for instance, if three motors drove 33-in. wheels and the fourth drove a 34-in. wheel, would not the single motor then be obliged to carry more than its share under full load conditions?

H. S. Williams, Peter Smith Heater Company, said that he had made observations on steel wheels similar to those recorded by Mr. Sibbald. Mr. Williams then presented a drawing of a wheel section enlarged sixfold and delivered a talk on the economy of permitting the flange to wear as thin as possible. Mr. Williams' arguments were similar to those contained in his paper on "Wheel Turning" presented to the Central Electric Railway Association on March 23 and published elsewhere in this issue.

Mr. Dyer suggested that the representatives of the steel wheel makers be invited to explain the differences in wheels furnished. He had had occasion recently to remove four pairs of wheels in making a trial with new gears and pinions. Two pairs had been turned twice on account of flange wear, one pair had been turned once, while the fourth pair, which had never been turned, proved to be in the best condition.

M. J. French, engineer maintenance of way, Utica & Mohawk Valley Railway, referring to Mr. Barnes' remarks, thought it would be interesting to compare the special work mileage in Utica and Syracuse to see whether it was proportional to flange wear.

Mr. Harvie alluded to Mr. Danforth's remarks and said that the use of short wheel-base trucks with outside-hung motors, as on some of the Syracuse cars, might account for the greater flange wear.

Mr. Danforth brought up the question of the most economical and efficient brakeshoe for use with steel wheels. Several of the delegates said that they had found the soft gray-iron shoes furnished by the truck builders to be far too short-lived for high-speed interurban service. Mr. Dyer pointed out that when an emergency braking application is made the heat generated is great enough to soften the hard shoe, thereby giving the required braking efficiency when it is most needed.

Mr. Danforth favored the one-wear wheel which had been advocated by H. A. Benedict, now mechanical engineer, Public Service Railway. If it is possible to get for light suburban service a wheel hard enough to give 60,000 to 70,000 miles without turning the railways could then afford to throw it away, assuming that it could be bought for something under \$10. On the other hand, could street railways afford at any price to use steel wheels on short wheel-base trucks in heavy city service, as compared with the cast-iron wheel? Under the latter conditions the flange wear of steel wheels was so excessive that they might cost twice as much as cast iron. Out of 100 steel wheels only 10 may prove tough enough for the service. Perhaps it would be possible to improve the cast-iron wheel by the addition of nickel or some other strengthening element. If this was done we might get something akin to steel and the problem of the one-wear wheel would be solved.

Mr. Collins said that in Amsterdam, where there are grades up to 14 per cent, the substitution of steel for chilled cast-iron wheels had greatly bettered the traction and braking conditions.

Mr. Dyer mentioned that he had asked the steel makers about the possibility of giving wheels a heat treatment similar to that for axles. This refinement of the metal and reduction of crystallization should have a favorable effect on wheel and flange wear. He was thinking seriously of having a set made for experiment.

Clark Prather, superintendent motive power, Buffalo, Lockport & Rochester Railway, said that the diameter of wheels was a factor in wear. In selecting a wheel one should use the largest diameter possible. The difference in the number of revolutions between a 34-in. and a 36-in. diameter wheel was 25 per mile, or 25,000 revolutions in 1000 miles. On a line with many curves such a difference meant appreciably greater flange wear. His company was now changing from 36-in. to 37-in. diameter wheels.

Mr. Harvie asked what was the permissible variation in diameter for wheels on the same axle and for different pairs of wheels under the same car. One delegate replied that in the first case it should not exceed 1/32 in. If it was more than this he used an emery shoe to reduce the variation. The wheels are gaged to 1/32 in. by raising and taping them.



Mr. Sibbald said he had formerly permitted a difference of 1/16 in. for wheels on the same axle, but after getting the data upon which his paper was based he went to 1/32 in.

Mr. Cameron said that he tapered his wheels, allowing 1/8-in. difference in circumference, which was equivalent to less than 1/16-in. difference in diameter.

The discussion was concluded by a suggestion from Mr. Dyer that the president invite representatives of the steel wheel makers to give their views of this subject at the next meeting.

#### JOINT USE OF POLES

As chairman of the committee on the joint use of poles, W. J. Harvie read the report printed elsewhere in this issue. He was followed by B. Penoyer, engineer maintenance of way, Schenectady Railway, who read the following comments on the report.

"Article 1.—Territory Covered.—It would seem that under this section local conditions would govern. It might be desirable to exclude certain sections or streets in the same city or town on account of one company desiring to use a certain type of pole or structure which would not be adapted to the use of other companies.

"Article 3.—Joint Privileges.—I believe that all companies should have equal privileges where any are accorded.

"Article 4.—Ownership and Initial Cost.—Where it might be desirable to enter into a joint ownership proposition in certain sections or in the event of new lines being installed I do not believe this should include all poles. As to apportionment of initial cost this would necessarily be determined by the terms of the agreement; that is, whether the line would be on a jointly owned or jointly occupied basis.

"Article 5.—Installation.—Should attachments be rearranged and poles replaced for the convenience of one party, such party should bear the entire expense of same. The other parties occupying pole or poles at the same time are to rearrange their attachments and apparatus, billing the party for whom the changes were made. Should the pole line be on a joint occupancy basis, pole replacements are to be made as the owner may elect. The arrangements of attachments are to conform to specifications which would be a part of the agreement.

"Article 6.—Operation.—Each party should care for its own fixtures and appliances, as per specifications attached. Each party shall have the right to pass over that part of pole or structure set aside for the use of the other party or parties. All attachments made on poles jointly used should be constructed, erected and maintained in accordance with the specifications and should be kept at all times in a safe condition and thorough repair.

"Article 8.—Reconstruction.—If at any time after the wires and fixtures are installed the said pole line shall require reconstruction throughout the work shall be done subject to mutual agreement of all parties hereto as to size of new poles and manner of doing work.

"Article 9.—Notice of Removal.—If any of the parties hereto shall at any time desire to discontinue and relinquish the use and occupancy of any of the said poles, they may notify the other parties hereto in writing to that effect, and shall at once remove its wires, fixtures and attachments from said joint pole or poles. All right of interest of such party so removing its wires, fixtures and attachments shall forthwith cease and it shall not be liable for the maintenance, operation, rental charges or taxes thereof incurred after such discontinuance or joint-occupancy basis. In the event that the owner shall remove its attachments opportunity to acquire ownership shall be given to the parties having next prior right to pole-line location.

"Article 10.—Payments.—As to (a) joint occupancy, taxes and regular maintenance shall be prorated and paid to the owner as follows: Taxes annually and maintenance monthly. As to (b) joint-ownership basis, all taxes and maintenance should be prorated. As to (c) rentals, the renter shall pay a yearly rental based on schedule shown on sheet No. . . . according to record of approved count as of July 1. Payments to be made before . . . .

"Article 11.—Liability.—Each party hereby agrees to indemnify

the joint occupants and to hold such party or parties harmless from any and all loss or damages either to persons or property caused by its negligence, either in respect to the construction, maintenance or operation of said joint occupancy of poles."

C. L. Cadle, chief engineer of the New York State Railways, contributed the following notes:

"The first method considered was for all parties to own the pole line jointly, and the second method was for one party to own the pole line and the remaining parties to rent such portion of the pole line as might be agreed upon. Both methods of ownership give all companies equal rights, but the latter is more specific in that it places the responsibility of the maintenance more particularly in the party owning the poles. Under this method, it would seem to me that the pole line, wherever possible, should be under the ownership of the railway companies, as they will probably have overhead wires in the streets long after all the other parties have their attachments placed in subways.

"In order to be perfectly fair to all the parties concerned, it would seem that the original occupant of a street with a pole line should be the owner of the poles under a joint agreement. In case this party should take off all its attachments and abandon the line, the ownership should fall to the next party owning prior rights and having been in the street the greatest number of years. Regardless of the method of ownership, some one party must be primarily responsible for the safe maintenance of the pole line. This responsibility should preferably be placed in the party owning the majority of the attachments, or that party which would be likely to have attachments on the poles the greatest number of years. Each party, of course, should maintain its own attachments and place sufficient guys wherever it subjects the poles to extraordinary strains on account of the running of lateral wires, etc.

"In an agreement which will cover all conditions of attachments, there should be a set of standard drawings showing the height and size of the pole, spacing of cross arms, clearance between wires on the arms and clearance between electric light, telephone and railway wires or cables. These drawings should specify the minimum operating and test voltages of insulators allowable for different line voltages which are now standard practice in this country for light and power purposes. The minimum size and specifications of all wires should also be given for a predetermined span and sag. A liberal factor of safety should be allowed in determining the size of the wires, whether they be telephone, electric light, power or high tension wire or cables.

"The subject of foreign cables and wires crossing a jointly occupied pole line has not been touched upon. I think this is a very important point and should receive as much consideration when an agreement is drawn up as the specifications covering the attachments on jointly occupied poles.

"From the standpoint of safety, would it not be better to have the high-tension transmission lines placed at the top of the pole, the electric light wires second, telephone wires third and railway cables fourth? Some companies prefer to have the telephone wires at the top of the pole, but this does not seem to me to be the best method, as in this case if a telephone wire breaks it is pretty sure to fall on an electric light wire, which usually carries a high potential. By placing the electric light wires at the top there would be less liability of accidents, as these wires are usually of heavier construction and of less number. Between the electric light and the telephone wires there should be a reasonable clearance to enable workmen to work on the telephone lines without endangering their lives by coming in contact with high-potential current. There should also be a reasonable clearance between all pole wires to enable the workmen to have free access up and down the pole in order to perform their duties with safety. This distance in no case should be less than 24 in. for telephone wire and for electric light and power cables not less than 30 in. Provision must be made on the poles for cable boxes, cable box seats, transformers, trolley brackets and street light fixtures when the



agreement covers telephone, electric light and railway attachments. All services to these attachments which run vertically should be properly protected by means of molding, conduit or other approved protection to guard against accidents caused by workmen coming in contact with high voltages or injuring the sheath of cables.

"There always comes a time when it is necessary to reconstruct a line throughout by putting in new poles, new cross arms or new guys, etc. This is a matter which should be left as open a question as possible in an agreement of this sort, as conditions change so much during the life of a pole that it is nearly impossible to predict what the standard construction will be at the end of, say, 15 years; also, it is often advisable on account of local conditions to change the location of the line or of individual poles. The main point to be considered in the use of jointly occupied poles is to have the line so constructed and so maintained that it will be as sightly as possible and provide for the maximum safety of the general public as well as the company's employees interested."

C. S. Stanton, electrical engineer, Otsego & Herkimer Railroad, suggested that all poles be labeled or stenciled so that linemen could tell what class of work they were to do.

E. F. Peck, general manager Schenectady Railway, said the report on the joint use of poles had been suggested by his experience in Schenectady. He had been asked to enter into a joint agreement with the telephone and lighting companies. The contract submitted had been prepared by the National Electric Light Association and the telephone companies, but while it contained many excellent features its authors had unfortunately overlooked the electric railways. He hoped that the work of the present committee would be continued and elaborated to safeguard the interests of the electric railways in future contracts of this nature.

C. Loomis Allen, general manager of the Utica & Mohawk Valley Railway, and Mr. Collins fully agreed with Mr. Peck's suggestion that the committee be continued. Mr. Allen said that no joint occupancy should be entertained unless all the users had franchise rights. The maintenance should be done by one party alone, while the others participated in the cost. As to liability in connection with workmen and public, the common law on liability should govern. He also thought it desirable that a representative of the Public Service Commission of the Second District should if necessary be asked to act as a mediator should the railway, lighting and telephone companies fail to agree on any points.

Mr. Dyer said that in the joint agreements drawn up by his legal department there was a clause which made each company liable for injuries to its own workmen, but not liable under other circumstances.

J. K. Choate, general manager Otsego & Herkimer Railroad, remarked that it was not always desirable to enter into a contract for the joint use of poles in communities where there was a strong sentiment for placing telephone wires and even lighting wires under ground.

E. F. Seixas, general manager Niagara, St. Catharines & Toronto Railway, said that in Ontario the conditions concerning high tension pole lines are decided by the government. Aside from this, the joint users of poles have simple contracts with the almost invariable clause that each company is liable for injury to its own men who work on the poles.

The meeting then passed Mr. Peck's motion that the committee be continued and that it take up this matter with the National Electric Light Association, the telephone companies and the legal representatives of the railways for report at the June meeting. It was understood that the proposed form of agreement would be broad enough to cover both rental and joint ownership bases.

#### DISCUSSION ON INTERURBAN RULES

J. K. Choate, Otsego & Herkimer Railroad, took up the question of interurban rules. He said there was no more important subject than the adoption of interurban rules. A large number of papers had been written on this subject and a great deal of work had been done in relation thereto. At

Cooperstown nine months ago it was suggested that this association should adopt a code, and a motion to that effect was passed by the association. At that time many companies had these rules set in type. There would have to be certain local rules necessary to adapt the code to local conditions. He thought that the Denver code, with possibly some revisions and changes in the numbering, should be placed in operation by the New York State railways, and suggested that a resolution on this subject should be passed by the association and sent to the Public Service Commission, so that a code should become standard for all railways in the State, whether in the association or not. He, therefore, moved the appointment of a committee of three to revise and recommend rules for adoption by interurban lines consisting of the rules adopted at the Denver convention and that the committee fix a date for placing the rules in operation on the New York State railways. No roads had adopted the code as passed at Denver. A positive date for adoption should be set.

W. H. Collins, general manager Fonda, Johnstown & Gloversville Railroad, said that a resolution for the adoption of rules now was scarcely necessary. Last June the association adopted the Denver code, but it developed at a recent conference at Syracuse that the rules had not been put into general use by the roads of the State. Many roads were still operating under the old code adopted at Kingston, N. Y., and he did not believe they would care to change. He had about made up his mind to wait on the action of the committee of the American Electric Railway Association. The American association had failed to make any recommendations last year, but the committee intended to go into the subject very thoroughly this year. The committee should consider the Denver code as the basis of a new code, and should give some attention to the renumbering of the rules to conform more closely to the American Railway Association code. He hoped that the committee would report a code that all roads, with the possible exception of roads operating under practically steam railroad conditions, could adopt. Those roads could use the American Railway Association code.

H. C. Donecker, secretary of the American Electric Railway Association, said that the committee on interurban rules of the association would meet on April 11 at Chicago, and he would assume the responsibility of suggesting that any committee which might be appointed by the New York State Association should meet with this committee.

C. Loomis Allen, general manager Syracuse Rapid Transit Railway, said that his idea was that some code should be adopted as a basis and changes could be made every year in that. The Denver code had been accepted by a majority. The reconciliation of the differences was absolutely impossible. He thought the strong point for which the association should strive was the perfection of a code that would be approved by the public service commissions of the country. The Indiana commission was the only one, he believed, which had approved a code, and its action had been of value.

Mr. Choate said that Mr. Allen had expressed exactly the ideas he wanted to convey ever since he had been connected with electric roads. He had been adopting codes and had never done anything with them.

J. P. Maloney, superintendent Albany & Southern Railroad, said that that company had about decided to go ahead and issue its code of rules.

John H. Pardee, New York, said that an attempt had been made to prepare a code to fit the conditions prevailing on every railroad. He did not believe it possible to prepare such a code. It was possible to prepare a code in which the important points should be covered. This code would meet with the general conditions, and amendments could be made by individual companies to fit the code to their conditions. The Public Service Commission wanted a decision on this subject and some definite code adopted.

The association then adjourned for lunch. After lunch the following resolutions, representing the ideas of Messrs. Allen and Choate, were adopted by the association:



"Resolved, that a committee of three be appointed by the chair to present the standard code of rules for interurban and city operation of this association to the Public Service Commission for the Second District of the State of New York for approval and to urge the adoption of the same and to ask that a date be fixed by the commission when such a code should be adopted and be in force by the electric railways under their direction."

#### STIMULATING SUMMER TRAFFIC

The paper by R. H. Smith, Albany Southern Railroad, on "Building Up of Interurban Territory and Best Method of Stimulating Summer Traffic" was then read by R. M. Colt. This paper is published elsewhere in this issue. After this paper was read C. E. Holmes discussed this subject.

C. E. Holmes, assistant general freight and passenger agent Otsego & Herkimer Railroad, said he was particularly interested in the statement of Mr. Smith that increasing revenue was considered as great a field for endeavor as the reduction of operating expenses, for it showed that the traffic department on electric roads must be recognized as an important factor in their development. On many of the electric roads in the State the question of development had become broader than that of catering to the commuter. The man interested in the development of the section in which he lived, either by the introduction of manufactures or by the upbuilding of its agricultural and commercial interests, was the man that was wanted. The commuter was bound by certain limitations which the other man did not know. He must live within a short ride from his business, consequently making the per capita fare very small. He required train service at peak-load periods and many times the adoption of a train service that could not be properly balanced to secure economical operation.

The interurban road needed the man who would establish shops and factories, build up and make better the stores and hotels of the cities and villages, increase and diversify the production of the farms, and by so doing bring into the territory men to carry on these increased activities who, with their families, would travel for business and pleasure, at the full tariff rates for long hauls. The upbuilding of the homes and business created a prosperity, Mr. Holmes said, that could not fail to draw others to the same location. The instilling of thoughts of active endeavor along commercial, manufacturing and agricultural lines, and co-operation with all these interests in the production of the best results, was the traffic man's field of labor and that which most increased the revenues of the interurban roads.

Mr. Holmes said that the territory reached by the road which he represented was principally a farming one, and an endeavor was made to keep in touch with all the farmers. He wanted to know the size of the farms, the number of cattle kept, the amount of crops produced and what was for sale. It was desired that the producer and buyer should consider the traffic department a ready reference in matters of this kind, and through this means it was believed that the upbuilding of the territory would be accomplished more easily. It was desired to accomplish the same results with merchants and manufacturers by bringing to them the consumers they were best qualified to serve and giving a freight and passenger service to place them on an equality with their competitors at other points.

In the stimulation of summer travel to the parks and amusement places found on nearly all electric lines, Mr. Holmes thought the vaudeville, minstrel and theatrical performances certainly had a great value, but the numerous performances of this kind in every city or village of any size had detracted somewhat from their usefulness in inducing people to visit the summer parks. He was of the belief that larger attractions of various kinds, such as the army maneuvers mentioned by Mr. Smith, athletic contests, field days under the auspices of fraternal and other organizations and, perhaps, an exhibition with a flying machine, were of greater value.

One of the best sources of summer business on interurban lines so situated as to offer the attraction, is the opportunity for camps; and full information as to the available camps,

rents and natural advantages should be in the hands of the traffic department, be printed in its folders and be included in the advertising matter sent out. On the line of the Otsego & Herkimer Railroad were two lakes, on the shores of which nearly 200 families camped. During the summer months the constant change of tenants, the visits of their friends and the numerous trips of the campers themselves formed a very satisfactory revenue and one that the company endeavored to increase by every means in its power.

Excursions worked up through some organization and scheduled on days when the natural or encouraged traffic was the lightest, were important sources of summer business. Mr. Holmes believed that one of the best methods of securing this business was a personal visit to the officers of the fraternal societies, superintendents of Sunday schools, and others in similar positions.

Mr. Holmes declared that rates did not always play an important part in securing this business. Many times the service offered or the ability to make attractive representation of picnic places would secure the business, even at a higher rate than that offered to other places. Advertising inside the local cars would certainly keep the regular patrons and some others informed as to the attractions offered, but he believed that a banner on the pilot or front of the car was better, supplemented by half or full-sheet posters and window cards and small dodgers for details. The best advertisement for increasing regular traffic on interurban roads was the service offered, taking into consideration not only an adequate number of cars, regular service, etc., but also the connections with other roads, cleanliness of cars and particularly the courtesy shown by employees.

R. M. Colt then discussed the paper by Mr. Smith. He said that in securing passenger business the policy of the company to its patrons and particularly the attitude of the traffic officials had a great influence upon the earnings. If their personality was agreeable and they were aggressive and secured confidence and retained it by never promising to do what they could not perform, patronage would follow. Business could be stimulated by the establishment of special events. Firemen's conventions, social meetings and dancing parties could be arranged between the people of different cities. He found that this additional business could be handled, as a rule, by the regular service. The community wanted pleasure parks, and company amusement resorts should be located near the center of the property in order to attract excursion business. Lower rates were also essential in this business. Excursion business should never be solicited on a rainy day. He expected to stimulate business this year by installing free attractions, such as baseball games by semi-professional teams. He did not think it desirable to have theatrical performances on Sunday. He believed in the use of large space for newspaper advertising.

J. Stanley Moore, general passenger agent Syracuse, Lake Shore & Northern Railroad, asked about winter resorts. He said that the public liked to be considered. It was important to have attractive advertising literature.

R. M. Colt, general passenger agent Fonda, Johnstown & Gloversville Railroad, said that he tried at one time to maintain an outdoor skating rink, but the fact that it was out of doors made it unsuccessful.

B. E. Wilson, general passenger agent New York State Railways, stated that skating should be advertised as an attraction in connection with city lines, but that it was a difficult matter to arrange successful winter resorts for interurban lines.

#### OHMER FARE REGISTER IN CITY SERVICE

W. C. Callaghan, Rochester, read the paper on "Ohmer Fare Registers in City Service," prepared by John E. Duffy, superintendent Syracuse Rapid Transit Railway. This paper is published elsewhere in this issue.

John F. Ohmer, of the Ohmer Fare Register Company, said that the report apparently carried out the distinction and results he had claimed during the years in which his company had been in business. Some managers claimed that his system was one that was peculiarly adapted to interurban properties, but he



had always maintained that the principles embodied in the register were just as important with 5-cent fares as with fares of higher denomination. He claimed that the transfer had its value. His proposition was merely a business one which began to account for the fare the moment it passed from the passenger to the conductor. In order to get a substantial foundation on which to build it was necessary to have a substantial basis in the collection of fares. Without that the collection was not much more than guesswork. The specifications for the registers adopted in Syracuse were peculiarly adapted to this local property. They had been made and carried out in accordance with what the Ohmer company believed would best serve the interests of the Syracuse company. Mr. Duffy had shown the gradual increase in the ratio of the moral worth of each conductor and how he was able to put his finger on any conductor who was derelict in duty or dishonest. The result was that better discipline prevailed than ever before and he believed the fact bore him out in the statement that the management had better control of its conductors than ever before. The company had charge of the accounting and the conductor was positively outside this branch of the business. With the old type of registers all values were registered together, and the management was, more or less, in the hands of the conductors. The old method had a tendency to divert conductors from the path of virtue.

W. C. Callaghan, superintendent New York State Railways, Rochester, asked Mr. Ohmer about the discipline of the conductors under the new system. Mr. Ohmer said that he understood that Mr. Duffy had said that the majority of his conductors were satisfied with the present operations. Mr. Ohmer believed in the brotherhood of man. If a man was employed as a conductor the presumption was that he was honest until proved otherwise.

Mr. Duffy said that by permitting results with the register to be made public Mr. Allen had done work of invaluable benefit to the fraternity and the association.

Mr. Ohmer said that to have the registers in the car meant the adoption of a mechanical bookkeeping system, which eliminated much clerical work at the office.

H. M. Beardsley, Elmira, asked whether the conditions on the system were the same now as when the system was introduced.

Mr. Duffy said that he was satisfied that the transfer regulations were lived up to better than last year. That was one reason for improvement.

Mr. Allen said that the information received had been very valuable. It had cost a great deal of money and it was an open question whether the company was warranted in the expense of securing the information and of having the necessary checking done.

#### CONCLUDING BUSINESS

Mr. Pardee said that there was a larger attendance at this meeting than at any other quarterly meeting of the association. More than 60 were present.

President Pardee appointed the following committee on inter-urban rules: J. K. Choate, Herkimer; W. H. Collins, Fonda, and T. C. Cherry, Utica.

The annual convention will be held June 27 and 28, 1911, at the Hotel O-Te-Sa-Ga, Cooperstown, N. Y., which was the meeting place last year.

### MEETING OF CENTRAL ELECTRIC TRAFFIC ASSOCIATION ON RATE CHECKING

The Central Electric Traffic Association held a four-day session beginning on March 13, 1911, during which the work of checking up rates for the revision of Joint Passenger Tariff No. 3 was completed. This will be published as soon as the copy can be prepared for the printer. Other routine business was transacted and the meeting adjourned on March 16. The next meeting will be held at Lima, Ohio, on April 12, 1911, at the Lima House.

### POLES AND POLE ACCESSORIES PURCHASED IN 1909

The Bureau of the Census of the Department of Commerce and Labor has just issued Bulletin No. 8 on forest products. This gives the statistics of poles, cross-arms, brackets and insulator pins purchased in the year 1909. Data concerning cross-arms, brackets and insulator pins purchased were collected for the first time. Reports on these accessories were obtained from practically every concern which uses poles.

The total number of wooden poles purchased by pole consumers in the United States in 1909 was 3,738,740, which is the largest total ever reported. The gain over the number reported for 1908 was 489,586, or 15.1 per cent, and over that for 1907 455,472, or 13.9 per cent. For the poles purchased in 1909 the sum of \$7,073,826 was paid, which, although greater by \$1,145,002 than the expenditure reported in 1908, was less by \$1,007,942 than that in 1907, when the average cost of poles was greater than in other years. In 1909 the leading kinds of wood were cedar, chestnut, oak and pine, and poles made of these species formed 92.7 per cent of the total number purchased and represented 95 per cent of the total cost. As in previous years, cedar and chestnut were most important, supplying respectively 65.3 per cent and 16.3 per cent of all poles purchased in 1909.

The growing use of oak is notable. In 1907 only 76,450 oak poles were reported, while the number was 160,702 in 1908 and 236,842 in 1909. Other kinds of wood for which steady gains are shown since 1907 are juniper, tamarack, Douglas fir and osage orange. For cypress, on the other hand, annual decreases were reported. More redwood poles were purchased in 1909 than in 1908, but considerably fewer than in 1907. The telephone and telegraph companies purchased 2,916,005 poles, or 78 per cent of the total number reported. The electric railway and electric light and power companies bought 627,414 poles, or 16.8 per cent of all poles purchased in 1909, and the steam railroad companies, 195,321 poles, or a little more than 5 per cent. Since 1908 there has been an increase of 13.8 per cent in the number of poles purchased by the telephone and telegraph companies and an increase of 18 per cent in the number purchased by the electric railroad and electric light and power companies, while the largest gain, 25.7 per cent, is shown for the steam railroads. Among the poles purchased by the electric railway and electric light and power companies pine poles exceeded in number those of any other species except cedar and chestnut.

The average cost of all poles purchased was \$1.89 in 1909, as compared with \$1.82 in 1908 and \$2.46 in 1907. The somewhat high cost in 1907 is accounted for in part by the lack of complete statistics for that year as to the purchases of short poles, which, of course, have a low average value. The average cost of poles for the electric railway and electric light and power companies was \$3.89. An increase in average cost since 1908 is shown for each group of poles having a length of 30 ft. or over. On the other hand, poles under 20 ft. in length cost 56 cents per pole in 1909, as compared with 62 cents in 1908, and poles from 20 ft. to 25 ft. in length 82 cents in 1909, as compared with 84 cents in 1908, while for those from 25 ft. to 30 ft. in length the average cost was the same in both years.

By far the greater number of the poles reported as treated were made of those timbers which have a naturally long life and were given a light treatment, adding comparatively few years to the life of the pole. It follows, therefore, that the advance in pole preservation as measured by added length of service has been much less in the United States than would be inferred from the number of treated poles reported.

With regard to the number of poles which were treated by the open-tank process no statistics are available, but this practice is known to be increasing. Reports to the Forest Service from 62 commercial and private treating plants show that in 1909 about 1,123,000 linear ft. of pole timber, equivalent to 44,920 poles 25 ft. in length, were creosoted under pressure with from 8 lb. to 20 lb. of oil per cubic foot of timber, and that, in addition, several hundred thousand linear feet were given a



treatment with creosote oil and a zinc chloride solution combined. The plants reporting poles treated under pressure were all in the Southern States and the wood used was chiefly Southern yellow pine. No reports were received from three Southern plants which also treated poles by this method. Among the preservatives reported by the companies which purchased poles were creosote, coal tar, crude oil, various kinds of carbolineum and other patented preservatives.

Of the poles reported in 1909 576,631, or 15.4 per cent, received treatment before or after purchase. This represents an increase of about 232,000, or 67.4 per cent over the number reported as treated in 1908, and an increase of 180,432, or 45.5 per cent over the corresponding number in 1907. In 1908 treated poles formed 10.6 per cent of the total number of poles reported as purchased, and in 1907 12.1 per cent. Of the poles purchased by electric railroad and electric light and power companies in 1909 24.2 per cent were reported as treated, while in 1908 and 1907 treated poles formed respectively 14.7 per cent and 12.4 per cent of their purchases. These companies use poles of high average grade and value.

Treated cross-arms, brackets and pins are used by some companies, but to what extent is not known. According to reports from 62 treating plants 67,000 cross-arms were treated by them in 1909 with from 10 lb. to 14 lb. of creosote oil per cubic foot of wood. The majority of cross-arms are painted before use. The accompanying Table I shows the amounts and costs of cross-arms supplied to electric railway and electric light and power companies.

TABLE I.—CROSS-ARM STATISTICS.

Kind of Wood.	Number.	Cost.	Average Cost per Cross-Arm.
Douglas fir .....	422,198	\$155,960	\$0.37
Pine .....	689,664	238,139	0.35
Oak .....	26,040	7,565	0.29
Cypress .....	6,274	1,633	0.26
Spruce .....	62,325	21,275	0.34
Juniper .....	1,200	248	0.21
Cedar .....	5,710	1,122	0.25
Chestnut .....	5,820	2,360	0.41
Locust .....	4,047	1,193	0.29
All other.....	7,899	2,449	0.31
Total .....	1,231,177	\$432,244	\$0.35

Table II shows the number, cost and average cost of the brackets purchased by the electric railways and the lighting and power companies.

TABLE II.—BRACKET STATISTICS.

Kind of Wood.	Number.	Cost.	Average Cost per Bracket.
Oak .....	779,430	\$17,345	\$0.022
Locust .....	59,669	1,159	0.019
Pine .....	25,844	670	0.026
Douglas fir.....	4,910	128	0.026
All other.....	26,820	564	0.024
Total .....	886,673	\$19,866	\$0.022

The total number of brackets reported in 1909 was 6,167,795 and the amount paid for them was \$94,721. Oak was the principal kind of wood used, furnishing 95.2 per cent of the total number of brackets reported and contributing a high proportion of the total in the case of each class of consumers.

Table III shows the number, cost and average cost of insulator pin purchased by the electric railway, lighting and power companies.

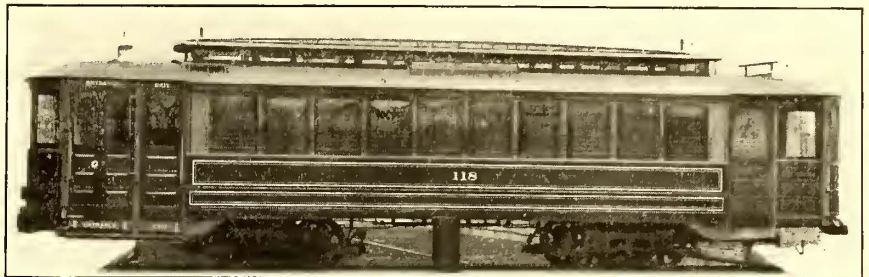
TABLE III.—INSULATOR PIN STATISTICS

Kind of Wood.	Number.	Cost.	Average Cost Per Pin.
Locust .....	3,731,009	\$56,416	\$0.017
Oak .....	614,031	11,314	0.018
Elm .....	31,625	500	0.016
Osage orange .....	115,651	1,839	0.016
All other.....	184,729	3,701	0.020
Total .....	4,177,037	\$73,761	\$0.018

Of the 18,463,041 insulator pins reported, 70.8 per cent were locust, 12 per cent oak and 11.9 per cent elm, these three kinds of wood furnishing nearly 95 per cent of the total number purchased in 1909.

**PAY-AS-YOU-ENTER CARS FOR CHATTANOOGA, TENN.**

The Chattanooga (Tenn.) Railway & Light Company has lately received 10 pay-as-you-enter cars from the G. C. Kuhlman Car Company, Cleveland, Ohio. The most striking feature is the arrangement of entrance and exit doors on the conductor's platform. The entrance side consists of a two-section hinged door which can be opened flat against the pipe rail or be folded between the door post and the end of the pipe rail. The exit has a swinging door which is arranged to close against the corner post of the car. This door has a combination handle and swing catch on the inside, but no provision is made for opening it from the outside. The exit side of the motorman's



Pay-As-You-Enter Car for the Chattanooga Railway & Light Company

platform is provided with the usual combination of single sliding door and folding step.

The new cars are 45 ft. long over the bumpers and 28 ft. 8 in. long over the end panels. The length of the platforms in the clear on the center line is 7 ft. 2 in. and the length of the vestibule over the dash 7 ft. 8 in. The width of the car over the posts is 8 ft. 8 in. and the height from the top of the rail to the top of the trolley plank 12 ft. 3/4 in. The side sills are of long-leaf yellow pine, reinforced with 3/8-in. x 15-in. steel plate and angle irons. The end sills are of oak, reinforced with a 6-in. x 1/2-in. plate which is extended the entire length and bent at right angles at each end for bolting to the side sills. The cross sills and braces are of white oak. The body framing, belt rails and window rails are of ash, but all long rails are of long-leaf yellow pine.

The platforms are supported by two 6-in. x 3 1/2-in. x 3 1/2 in. x 9/16-in. Z-bars, on each side of which are riveted 4-ft. 3-in. x 7-in. x 5/8-in. reinforcing steel plates. Each platform is provided with a Brill angle-iron bumper which is covered with a sheet-steel bumper shield. The roof has 10 ventilator sash on each side and three transom lights at each end. Side ventilators are hinged and are equipped with Ætna bronze ventilator openers, five to each side. The wood roof rafters are of ash, one located at each post and two between posts. This structure is reinforced with steel roof rafters at each post.

The inside finish of the cars is of clear cherry to match the doors, window sash, moldings, panels, etc. They are provided with 16 transverse seats, 33 in. long, eight on each side, and also a transverse seat for one person at each corner of the car. This seating arrangement permits an aisle width of 24 7/8 in. Among the specialties used on these cars are Brill No. 22 special trucks, having a wheel base of 4 ft. 6 in.; "Acme" window fixtures; "Universal" safety treads for the platform steps; Crouse-Hinds "Imperial" arc headlights and Dressel electric headlights for each end of the car; "Dumpit" sand boxes and Ohmer fare registers. The car painting was done throughout with Murphey's paints and varnishes.

By vote of the City Council of Gary, Ind., on March 13, the Mayor of the city was directed to request the removal of the overhead wires and cables of the Chicago, Lake Shore & South Bend Railway Company within the city limits. This company, operating a single-phase alternating-current railway system, employs a transmission voltage of 33,000 and a trolley voltage of 6600. The officials of that city consider that the high-potential wires are dangerous.



## CIRCUIT CONTROLLER FOR RAILROAD SIGNALING

The Union Switch & Signal Company has had on the market for some time the circuit controller shown in the accompanying cut. This device is used in connection with railroad signaling and is the development of a wide experience and a large number of experiments. It has been named the "Universal" switch circuit controller because it can be applied to every situation and equipped in a great variety of contacts. These contacts are four in number and any one or more of them may be equipped with a front contact, a back contact or both. Also by the interchange of cams any of the contacts may be made "three-position" in which the front contact is closed at the extreme normal position and the back contact at the extreme reverse position of the switch and both are open at all intermediate points. The interior of the box is



Circuit Controller for Railroad Signaling

thoroughly protected from dust, water, etc. by a gasketed cover and the crank and the wire inlet cap may be placed on either side. Accessibility of the parts is one of its many valuable features. All current-carrying parts are mounted on blocks of insulating material to dispense with the many troubles incident to mounting them on and insulating them from metal frames.

## CONFERENCE ON THE CONSERVATION AND UTILIZATION OF WATER-POWER

A public conference will be held in the United Engineering Building, New York, on Saturday, April 8, under the auspices of the Power Transmission Section of the National Electric Light Association, to consider the important subject of the relation of the national and State governments to the conservation and utilization of water-powers. Two sessions will be held, afternoon and evening, and papers and addresses will be delivered by several well-known men. Invitations to the conference are being sent to members of engineering societies as far east as the Mississippi River, and the meeting has the hearty co-operation of national engineering bodies. The topics for discussion include a great variety of subjects, such as whether the federal government or individual States shall control the water-power sites, the rentals to be charged, etc.

## EXHIBITS AT THE MAINTENANCE OF WAY AND SIGNAL CONVENTION

In connection with the conventions this week of the American Railway Engineering and Maintenance of Way Association and of the Railway Signal Association in Chicago, an elaborate exhibition of railroad apparatus was made at the Coliseum. The following is a brief list of the exhibits of most interest to electric railway companies:

**Adams & Westlake Company, Chicago, Ill.**—Signal lamps, lanterns, railway specialties.

**Alexander Crossing Company, Clinton, Ill.**—Continuous-rail non-pounding crossings.

**American Concrete Pile & Pipe Company, Chicago, Ill.**—Concrete culvert pipes and piles.

**American Guard Rail Fastener Company, Philadelphia, Pa.**—Anchor guard rail clamps, tie-plate guard-rail fasteners and Vaughan automatic rail anchors.

**American Hoist & Derrick Company, St. Paul, Minn.**—Complete life-size "American Railroad Ditcher," mounted on flat car.

**American Railway Steel Tie Company, Harrisburg, Pa.**—Section of track with its steel ties.

**American Steel & Wire Company, Chicago, Ill.**—Right-of-way fencing, gates, signal wire, rail bonds, tie-marking nails.

**American Valve & Meter Company, Cincinnati, Ohio.**—Economy switch stands, Anderson interlocking switch stands and safety switch locks for main line switches, track devices.

**American Vulcanized Fiber Company, Wilmington, Del.**—Original vulcanized fiber for rail joint insulation, steel tie insulation, mechanical use.

**Asbestos Protected Metal Company, Canton, Mass.**—Two sheets of asbestos protected metal.

**Barrett Manufacturing Company, New York, N. Y.**—Roofing, floor protection particularly adapted for wooden floors in repair shops and freight houses, bridge waterproofing, waterproofing and damp-proofing for masonry.

**Bausch & Lomb Optical Company, Rochester, N. Y.**—Engineering and surveying instruments, transits and levels, etc.

**Beaver Dam Malleable Iron Company, Beaver Dam, Wis.**—Tie plates and rail braces.

**Blocki-Brennan Refining Company, Chicago, Ill.**—Carboxide elastic metal preserver and some of the by-products.

**Bossert Manufacturing Company, W. F., Utica, N. Y.**—Simplex and Duplex track drills.

**Bowser & Company, Incorporated, S. F., Fort Wayne, Ind.**—Oil storage systems, self-measuring pumps for handling oils, gasoline, varnishes, etc.

**Buda Company, Chicago, Ill.**—Railroad motor cars and velocipedes, track drills, drill grinders, switch stands, ratchet jacks, ball-bearing jacks, adjustable switch rods, solid manganese crossings, replacers, electric crossing gates.

**Burroughs Railway Nut Lock Company, Jacksonville, Fla.**—Positive railway nut lock.

**Cambria Steel Company, Johnstown, Pa.**—Rails, 100 per cent splice bars, Morrison guard rails, "Coffin Process" axles.

**Carey Company, Philip, Cincinnati, Ohio.**—Roofing, asbestos and magnesia products, insulating materials.

**Carnegie Steel Company, Pittsburg, Pa.**—Section of railroad track, constructed with steel cross ties and Duquesne joints, with various types of fastenings, including insulated wedge fastening; steel cross ties which have been in track since 1904, with information showing weight, service, etc.; light ties for portable track; assortment of Duquesne rail joints; large display of nickel-plated samples, showing representative shapes rolled by Carnegie Steel Company; bolt and spike tests; steel freight car, passenger car and street car wheels; bolt and spike kegs, showing steel hoops.

**Carpenter & Company, George B., Chicago, Ill.**—Cordage, cotton duck, tackle blocks, rubber goods, switch ropes, track tools.

**Chicago Pneumatic Tool Company, Chicago, Ill.**—Section motor cars, pneumatic and electric tools.

**Chicago Steel Tape Company, Chicago, Ill.**—Implements



for field surveys such as steel tapes, leveling rods, lining poles, marking pins, stadia rods, targets and repairing devices.

**Cleveland Frog & Crossing Company**, Cleveland, Ohio.—“Hard Service” manganese frogs and crossings, improved spring rail clamps, interlocking switch appliances, etc.

**Collins & Company, W. P.**, Chicago, Ill.—Lubricating oils and greases, Kapak (Elaterite) paint, ready roofing, Lardoilene cutting compound.

**Concrete Form and Engine Company**, Detroit, Mich.—Collapsible steel form for building concrete culverts, conduits, sewers, etc.

**Conley Frog & Switch Company**, Memphis, Tenn.—Conley patent frogs, manganese frogs, railway track appliances.

**Continuous Frog & Crossing Company, Reinforced Rail Joint Company**, St. Louis, Mo.—Railroad frogs and rail joints.

**Cook's Standard Tool Company**, Kalamazoo, Mich.—Standard bonding drills, Standard track and car jacks, Climax track drills, Magic tool grinders, Magic chucks and high-speed bits.

**Detroit Graphite Company**, Detroit, Mich.—Paint for bridges, buildings, structural steel, etc.

**Detroit Steel Products Company**, Detroit, Mich.—Solid steel Detroit-Fenestra windows.

**Eugene Dietzgen Company**, Chicago, Ill.—A complete line of modern surveying instruments, leveling rods, ranging poles, tapes, rail profile machines and other supplies which are used by engineers both in the office and in the field.

**Dilworth, Porter & Co., Limited**, Pittsburgh, Pa.—Railroad spikes and tie plates.

**Dixon Crucible Company, Joseph**, Jersey City, N. J.—Dixon's Silica-Graphite Paint, Graphite productions.

**Dressel Railway Lamp Works**, New York, N. Y.—Switch, semaphore, tower, station, tail-maker, lamps, oil pots, long-time and standard railroad lamp burners, etc.

**Drouvé Company, G.**, Bridgeport, Conn.—“Anti-Pluvius” puttyless skylights and the “Lovell” and “Straight-Push” sash operators.

**Duplex Metals Company**, Chester, Pa.—Miniature pole line showing results from heavy snowstorm; samples of all kinds of copper-clad steel wire and products, such as nails, cotter pins and bolts.

**Economy Separable Switch Point Company, Incorporated**, Louisville, Ky.—“Economy” separable switch points, positive rail anchors, positive rail anchor-tie plate combination, positive malleable tie plates.

**Electric Storage Battery Company**, Philadelphia, Pa.—“Chloride Accumulator” batteries.

**Fairbanks, Morse & Company**, Chicago, Ill.—Motor cars for section work and inspection; gasoline pumping engines, steam pumps, gasoline and gas engine generating sets, motors and dynamos, track and bonding drills, ratchet, ball-bearing and hydraulic jacks, scales.

**Frank M. Foster**, Columbus, Ohio.—Foster interlocking switch stands.

**Franklin Manufacturing Company**, Franklin, Pa.—Asbestos corrugated roofing and siding; special journal box packing; wool and cotton waste.

**General Electric Company**, Schenectady, N. Y.—Railway signal and accessory and supply devices, including an alternating-current and a direct-current signal in operation; four-cycle, 25-kw gas engine and generator; mercury arc rectifier; transformers; motor generators, etc.

**General Railway Signal Company**, Rochester, N. Y.—Electric interlocking machines, Model 2A, electric motor signals for automatic block and interlocking systems, relays and other devices.

**Gifford-Wood Company**, Hudson, N. Y.—Ice cutters and ice tows.

**Goehon Manufacturing Company**, Canton, Ohio.—Preservative coatings for iron and steel and galvanized iron.

**Goldie, William**, Pittsburgh, Pa.—Steel railroad tie, method of surfacing track and tie plugs.

**Gray & Sons, Peter**, Boston, Mass.—Signal lamps and lanterns.

**Greenlee Brothers & Company**, Chicago, Ill.—Railroad

tie machinery, automatic tie adzing and boring machines, screw spike driving machines, tie dowelling machines.

**Grip Nut Company**, Chicago, Ill.—Grip nuts.

**Hall Signal Company**, New York, N. Y.—Automatic signal appliances.

**Handlan-Buck Manufacturing Company**, St. Louis, Mo.—Handlan Special lanterns, McPartland rail clutches, track tools, metallic track and train flags.

**Harry Brothers Company**, New Orleans, La.—Corrugated metal culverts, corrugated iron tanks, knockdown portable galvanized iron houses.

**Hart Steel Company**, Elyria, Ohio.—Tie plates and spikes.

**Hayes Track Appliance Company**, Geneva, N. Y.—Hayes derails and attachments.

**Heath & Milligan Manufacturing Company**, Chicago, Ill.—Mindura, an iron and steel preservative.

**Hobart-Allfree Company**, Chicago, Ill.—Smyth derailleurs, Freeland derailleurs, Newton car replacers and Newton divided car replacers.

**Hoskins Rail Joint Company**, Chicago, Ill.—The continuous girder rail joint.

**Hubbard & Company**, Pittsburgh, Pa.—Railroad track tools, shovels and scoops, bolts, nuts and washers, pole-line hardware.

**Hunt Company, C. W.**, West New Brighton, New York, N. Y.—Models of automatic railway; conveyor; grab bucket, wheel and axle car with wheel and axle on it; curve, straight track and switch; shop car.

**Ideal Concrete Machinery Company**, South Bend, Ind.—Concrete block machines, concrete block power tamper, concrete brick machine, concrete stone products.

**Indianapolis Switch & Frog Company**, Springfield, Ohio.—Manganese frogs, crossings, switches, etc.; a special showing of Indianapolis Switch & Frog Company model R-N-R manganese frogs and crossings and tests.

**Interlocking Nut and Belt Company**, Pittsburgh, Pa.—The Clark nut lock.

**Johns-Manville Company, H. W.**, New York, N. Y.—Asbestos and magnesia materials, electrical supplies, roofings.

**Jordan Company, O. F., The.**, Chicago, Ill.—Steel constructed Jordan spreader and snow plows.

**Joyce-Cridland Company**, Dayton, O.—Railway jacks.

**Kalamazoo Railway Supply Company**, Kalamazoo, Mich.—Manufacturers of hand, push and velocipede cars, improved track drills, jacks, pressed steel wheels, track appliances.

**Kellogg Switchboard & Supply Company**, Chicago, Ill.—Railway telephone equipment, including train-dispatching sets, various types of portable telephones, siding telephones and ordinary telephones for use on both steam and electric roads.

**Kennicott Company**, Chicago, Ill.—Steel cars, steel underframes, general steel-plate construction.

**Kerite Insulated Wire and Cable Company**, New York, N. Y.—Kerite insulated wires and cables.

**Kerlin Automatic Post Machine Company**, Delphi, Ind.—Concrete fence post machine, reinforcements for concrete posts; lineal concrete railway tie.

**Kernchen Ventilator Company**, Chicago, Ill.—Ventilators for passenger coaches.

**Keuffel & Esser Company**, New York, N. Y.—Drawing materials, mathematical and surveying instruments, measuring tapes.

**King Fifth Wheel Company**, Philadelphia, Pa.—Interlocking roller-bearing car pivot.

**Lackawanna Steel Company**, Buffalo, N. Y.—Rails, rail joints, structural and bridge material, reinforced concrete bars and track supplies, special alloy steels, including Ferro, Titanium, Bessemer rail steel.

**Lansing Wheelbarrow Company**, Lansing, Mich.—Trucks and track barrows.

**Lehon Company**, Chicago, Ill.—Waterproofed canvas for passenger cars, Lehon's car roofing, car sill covering.

**Link-Belt Company**, Chicago, Ill.—Elevating and conveying specialties.

**Lorain Steel Company**, Johnstown, Pa.—Track Material—Solid manganese crossing; built-up crossing, 3-rail type; solid manganese frog; 4-rail manganese center frog; 6-rail manganese center frog; manganese wing rail frog; expan-



sion joint; manganese split-switch point; Tadpole tongue switch; guard-rail clamp; heavy pattern cast steel combination joint; samples of electrically welded joints; sections of deep tee and M. C. B. guard rails; track skate.

**Lufkin Rule Company**, Saginaw, Mich.—Measuring tapes of all descriptions, steel rules, etc.

**Lupton's Sons Company, David**, Philadelphia, Pa.—Lupton steel sash. Lupton rolled steel skylight, Pond continuous sash, Pond operating device, details and large photographs of shop construction.

**Luther Grinder Manufacturing Company**, Milwaukee, Wis.—Hand and foot power tool grinders, grinders of all descriptions, with special attachments for sharpening chisels and twist drills.

**Manning, Maxwell & Moore, Incorporated**, New York, N. Y.—Railway and machinists' tools and supplies, electric traveling cranes, Schmidt hack saw machine.

**C. F. Massey Company**, Chicago, Ill.—Illuminated signals for highway crossings, reinforced concrete culvert pipe, rubber-covered insulated wire, roofing material.

**Matthews & Brother, W. N.**, St Louis, Mo.—Matthews guy anchors, cable clamps, cable-splicing joints, lamp guards, guy clamps.

**Matthews & Rothermel**, Chicago, Ill.—Steel sash for railway cars.

**Merillat Culvert Core Company**, Winfield, Ia.—Adjustable collapsible cores for making concrete culverts.

**Alexander Milburn Company**, Baltimore, Md.—Portable acetylene lights up to 10,000 cp for railroad construction, wrecking and inspection work.

**Morden Frog & Crossing Works**, Chicago, Ill.—Manganese frogs and crossings, Unity stand with facing point lock and distant signal, G. L. M. automatic switch stand, compromise joints, facing point lock for Mansfield stands, guard rail, clamps, switch adjustments, rods and plates.

**Mudge & Company, Burton W.**, Chicago, Ill.—Adams motor car.

**Municipal Engineering & Contracting Company**, Chicago, Ill.—Concrete mixing machinery, Chicago improved cube concrete mixer.

**Nachod Signal Company**, Philadelphia, Pa.—Electric railway track model operating actual signals, high-speed trolley contractors, signal relay.

**National Corrugated Culvert Company**, Warren, Pa.—American ingot iron corrugated culverts.

**National Lock Washer Company**, Newark, N. J.—Exhibiting nut locks and special testing apparatus showing power exerted by spring washers under compression and toughness of steel structure.

**National Surface Guard Company**, Chicago, Ill.—Surface cattle guards, track wrench, lock washers.

**Nichols & Brother, George P.**, Chicago, Ill.—Electric turntable tractor.

**Okonite Company**, New York, N. Y.—Okonite wires; aerial, underground and submarine cables for all kinds and conditions of electrical service; potheads; cable joints; Okonite and Manson tapes; samples of crude rubber.

**Paterson Nut Lock Company**, Philadelphia, Pa.—Paterson nut lock.

**Pennsylvania Steel Company**, Steelton, Pa., and **Maryland Steel Company**, Sparrows Point, Md.—Solid Manard frogs, Manard anvil face frogs and other Manard special work built for various steam railroads, switch stands, rail joints, compromise joints, etc.

**Pittsburgh Metal Products Company**, Pittsburgh, Pa.—American ingot iron, plates, stack iron, sheets.

**Pneumatic Jack Company**, Louisville, Ky.—Pneumatic lifting jacks and accessories.

**Pocket List of Railroad Officials**, New York, N. Y.—Pocket list of steam railroad officials.

**P. & M. Company**, Chicago, Ill.—P. & M. anti-rail creepers.

**Q. & C. Company**, New York, N. Y.—Q. & C. Bozano joints, rolled steel step joints, cast-steel step joints; Bozano insulated joints, anti-rail creepers; rail benders; portable rail saws; guard rail clamps, rail braces, track-relaying machines; Kimball concrete tie.

**Rail Joint Company**, New York, N. Y.—Continuous,

Weber and Wolhaupter types, base-supporting rail joints.

**Railroad Supply Company**, Chicago, Ill.—Tie plates, derailleurs, signals.

**Railway Age Gazette (Maintenance of Way Daily) and The Signal Engineer**, New York, N. Y.—Copies of papers and bound volumes.

**Railway & Engineering Review**, Chicago, Ill.—Copies of publications.

**Ramapo Iron Works**, Hillburn, N. Y.—Automatic safety switch stands; manganese pointed switches, manganese center frogs, solid manganese reinforced frogs, rolled manganese steel rail, guard rail, rail clamps, etc.

**Robinson & Company, George M.**, Dubuque, Ia.—Metallic railway tie and fastenings.

**Sandwich Electric Company**, Sandwich, Ill.—Selective telephone and signal apparatus.

**Scherzer Rolling Lift Bridge Company**, Chicago, Ill.—Models, photographs, designs, plans, drawings and literature.

**Sellers Manufacturing Company**, Chicago, Ill.—Tie plates, angle bars, Sellers Anchor Bottom tie plate.

**Spencer Otis Company**, Chicago, Ill.—Economy tie plates and American Kron scale.

**Standard Paint Company**, New York, N. Y.—Ruberoid roofing, Ruberoid car roofing, insulating papers; railway equipment and bridge paints.

**Standard Scale & Supply Company**, Chicago, Ill.—The Standard scales, freight and warehouse trucks, Eclipse low-charging concrete mixer.

**Standard Underground Cable Company**, New York, N. Y.—Bare and insulated copper wires, bare and insulated copper-clad wires.

**Sterling Varnish Company**, Pittsburgh, Pa.—Sterling iron enamel paints.

**Strait Scale Company**, Kansas City, Mo.—Heavy special track scales, other scales used by railroads.

**Taylor Lock Nut Company**, Salt Lake City, Utah.—Lock nuts, showing their application to track and car work.

**Templeton, Kenly & Company, Limited**, Chicago, Ill.—Simplex track and car jacks.

**Union Switch & Signal Company**, Swissvale, Pa.—Interlocking and signaling apparatus for steam and electric railways, including electro-pneumatic, electric and electro-mechanical interlockings in operation; signals, relays and other apparatus for a. c. or d. c. automatic block signaling; staff system for use on steam and electric railways of the "Operator" and "No-operator" type; electric crossing gates and bells, Keystone insulated rail joints, mechanical interlocking derails, etc.

**United States Electric Company**, New York, N. Y.—The Gill selector, railway signals and electrical devices.

**U. S. Metal & Manufacturing Company**, New York, N. Y.—Diamond tapered steel poles; Wolfe automatic rail joint lock; Columbia lock nuts, St. Louis surfacer paints and target enamels.

**Universal Metallic Tie Company**, Salt Lake City, Utah.—Steel cross-tie.

**Verona Tool Works**, Pittsburgh, Pa.—Track tools, track jacks, track gages, nut locks.

**Weir Frog Company**, Cincinnati, Ohio.—Railway frog, switch stands, guard-rail clamp, manganese frog.

**Weir & Craig Manufacturing Company**, Chicago, Ill.—Electric turntable tractors, compressed air turntable tractors, pneumatic and hydraulic drop-pit tables, transfer tables, electric portable hoists, compressed-air portable hoists.

**Weisell Nut Lock Company**, Chicago, Ill.—Nut-lock.

**Western Electric Company**, New York, N. Y.—Railway telephones for train dispatching, siding telephones, portable telephones for train crews and all telephone apparatus, arc lamps, installation material; Buffalo grips, Mazda lamps, bells and buzzers.

**Wm. Wharton, Jr., & Company, Incorporated**, Philadelphia, Pa.—Manganese steel switches, frogs, crossings and movable points; switch stands, guard-rail clamps, anti-creepers, models, photographs, etc.

**Whitehead, Jos.**, Farmington, Ill.—Composite tie, metal and concrete railway tie.

**Winan's Improved Patent Rail Joint Company**, Portland, Ore.—A base-supported rail-joint.



## ELECTRIC RAILWAY LEGAL DECISIONS

## CHARTERS, ORDINANCES AND FRANCHISES

**California.**—Municipal Corporations—Powers—Acquisition of Public Utilities.

The State may empower municipalities to acquire and operate any such necessary public utility as is generally owned and operated in a city by public service corporations, such as waterworks, gas or electric light plants, street railways, etc.

That money appropriated by a municipality to construct a street railroad has not been expended for that purpose does not show want of authority to issue bonds for that purpose, in the absence of a showing that the funds are still available.

In construing a complaint against acquisition of a street railroad under San Francisco Charter of 1907, Art. 12, Sec. 14, approved by the Legislature November 28, 1907 (St. Ex. Sess. 1907, p. 37), on the ground that the road would parallel an existing road for more than ten blocks, a franchise granted in 1878 will be presumed to have expired, in the absence of allegation to the contrary.

San Francisco Charter, Art. 2, Ch. 2, Sec. 1, subd. 27, as amended February 5, 1903 (St. 1903, p. 586), precluding authorization of the joint use by two or more street railways of more than ten blocks, means "ten consecutive blocks." (Platt v. City and County of San Francisco et al., 110 Pac. Rep., 304.)

**Illinois.**—Public Improvements—Additional Servitude—Funds—Availability.

Mueller Law 1903 (Laws 1903, p. 285), Sec. 1, authorizing cities to own, operate or lease street railways, applies to underground and elevated, as well as surface, street railways.

Street railways may be constructed either on the surface of the streets or at an elevation above them.

Since the primary use of streets is to accommodate travel and since street railways afford increased facilities therefor, their use of streets does not impose any additional servitude.

Under Mueller Law 1903 (Laws 1903, p. 285), Sec. 1, authorizing cities to own, operate or lease street railways, the City of Chicago can acquire or build street railway subways.

The traction ordinances of the City of Chicago, adopted February 11, 1907, are not invalid, because they provide that the city will not permit any other street car company to use the tracks in proposed subways leased to existing companies.

The City of Chicago can use the funds provided for by traction ordinance Feb. 11, 1907, Sec. 24, comprising a percentage of the net earnings of the traction companies or any other available corporate funds, to purchase or construct subways in the streets or to do necessary preliminary work to enable the city to determine whether such construction is advisable. (Barsaloux et al. v. City of Chicago et al., 92 N. E. Rep., 525.)

**Michigan.**—Workingmen's Tickets — Ordinances — What Constitutes Extensions—Reduced Fares.

An ordinance was passed providing that a street railroad company should furnish workingmen's tickets at a reduced rate, good over any of its lines in the city, which ordinance was accepted by the railway, and the same ordinance gave the railway a right to extend its tracks to the easterly limits of the city. Subsequently the railway franchise was assigned to a united company, which thereafter purchased a suburban line wholly without the limits of the city. The city then extended its limits to cover a portion of the territory in which the purchased railroad was. Held, that since there were two methods of extending a street railway, one by construction and the other by purchase under Comp. Laws 1897, Sec. 6448, the purchase of the suburban railway by the united company was an "extension," and hence the company was bound by the ordinance, regardless of the franchise of the suburban railroad.

Held, also, that the ordinance would be construed to cover future extensions of the city limits, since it was reasonably in the contemplation of the original parties that the limits would be extended and hence the company was bound to

give such reduced fares on its purchased line. (People v. Detroit United Ry., 125 N. W. Rep., 700.)

**Nebraska.**—Interstate Carriers—Regulation of Street Railroads.

Act Cong. Feb. 4, 1887, Ch. 104, 24 Stat. 379 (U. S. Comp. St. 1901, p. 3154), or its amendments (act June 29, 1906, Ch. 3591, 34 Stat. 584 [U. S. Comp. St., Supp. 1909, p. 1149]), being acts to regulate commerce, do not apply to street railway companies engaged in the transportation of passengers between cities in different states. (Omaha & C. B. St. Ry. Co. et al. v. Interstate Commerce Commission, 179 Fed. Rep., 243.)

**New York.**—Municipal Corporations—Failure to Exercise Franchise—Forfeiture.

A franchise for operating a railroad through public streets is disconnected from the corporate franchise of the corporation to which it is granted, and may be forfeited for failure to exercise it. (People v. Bleecker St. & F. F. R., 124 N. Y. Sup., 782.)

**New York.**—Lease —Transfer by Lessee—Rights Passing.

Where a street railroad company had the right under its lease to charge an additional fare to a certain point, a sublease or an assignment of the lease would carry with it the same right.

In spite of Railroad Law (Laws 1884, Ch. 252, Sec. 13, as amended by Laws 1890, Ch. 505, Sec. 101, and Laws 1892, Ch. 676, Sec. 101), providing that no corporation constructing a railroad under that act shall charge more than five cents for one continuous ride from one point on the road, or on any road, line, or branch operated by it and under its control, to another or to a point on any connecting line within the limits of any incorporated city or village, the Nassau Electric Company may charge a second five-cent fare for the ride in its trains from its own terminus on Coney Island over the tracks of the Brooklyn Heights Railroad Company. (Enton v. Nassau Electric R. Co., Same v. Brooklyn, Q. C. & S. R. Co., 124 N. Y. Sup., 555.)

**Oregon.**—Constitutional Law—Taking Property—Due Process of Law—Condemnation by City.

Where a municipal corporation without statutory authority was attempting to condemn complainant's property for a street, it was thereby attempting to deprive complainant of its property without due process of law, in violation of the fourteenth amendment of the federal Constitution.

Where a city had only general charter power to open, lay out, establish, widen, alter, extend, vacate or close streets, and to appropriate and condemn private property therefor, it had no power to condemn a part of a railroad's right of way to construct a street longitudinally along the same, especially where there was no provision for joint use of the property by the railroad company and the public. (Portland Ry., Light & Power Co. v. City of Portland et al., 181 Fed. Rep., 632.)

**Pennsylvania.**—Specific Performance—Pavements.

A borough may maintain a bill in equity against a street railway company for specific performance of a contract, for laying additional track on a street and for repairing the pavement of the street in a particular manner, in consideration of the borough's consent to the laying of the track on the street. (Patton Tp. v. Monongahela St. Ry. Co. et al., 75 Atl. Rep., 589.)

**Texas.**—Franchises—Liquidated Damages.

A deposit of \$2,500 with a city under a street railway franchise to be forfeited as liquidated damages on the franchisees' failure to have cars in operation and the road completed within specified times, etc., is properly retained by the city as damages on failure to construct the road. (Whitcomb v. City of Houston, 130 S. W. Rep., 215.)

**Wisconsin.**—Eminent Domain—Condemnation of Street Railroad Right-of-Way.

Under St. 1898, Sec. 1863a (Sanborn's St.:—Supp. 1906, Sec. 1863a), conditioning the power of a street railway to condemn rights within a street or other public place on the existence of a franchise granting the use of such street, this is a condition precedent, and goes both to the jurisdiction of the corporation to seek condemnation and of the court to grant it. (Milwaukee Light, Heat & Traction Co. v. Burlington Electric Light & Power Co., 125 N. W. Rep., 932.)



## LIABILITY FOR NEGLIGENCE

**Alabama.**—Rights in Street—Care Required—Wanton Negligence.

The public and a street railroad company each have the right to use the street so that one traveling in a vehicle on or near a street car track was not a trespasser per se.

The degree of care required to prevent negligent injuries must be commensurate with the danger, and since an electric street car moves more rapidly than a horse car and cannot be as readily stopped, a greater degree of care is required by both the motorman and the persons driving near the track.

The act done or omitted must be done or omitted with the certain consciousness that injury will probably result in order to constitute wanton negligence, and such knowledge cannot be implied from knowledge of the dangerous situation, but there must be a design to do a wrong or reckless indifference or disregard of the natural consequences of the act done.

Since more or less danger of collision always attends the movement of street cars and vehicles in the street, the motorman is not bound to stop the car whenever there is danger of collision unless such danger be imminent.

That a motorman sees one on the track in a vehicle does not require him to stop unless he knows that the driver is unaware of the danger. (*Merrill v. Sheffield Co. et al.*, 53 S. Rep., 219.)

**California.**—Negligence—Driver and Occupant of Private Vehicle.

The rule of imputed contributory negligence does not apply to a passenger in a public conveyance or to one invited to ride in a private conveyance, and neither is chargeable with the negligence of the driver.

The rule against imputed contributory negligence does not absolve a passenger or guest from using ordinary care for his own safety, as no one can be allowed to shut his eyes to danger in blind reliance on the unaided care of another without assuming the consequences. (*Fujise et al. v. Los Angeles Ry. Co.*, 107 Pac. Rep., 317.)

**Delaware.**—Passengers—Injuries—Accidents.

Accidental injuries are not actionable; so that, if a street car collision was accidental, a passenger could not recover for injuries received in jumping to avoid injury, however imminent the danger when he jumped. (*Eaton v. Wilmington City Ry. Co.*, 75 At. Rep., 369.)

**Georgia.**—Persons Near Tracks—Duty of Motorman.

A motorman in charge of an electric car who observes or in the exercise of reasonable care could observe a vehicle containing several occupants near the track, and that the animals pulling the vehicle are frightened at the approach of the car and are acting in such manner as to lead a person with ordinary prudence to apprehend danger of a collision between the car and the vehicle, is bound to bring the car under such control that it can be stopped, if necessary, to prevent a collision or injury to the occupants of the vehicle. (*Dabbs v. Rome Ry. & Light Co.*, *Rome Ry. & Light Co. v. Dabbs*, 69 S. E. Rep., 38.)

**Indiana.**—Injury to Passenger—Existence of Relation—Sufficiency of Evidence—Instructions.

In an action against a street railroad for injuries to a passenger alighting from a car, an instruction that a carrier of passengers, while not an insurer, must exercise the highest degree of care, and is liable to a passenger who is himself without fault for an injury resulting from failure to exercise such care, that it is the duty of the carrier to provide for the safe receiving and discharging of its passengers and to exercise the strictest vigilance, not only to carry passengers to their destination, but also to set them down safely, was not erroneous as ignoring the rule that the high degree of care required of a carrier toward its passengers must be consistent with the mode of conveyance.

In an action against a street railroad for injury to plaintiff while alighting from a car, an instruction that if plaintiff entered the car with the intention of becoming a passenger, and paying the usual fare, and was able and willing to do so, and that no fare was at any time demanded of him, and no place was provided in the car for the purpose of depositing the fare, he was entitled to receive from defendant the highest degree of care, was not misleading as ignoring the factor of good faith on plaintiff's part. (*In-*

*diana Union Traction Co. v. Smalley* (No. 6497), 88 N. E. Rep., 867.)

**Massachusetts.**—Trespassers on Car—Duty Owed by Company.

That plaintiff was technically a trespasser in getting on the steps leading by the left-hand door to the rear vestibule of defendant's street car, when by its rule that door was kept locked, and entrance could be had only by the right-hand door, did not relieve it of the duty to exercise proper care not to injure her unnecessarily; but it was bound to use reasonable care till at least she had an opportunity safely to step down. (*Yancy v. Boston Elevated Ry. Co.*, 91 N. E. Rep., 202.)

**Michigan.**—Carriers—Passengers—Actions—Jury Question—Negligence—Burden of Proof—Instructions.

In a street car passenger's action for injuries received in a derailment, whether defendant was negligent held a jury question.

In a street car passenger's action for injuries received in a derailment, the court instructed that the burden was upon plaintiff to prove his case by a preponderance of the evidence, but, upon proving the derailment and resulting injuries, he made a prima facie case, and the burden then shifted to defendant to show that the derailment was not caused by its negligence. Held, that the charge was erroneous. (*Niedzinski v. Bay City Traction & Electric Co.*, 125 N. W. Rep., 409.)

**New York.**—Carriers—Injuries to Passengers—Acts of Carrier's Servant—Special Officer—Justification.

A special officer, appointed at the request of a carrier to maintain order at station platforms, whose shield and cap were paid for by the carrier, and whose wages were paid by it, was its employee, for whose acts toward a passenger the carrier is liable.

Where a special officer warned plaintiff, a passenger waiting on the station platform, not to push or he would smash his head, plaintiff's reply, "Go ahead and do it," did not as matter of law justify an assault by the officer. (*Brewster v. Interborough Rapid Transit Co.*, 123 N. Y. Sup., 992.)

**Pennsylvania.**—Injury to Passenger—Presumption of Negligence—Burden of Proof.

Where a passenger in a crowded summer car by a sudden movement of the car is thrown beyond the guard rail and his head is struck by a car on the other track but there is no injury to the car in which the passenger is riding, no presumption of negligence on the part of the company arises from the mere happening of the accident.

In an action for injuries to a passenger on a street car, the burden is on plaintiff to prove negligence, which he may do sufficiently to carry the case to the jury by showing that the car was unsafely run in passing over a curve which threw the passenger's head beyond the guard rail, so that it struck a car passing on another track. (*Cline v. Pittsburgh Rys. Co.*, 75 Atlan. Rep., 850.)

**South Carolina.**—Injuries—Negligence—Violating Speed Ordinance—Instructions.

Running a street car at a greater rate of speed than allowed by ordinance shows negligence per se in an action for injuries.

In an action for injuries by being struck by a street car, the court charged that if the jury found that decedent did "what an ordinary woman would have done, and she exercised the care that an ordinary woman would have done—in other words, that she was not negligent"—they should determine whether defendant was negligent. The court elsewhere charged that decedent was held to the standard of care which the law denominated ordinary, reasonable care, which standard the jury must fix from their knowledge of themselves, their fellow men, and from the circumstances and peril surrounding plaintiff when she approached the street car, and if she fell short of the conduct required by an ordinary person in what she did, and that contributed to her injuries, the jury should find for defendant. Held, that the charge, when the quoted part was considered with the remainder thereof, was not erroneous in making the standard of care required of decedent the conduct of an ordinary woman, instead of that of one of ordinary care and prudence. (*Martin v. Columbia Electric St. Ry., Light & Power Co.*, 66 S. E. Rep., 993.)



# News of Electric Railways

## Mayor Whitlock on the Toledo Franchise Extension

Brand Whitlock, Mayor of Toledo, Ohio, issued a long statement on March 17, 1911, relative to the franchise situation and the course he believes should be pursued to settle the problem promptly. This is the first public utterance made by the Mayor since last December, when he was taken sick. Previous to the Mayor's illness City Solicitor Schreiber completed the draft of an ordinance renewing the grant to the Toledo Railways & Light Company, but nothing has been done regarding it. The administration is pledged to a 3-cent fare, said the Mayor in his statement, and this pledge must be considered as inviolable. He discussed the course to be taken in securing data to show the cost of carrying a passenger and finally said that, in case it was found impossible to operate at three cents with the right kind of service and fair returns upon the investment, the people must decide the rate of fare. Under the agreement with the company, however, the question of fare must be left for discussion until the last, since all the data upon which to base a determination will then be at hand. The Mayor also suggested a sliding scale of fare that will change automatically under certain conditions affecting the payment of dividends and interest on bonds. Mayor Whitlock said in part:

"In the first place I think the street railway problem should be settled promptly and I know of no reason why this cannot be done. This administration is pledged to 3-cent fares. To get 3-cent fares, however, it is necessary to do something more than merely talk about them or make speeches extolling them. To get them we shall have to make a critical and exhaustive examination of the whole subject, with the advice and assistance of able experts, committed to the people's side of this conflict with special privilege. We have already had such advice and assistance in making a study and analysis of the company's books, its receipts, expenditures, etc. We shall be compelled to have similar assistance in making the valuation of the company's property. We are confident that with these data 3-cent fares will be shown to be practicable. But, whatever the result, the question must go to the people for determination.

"If the result should show that 3-cent fares, literally, are impossible, even then, with the issue undetermined, excellent results would have been obtained. In order, however, to open the negotiations, to approach the subject with open minds, the administration determined to avoid as many points of irritation as possible, and so determined to leave the discussion of the fare for the last thing, when, and when only, it could be discussed intelligently in the light of all the data and the facts elicited.

"I wish to state again what I have said so often in public discussion during the last 10 years, that I think this question never will be settled rightly until we have municipal ownership. I believe that municipal ownership is coming, for as democracies grow they develop new necessities, and in that evolution they develop the functions necessary to meet these needs.

"The city, under the present law, is compelled to provide this service by means of a contract with a private corporation, and its first care should be to see that the people get adequate service, and, secondly, that it costs the citizens only what is required to furnish it. This includes, of course, a fair return upon actual investments, but it does not include a return upon speculative values or upon the water in stocks and bonds. The era of that sort of speculation is over and the time approaches when stocks or bonds of a municipal utility will be similar in return to the securities of the municipality itself. They are, in fact, based upon the faith of the city; and as the city is a permanent thing, as its population is to increase in size and importance, stock in a street railway enterprise is as secure an investment as could be imagined. It has altogether lost that speculative element it once had before the permanence of the city was assured.

"Therefore, it is probable that in the future stock in street railways in our cities will be limited in its return to an amount not very much, if any, in excess of that derived from municipal bonds. It has been suggested by some well-

meaning persons that a solution of the problem may be found in the proposal that the company be required to pay a part of its receipts into the city treasury. I am aware that such an arrangement is attractive to many citizens. And the fact that it is attractive shows how complaisant the people have been with street railways in this country and, indeed, how powerless they have been before them, how utterly in their political and economic grasp.

"The people have been so used to having nothing from their public service corporations, not even public service, that some of them are almost pathetically grateful for the slightest consideration.

"The traction magnate knows that the era of extravagant and irresponsible exploitations of public franchises, watered stock, profits for promoters through inflated bond issues, and all that, is over, and that we are now entering upon that period in which corporations enjoying under license or franchise a monopoly of the profits of public necessities are to be regulated by the public, in an effort to have them operated not for private profit alone, but really, and at last, for public service.

"The traction magnate knows, too, that the day is past when a man will have to pay more for a street car ride than it is worth; that is to say, he knows that the time has come when street car service must be provided at cost. Now, when I have said cost, I hasten to add that cost, of course, implies a reasonable return upon the actual investment, but it does not include an inflated and unearned profit.

"That is to say, it is proposed by this system to compel the workingman who rides downtown on a street car at 6 o'clock in the morning to pay the taxes of the man who rides downtown in a limousine at 10 o'clock in the morning. Of course, passengers on street cars ought to pay their taxes, but they ought to pay them at the court house, not on the street car, to the treasurer, not to the conductor, and surely they ought not to be made to pay their own taxes and then be made to pay somebody else's taxes too.

"The members of the Council have studied and read on this subject, many of them have gone to other cities to see what was being done there, and thus far I think they have treated the whole subject in a most intelligent, unselfish, non-partisan way. Their conclusion is that under the present laws the businesslike thing to do is to find out just what it costs to carry a passenger and then to fix the fare at that point, allowing, of course, for interest and taxes, for the betterment and extension of lines and for a reasonable return upon actual investments. This is the meaning of the demand for 3-cent fare, for it is believed that an analysis of the problem will show that all this can be done at that rate.

"These discussions will not proceed far until the question of valuation is reached. That is the key to the whole problem. And it seems to me that we might as well attack that problem at once and dispose of it. The task is one of no small difficulty, but it has to be performed, and it should be undertaken immediately. It will take weeks of earnest study and patient, drudging toil. But when it is done, when we have the value of the investment already made and of the investment necessary to rehabilitate the lines and provide the service that is required, with the analysis of receipts and expenditures that we now have, we will know just what it costs to carry a passenger, and then we can find whether it is not possible still further to decrease this cost by operating cars in a manner perhaps differing from that now employed, by doing away with parallel lines or lines that seem to duplicate others, perhaps by having fewer cars run in those hours when not many people are riding and by having more cars run in the early morning and evening when many people are riding, the hours when the cars are overcrowded and the rush is on. This is the way to 3-cent fares.

"Every obstacle possible will, of course, be thrown in the way. There will be criticism and innuendo and misstatement. Efforts will be made in behalf, not of the people, but of political interests and ambitions and those privileged interests that are in league with them and are served by them. Attempts will be made to divide those



whom the people have chosen to represent them in this matter; attempts will be made to divide the people themselves. Personal ambitions, interests, jealousies, all those human elements that complicate any problem under consideration by a large number of men, will be made the most of. But I hope that in this hour everybody concerned—and everybody in town is concerned—will rise to the best and highest that is in him and will put away every personal, selfish consideration and give his noblest efforts to settling this vexed question. He who does his best will best serve his town and his time, and in the end, himself."

### Improvements in Kansas City

The letter in regard to improvements in Kansas City addressed to Darius Brown, Mayor of the city, by John M. Egan, president of the Metropolitan Street Railway, was followed by a conference at the city hall, Kansas City, on March 13, 1911, between Mr. Egan, Frank Hagerman, vice-president of the company; Mayor Brown, John G. Park, city counselor, and Clyde Taylor, counsel to the Public Utilities Commission of Kansas City. At this conference an agreement is said to have been reached between the company and the city by which the company will proceed with the construction of the new line on Chestnut Avenue if certain changes are made in the ordinance and will improve the service in other directions as rapidly as can reasonably be expected. Following the conference Mr. Park said:

"The company will build the crosstown line from Fifteenth Street north to Lexington Avenue at once. At the earliest possible moment the city will build a trafficway through North Terrace Park on the north side of Chestnut Street from Lexington Avenue to connect with a viaduct to be built by the Terminal Company over the Chicago & Alton and Missouri Pacific tracks. This will give a direct connection with the East Bottoms by a crosstown line. The representatives of the Metropolitan Street Railway preferred an ordinance for the Chestnut Street line similar to the one requiring the construction of a line on Woodland Avenue, and that the city gladly will give.

"They also had some suggestions to offer about the drafting of an ordinance providing for a contract regarding the Twelfth Street trafficway. After some pencil changes of the city's draft they took the form of it under consideration. We had an oral understanding months ago with President Egan, Mr. Dunham and Mr. Hagerman that the company was to pay one-third the cost of the improvement—\$200,000 to be paid in cash within 10 days after the disposition of motions for a new trial in the condemnation cases; the remainder to be paid in one, two, three and four years. If the company paid the cash and notes within the time specified the city was to agree not to operate cars over the Twelfth Street viaduct, nor to grant to any one else a right to operate such cars unless advancements made by the Metropolitan Street Railway were returned to it."

After taking up in turn each of the clauses in the Mayor's letter of March 4, 1911, Mr. Egan concluded his letter of March 11, 1911, to the Mayor, in part as follows:

"The company appreciates its franchise obligations and the necessity of living up to them. This it will do. It expects the city will not, by unreasonable actions or harassing annoyances, prevent it from so doing. Because we cannot agree upon the present necessity for some particular line is no reason why unreasonable or harassing demands in other directions should be made to coerce the building of the lines.

"I reluctantly took charge of the property about one year ago with the idea that I might improve the property and the public service, being first assured by many leading citizens that my efforts in that direction would be appreciated, my previous experience in Kansas City warranting the belief that the people here did not demand anything but fair and just treatment. To meet the pressing situation which I found when I assumed my duties \$863,223.56 in excess of the receipts was expended during the year ended Dec. 31, 1910.

"Recognizing the earnestness of your desire for the Chestnut Street line and the obligations which you thought you were under to build it, I agreed to waive the right legally to object thereto if any contractor could be found who would

build it for bonds. A very reasonable suggestion was made that the Utilities Commission would probably want to know how the company intended permanently to deal with the question of additions to the property. This led to a 10 days' effort on our part in the East to interest someone in financing all future improvements, with the result that Lee, Higginson & Company, Boston, expressed a willingness to furnish the money if a security was created practically like that which you proposed in the plan as to Twelfth Street. The suggestion was rejected by you, and then came the publication of your letter.

"Your first demand is that we 'immediately accept the ordinance requiring the building of the Chestnut Street extension.' No such acceptance will be made, for you know as well as I do that under the franchise you cannot require the acceptance of any such ordinance. The most the city can do is to order an extension where it is reasonably necessary. Whether the line is an extension and reasonably necessary is for the court to decide. Until such decision the company is not in default.

"Personally, rather than lose the good will of the Kansas City people, I would prefer to sever my connections with the company and resume a peaceful farm life, which I was induced to leave by having my interest aroused in helping to solve the street car problem, by giving good service, building up the property and refunding the bonds maturing in 1913. If any effort in this direction is to be met with public abuse, I might as well quit. I have borrowed large sums for the company from Kansas City banks. It would not be fair to them or the people who are financially interested in the property for me to permit the Metropolitan Street Railway to be attacked by the city without going as far as I can to avoid it. A persistent, continued and concerted attack by public officials will prevent me from rendering any service to the public, and would ultimately drive any public service company into disrepute, bankruptcy, or out of existence.

"I feel that the company's first obligation should be to the majority of its patrons, and, situated as we are financially, our first thought should be expenditures for the above purposes. As to the service and the furnishing of sufficient street car facilities, it must not be overlooked that the company placed in service upon its lines last year 50 additional cars, and contracts have recently been closed whereby the company purchased 25 more cars of the latest and most approved design, delivery of which has been promised for July, and which will be placed in service immediately upon receipt. The company has been compelled to purchase these cars by making payments for same one-eighth cash, one-eighth six months, one-fourth each the next one, two and three years. The company will co-operate in every way possible with the Utilities Commission and adopt each and every reasonable and logical suggestion which will in any way improve the service. We have stood ready to do this any time during my management and will continue to do so. The company is not seeking a quarrel of any kind with the city, but if come it must, no effort will be left undone to assert and maintain our rights as we construe them."

### Committee to Consider Electrification at Chicago

A commission of 17 Chicago business men, city officials and railroad executives has been created by the Association of Commerce of Chicago, Ill., to investigate the electrification of the railroads operating into Chicago. The personnel of the commission as announced on March 20, 1911, follows:

City's representatives—Paul P. Bird, chief smoke inspector; T. E. Donnelley, chairman of the city smoke commission; Dr. W. A. Evans, commissioner of health; Milton J. Foreman, chairman of the local transportation committee of the City Council.

Railroad representatives—W. A. Gardner, president of the Chicago & Northwestern Railroad; H. G. Hetzler, president of the Chicago & Western Indiana Railroad; Darius Miller, president of the Chicago, Burlington & Quincy Railroad; C. E. Schaff, vice-president of the New York Central Lines.

Associates at large—W. F. M. Goss, dean of the College of Engineering, University of Illinois; E. R. Graham, of



D. H. Burnham & Company; Richard C. Hall, president of the Duck Brand Company; Jessc Holdom, attorney at law; Harrison B. Riley, president of the Chicago Title & Trust Company; John W. Scott, Carson, Pirie, Scott & Company; Francis T. Simmons, Francis T. Simmons & Company; Mason B. Starring, president of the Northwestern Elevated Railroad; Frederick H. Rawson, president of the Union Trust Company.

The railroads have agreed to pay all of the expenses of the investigation. The four representatives of the city participate, it is announced, not by virtue of their present public offices, but because of qualifications and experience that equip them to deal with the problem of electrification in the capacity of public representatives, and all have agreed to serve upon the commission to the conclusion of the investigation.

A meeting preliminary to the formal organization of the commission was held on March 18, 1911, at the La Salle Hotel. At this meeting committees were appointed to nominate a permanent chairman, vice-chairman and secretary, to recommend the scope of the work to be undertaken, to choose a chief engineer and to select headquarters. Mr. Scott, Mr. Donnelley and Mr. Gardner were delegated as a committee to nominate the permanent officers and to select a date for the regular meetings of the commission. Mr. Foreman, Mr. Gardner and Mr. Riley were named to consider the scope of the project. Dean Goss, Mr. Graham and E. H. Lee, chief engineer of the Chicago & Western Indiana Railroad, who attended the meeting in the absence of Mr. Hetzler, were called upon to select the chief engineer.

#### Suggested Changes in the Cleveland Grant

At a meeting of the special street railway committee of the Cleveland Chamber of Commerce on March 14 Attorney Andrew Squire, of Squire, Sanders & Dempsey, representing the Cleveland Railway, presented a list of changes which he said the company would like to have made in the Tayler grant to enable the company to carry out its financing more easily. Mr. Squire suggested that the committee secure an opinion in regard to franchise requirements from a man prepared to invest \$3,000,000 or so at a time. The conditions of the grant must finally meet the approval of such investors, and it would be advisable to have an authoritative expression of opinion before definite action was taken. This would prevent further complications. The company requested to be allowed to sell bonds on a 6 per cent basis without the consent of the Council. The best rate possible would always be secured, but such a change would allow more freedom in negotiations. Another change suggested would provide that the surplus from the operating fund be transferred to the interest fund once a year, instead of every six months. This would allow the company to average its operating fund through the year and make up increased expenses from the surplus produced during the months when the expenses are light.

Mr. Squire also suggested that the company be permitted to maintain the extensions and betterments at 100 per cent of their reproductive value. The original property should be maintained at its standard. This was fixed in the ordinance as 70 per cent of its reproductive value. Investors believed that all new work and betterments should be maintained at full value. Another suggestion was that 5 cents and 1 cent for transfer should be fixed as the maximum fare with such rates between the present fare and the maximum as the city may establish. Interests able to furnish money had even suggested that no maximum be named, as the fixed dividends would govern the matter. The company saw safety in financing in a 5-cent fare and 1 cent for transfer. The city had the right to renew the franchise and prevent the company from enjoying the maximum fare for the last 15 years of the grant.

The changes suggested in the manner of fixing the valuation of the property in case the city should decide to purchase the property at the expiration of the franchise would compel the city to pay par for the stock and 10 per cent additional instead of the appraised value plus 10 per cent. Since the stock was reduced in the settlement under the

Taylor grant and in the future must be sold at par, the company believed that the city should stand by its bargain if it purchased the property. Mr. Squire saw no objection to the city taking an option on the property for a year after the expiration of the grant in case no decision had been made at the time. A sinking fund to make up the 30 per cent deducted from the full valuation of the property in the Taylor grant was suggested, so that the property and stock would be at full value when the grant expired.

G. H. Dahl, street railway commissioner, suggested six changes in the grant. The first would require the company to expend at least \$1,000,000 each year in betterments, extensions and improvements. The second provided that when securities are sold above par the surplus shall be used in betterments. The third gave the city the right to initiate improvements, extensions and betterments. The fourth gave the city the right to take part in wage arbitrations. The fifth asked that the company accept a city grant for operation in any suburb after Dec. 18, 1909. The sixth provided that the interest fund of the company be invested in "safe" securities.

Attorney Squire said the company would accept the suggestion to require the expenditure of \$1,000,000 a year for extensions and betterments provided that this condition was not made to apply to the last 15 years of the grant. He could see no objection to the city taking part in wage arbitrations, but J. J. Stanley, president of the company, objected to the provision that the city grant should be extended to suburbs when they are admitted. Mr. Dahl's suggestion would include Collinwood, which, although a part of the city, is now paying a fare of 5 cents.

F. H. Goff, chairman of the committee, favored a sliding scale of dividends, like the gas plan in Boston, so that by good management the company might increase its dividends above a fixed limit. This would be an incentive to good management. George B. Siddall, a member of the committee, would like to see the Boston plan adopted.

On March 15 Mr. Dahl stated that he was opposed to an increase in the maximum rate of fare. He felt that it was unnecessary to secure funds. He was also opposed to a sliding rate of dividends where the dividends increase as the rate of fare decreases and decrease as the rate of fare increases. Mr. Stanley doubted whether such a plan could be put into successful operation in Cleveland. Mr. Goff, however, adhered to the idea and said he believed it necessary to make the Tayler plan a success.

#### Service and Improvements in Jacksonville, Fla.

The Jacksonville (Fla.) Electric Company has replied at length to the joint committee composed of members of the City Council and prominent citizens of Jacksonville which was appointed recently to take up with the company the question of extensions, improvements and service in Jacksonville. The committee requested the company to furnish it with the schedules in force and a statement of the number of cars in use on the various lines daily. This the company did in detail. It also furnished a table giving the name of each line, the receipts per line for 1910, the percentage of the receipts of each line to the total receipts and the average receipts per day, and a similar table in which the receipts per car per day were given and the number of cars operated per line.

A statement was also submitted which showed the number of trainmen in the employ of the company and the length of time they have been in the service of the company. In all 176 trainmen are employed by the company and more than 35 per cent of them have been in the service longer than one year. The average pay of these men is from \$60 to \$65 a month. The qualifications necessary for an applicant to secure employment by the company as a trainman were set forth in detail, particular stress being laid on the exacting physical examination to which each man is subjected.

The following is a complete list of the new work to be done by the Jacksonville Electric Company, with the cost thereof during the year 1911 as contained in the statement of the company:



1. New power station, 2,400 kw capacity.....	\$525,000
2. Ten new cars.....	50,000
3. Double-track Oak Street from Copeland to King Street....	19,200
4. Double-track Church Street from Georgia to Parker Street..	22,948
5. Double-track Highway Avenue from Palm Street to city limits	40,588
6. Rebuild and pave Beaver Street from Davis and Corning....	3,030
7. Rebuild and pave Corning Street from Beaver and Cleveland.	4,604
8. Rebuild and pave Enterprise Street, Cleveland to Myrtle Avenue	7,865
9. Rebuild and pave Church Street, Johnson to Stewart.....	3,225
10. Repave West Bay Street from Main to Market.....	7,590
11. Repave West Bay Street from Main to Bridge.....	25,515
12. Rebuild and pave Davis Street from Kings Road to Eighth...	24,355
13. Rebuild and pave State Street, Main to Kings Road.....	18,922
14. Pave Washington Street and May Street.....	1,350
15. Pave Bay Street from Cleveland to Myrtle Avenue.....	2,200
16. Addition to carhouse.....	25,000
17. Railway feeder.....	10,000
18. Miscellaneous items.....	32,000

\$824,412

The reasons for each of these expenditures were given at length in the statement of the company. In concluding the statement, Hardy Croom, general manager of the company, said in part:

"The manager of the Jacksonville Electric Company will be glad to present to the committee the merits of each of these items. He feels that they will undoubtedly be for the good of the greatest number and that the benefits from certain suggested extensions that might come to a few real estate dealers and to a portion of a community which is, comparatively speaking, very sparsely settled fade into insignificance so far as the importance to the greatest number of citizens of Jacksonville and the city taken as a whole is concerned.

"The management further says to this committee that it is an interesting fact that many thousand dollars more than the net receipts each year of the Jacksonville Electric Company for the last five years have been placed directly back into actual physical betterments.

"In view of the amount of improvements and betterments, all of which are to be completed during 1911, the management respectfully requests this committee to stop and consider before it recommends the expenditure of any more money for improvements by the Jacksonville Electric Company.

"Having taken the necessary steps to meet every complaint, having complied with the request of the committee in its resolution, and having shown to the committee the actual work contemplated by the company for 1911, the company requests that the committee give it a favorable report in the premises. The officers of this company present will be glad to answer any question that may be expedient in the premises."

#### Progress of Negotiations in Montreal

Progress is reported in the negotiations between the Montreal (Que.) Street Railway and the Board of Control of Montreal which have for their object the modification of the terms under which the company operates. A number of conferences have been held since the letter of E. A. Robert, president of the company, was presented to the city, as noted in the *ELECTRIC RAILWAY JOURNAL* of March 4, 1911, page 390, and it was announced at a recent meeting of the special committee of the Council appointed to confer with the officials of the company that the comptrollers have formulated terms upon which an agreement is likely to be arranged whereby the company will be granted an extension of its franchise. The report of the committee, however, merely indicates the terms upon which the company would be willing to accept an extension of its agreement with the city. The most important consideration to be arranged is the terms which cover the percentage of earnings from traffic within defined limits of the city to be paid by the company to the city. Under the present agreement the company pays 4 per cent on earnings up to \$1,000,000, 6 per cent on additional \$500,000 up to \$1,500,000, 8 per cent on \$500,000 up to \$2,000,000, 10 per cent on \$500,000 up to \$2,500,000, 12 per cent on \$500,000 up to \$3,000,000 and 15 per cent on all earnings over and above \$3,000,000.

It is unofficially stated that the company has proposed to substitute for this sliding scale a fixed rate of 6 per cent on all its earnings without distinction as to the source of the traffic revenue. The company is said to have expressed itself as willing to change the number of workingmen's tickets from 8 to 10 for 25 cents, and children's tickets from

10 to 12 for the same sum, and to have agreed to charge one fare to and from all recently annexed municipalities, the reduced fares to be applicable in these places. However, exception is made in the case of Bordeaux and Ahuntsic, where it is desired to maintain a 5-cent straight fare, with transfer to any part of the city. The company, moreover, is said to have asked for an extension of franchise for 38 years instead of 30 years, so as to make the contract expire 50 years from date.

The other points upon which as a basis the company is said to be willing to enter into an agreement with the city are the following:

(1) To pay two-thirds cost of snow removal on streets where it has or may in future have lines in operation, instead of one-half of the cost.

(2) To pave its right-of-way as well as a space of 18 in. on either side of its tracks.

(3) To make additional routes in the newly annexed wards and to provide a service therein equal to that furnished within the limits of the more densely populated sections of the city.

(4) If the city is willing to provide police officers to prevent overcrowding of the cars at transfer points, to do everything in its power to accommodate every passenger with a seat.

(5) To do a certain portion of street watering in the thoroughfares on which it has lines.

#### Date Set for Public Hearings in Investigation of First District Commission of New York

John N. Carlisle, Watertown, N. Y., formerly a member of the Public Service Commission of the Second District of New York, who was appointed by Governor Dix of New York recently to investigate the affairs of the Public Service Commission of the First District of New York, conferred with the Governor at Albany on March 20. Mr. Carlisle said that he had begun preliminary investigation and expected to hold public hearings in New York within a few weeks. He desired to learn the probable date of adjournment of the Legislature to ascertain if it will be possible to report his findings before the legislative session ends. In a statement made on Feb. 20, 1911, Mr. Carlisle is reported to have said:

"The investigation of the Public Service Commission, First District, is already under way and an itemized monthly statement of all expenditures made by the commission since its organization has been asked for, together with a list of all its employees, with a statement of their salaries and duties.

"It is intended to investigate carefully each bureau of the commission, with the idea of finding out the work undertaken, the work actually accomplished and the cost thereof, and to get in personal touch with the character of the work of each bureau and the men in charge thereof.

"Public hearings will be held at the Engineering Societies Building, 29 West Thirty-ninth Street, in New York, commencing April 4, at 10 a. m., at which time all parties who desire can appear and present any matters they may wish in connection with the work of the commission. My headquarters will be at the Hotel Belmont, New York, and all communications may be addressed to me at that place."

**Meeting of Illinois Electric Railways Association.**—The meeting of the Illinois Electric Railways Association which was arranged to be held at Bloomington, Ill., on March 17, 1911, has been postponed until March 24, 1911, at Bloomington.

**A. E. R. A. Data Sheet.**—H. C. Donecker, secretary of the American Electric Railway Association, New York, N. Y., sent to member companies under date of March 14, 1911, data sheet No. 69, requesting information in regard to the wages of employees other than trainmen.

**Cleveland Underground Railway.**—At its meeting on the evening of March 13, 1911, the City Council refused to suspend the rules and vote upon the amendments to the grant made to the Cleveland Underground Rapid Transit Company, as recommended by the Cleveland Chamber of Commerce. The amendments are intended to provide for the inspection of the company's books by the city; to provide



tubes in the downtown free district large enough to accommodate surface cars, and to strengthen the clause giving the city the right to purchase the property or nominate a purchaser.

**Detroit Franchise Question.**—It is probable that the question of revising the city charter of Detroit in order to introduce the municipal ownership amendment will be brought before the Common Council within a short time. A committee has been considering the subject for some time and one of the members has promised to report it out, whether recommended or not. Alderman McCarty, author of the resolution, is anxious that it should be acted upon so that the question can be submitted to the people. Amendments to the home rule law looking to the same end are pending in the Legislature at Lansing.

**Electrification of Lines at Pasadena.**—It is stated that as a result of the conference held recently in Pasadena, Cal., between E. H. Calvin, vice-president and general manager of the Southern Pacific Company; H. V. Platt, general superintendent of the company; P. Sheedy, superintendent of motive power, and W. H. Whalen, superintendent of the southern district of the company, the question is being considered of electrifying the steam lines running into Pasadena and making the present depot of the Southern Pacific Company at Broadway and Colorado Street the Pasadena terminal of the Los Angeles-Pasadena lines.

**Winnipeg Property Offered to the City.**—Sir William Mackenzie, president of the Winnipeg (Man.) Electric Railway, has made the following alternative proposals to the Mayor and other representatives of the city to sell the property of the company to the city as a means of settling the questions in dispute between the company and the city, in connection with the electric railway and commercial lighting matters: (1) The company will sell its street railway, gas, power and electric light outfit to the city as a going concern; or (2) the company will purchase from the city 15,000 hp as soon as the city and municipal plant is in a position to deliver it at a price which will pay the interest on the city's entire investment in the municipal plant at Point Du Bois Falls, on condition that the company shall be permitted the exclusive right to engage in commercial lighting. The basis on which control is offered is said to be \$250 a share, whereas the present market quotation is \$190. On this basis the city would pay upward of \$15,000,000 for the property. The Mayor will call a meeting of the special committee of the City Council which has power to deal with the case.

**Congress of Technology at Boston.**—The fiftieth anniversary of the founding of the Massachusetts Institute of Technology is to be celebrated by a "Congress of Technology" at Boston, Mass., on April 10 and 11, 1911. Papers of engineering, economic and industrial interest are to be read by the faculty and graduates of the institute, among them the following: "The Field of Scientific Management in Railroad Work," by S. M. Felton, president of the Chicago Great Western Railroad, Chicago; "The Reliability of Materials," by Walter C. Fish, manager of the Lynn works of the General Electric Company; "The Scientific Thought as Applied to Railroad Problems," by Benjamin S. Hinckley, engineer of tests of the New York, New Haven & Hartford Railroad, Boston; "Coal Combustion Recorders," by Prof. A. H. Gill, of the Massachusetts Institute of Technology, Boston; "The Chemist in the Service of the Railroad," by H. E. Smith, chemist and engineer of tests of the Lake Shore & Michigan Southern Railroad, Collinwood, Ohio; "Thirty Years' Experience in Boiler Testing," by George H. Barrus, expert and consulting steam engineer, Boston; "Analysis of Losses in Efficiency in a Large Producer Gas Engine Plant," by John G. Callan, electrical engineer with Arthur D. Little, Incorporated, Boston; "Power Plant Betterment," by H. H. Hunt, of the Stone & Webster Management Association, Boston; "The Engineer and Architect Unite," by L. S. Cowles, of the Boston Elevated Railway, Boston; "The Causes of Failure in Metals," by Henry Fay, professor of analytical chemistry at the Massachusetts Institute of Technology, Boston; "Research as a Financial Asset," by Willis R. Whitney, director of the research laboratory of the General Electric Company, Schenectady, N. Y.

## LEGISLATION AFFECTING ELECTRIC RAILWAYS

### CALIFORNIA

Senate Bill 466, introduced in the California Legislature, was passed on March 11 by the Senate. This bill relates to the acquisition, construction and operation of public utilities by municipal corporations. It provides that any municipal corporation may acquire, construct, own, operate or lease any public utility for supplying water, light, heat or power, affording transportation of persons or property or means of communication, or promoting the convenience of the public. Under this law San Francisco will be enabled to lease the Geary Street, Park & Ocean Railroad to private parties for operation. One section reads: "No lease of any public utility shall be valid for a period of more than 15 years, and all such leases shall be let to the highest bidder at a public auction."

Assembly Bill 992, the purpose of which is to permit the people of Alameda County to decide whether a tunnel shall be constructed under the Oakland estuary, was passed March 6 by the Senate and goes to the Governor. The series of bills known as the conservation measures have been passed. The bills call for an appropriation of \$150,000. One hundred thousand dollars is to be used to take an inventory of the natural resources of the State. The other \$50,000 is to be used to carry out the section of one of the bills which provides for a board to have control of the water power within the State.

Governor Johnson has signed the bill to permit San Francisco to operate a municipal railway over East Street.

### CONNECTICUT

The judiciary committee completed its hearing on the public utilities bills on March 10. E. C. Terry, New Haven, opposed the passage of any utilities bill on the ground that such a measure would entail considerable expense to the railroads and that a utility commission was not needed. Peter O'Hern for the railroad trainmen also opposed the measure. S. T. Bowers, Bridgeport, who appeared at the request of Mr. Terry, confined his remarks largely to the sins of omission of the Public Service Commissions in New York. The House has passed a bill to require electric railways to screen arc headlights when approaching vehicles. The penalty for failing to comply with this law is fixed at \$7 for each offense. The hearing has been closed on the bill to require the Connecticut Company to establish a fare of 10 cents between South Glastonbury and Hartford with transfer privileges.

### DELAWARE

The bill introduced by Senator Monaghan to create a public utility board for Wilmington has passed the Senate. The measure provides that the Governor shall appoint three citizens of Delaware to constitute a commission, the appointees to serve for two years, four years and six years respectively. At the end of that time successors are to be appointed to serve six years. The jurisdiction of the board is to extend to all street railways, railroads, express companies, gas companies, electric light companies, etc. All leases, mergers and consolidations are to be approved by the board.

### ILLINOIS

Another hearing was held before the committee on municipal corporations of the House on March 15 on the pending public utilities bill. The bill as drafted gives the State Railroad & Warehouse Commission appointed by the Governor sole control over all public utilities in Illinois outside of Chicago. H. E. Chubbuck, vice-president executive of the Illinois Traction System, asked what objection there could be to a perpetual franchise under the terms of the bill provided that the corporations lived up to the mandates of the Railroad & Warehouse Commission and gave good service at fair rates. Representatives of the Illinois Mayors' Association contended that the bill was un-American and opposed to the principle of home rule. According to them the measure was also antagonistic to the principle of democracy. Representative Raleigh, Freeport, who introduced the bill, spoke at length. Another hearing on the measure was set for March 22. A bill has been introduced in the House to require the street railways in Chicago to equip their cars with gates.



## MASSACHUSETTS

The committee on street railways has sent in an adverse report on House Bill 520, accompanying the petition of Alexander Sheldon for legislation to require street railways to pay damages to abutting property owners by reason of the location of tracks in front of estates. The committees on railroads and street railways, sitting jointly, have reported leave to withdraw House Bill 512, which provides that railroads and street railways shall double-track all extensions hereafter constructed. The committee has also reported adversely on the Brennan bill to provide for the free transportation of United States letter carriers on railroad and street railway cars. The adverse report of the committee on street railways upon House Bill 771 to require street cars to be equipped with lifting jacks has been given a second reading in the Senate. The committee has sent in an adverse report on the bill, Senate 261, which provides that the authority of street railways to issue preferred stock should be enlarged. The committees on railroads and street railways, sitting jointly, have reported leave to withdraw House Bill 1360, to provide for a determination of the value of shares of stock of consolidated railroads and street railways. An adverse report has also been sent in on House Bill 511 to require an examination of the mental capacity of transportation employees.

## MINNESOTA

Governor Eberhart has vetoed the bill to amend the anti-pass law so as to exempt street railways from its provisions and permit them to transport policemen and firemen in uniform free. He said that if policemen and firemen did not receive sufficient pay to enable them to pay their own fares the remedy lay in an increase in their salaries by the city or cities which employed them, and that it would be invalid to exempt them from the provisions of the anti-pass law. The committee on telephones and telegraphs of the House still has before it the public utilities bill. At a recent hearing W. E. Kerr, who was formerly identified with the Railroad Commission of Wisconsin, favored the proposed bill in Minnesota.

## NEW HAMPSHIRE

Robert P. Bass, Governor of New Hampshire, has sent to the Legislature a special message in which he said in part: "The session is now drawing to a close. Bills have been introduced for the purpose of enacting into law the promises made to the people. These bills are in various stages on their way toward final adoption or rejection by the General Court, but none of the laws which the people of New Hampshire have demanded has yet been passed. The only one of these measures finally acted upon was defeated. I refer to the bill to ratify the proposed amendment of the Constitution of the United States authorizing Congress to impose a tax on incomes. There is no doubt that the people of New Hampshire want the platform pledges redeemed. Therefore I urge upon you to pass the platform measures. The bills which are platform measures and which the General Court is under peculiar obligation to enact are the following. I give the legislative status of each bill: a. A bill to establish a public service commission. The House has passed this bill and it is now in the Senate before the judiciary committee. b. A bill to create a permanent tax commission to replace the present board of equalization. The purpose of this bill is to equalize taxation throughout the State and to provide effectively that public service companies and others shall bear their just and fair share of the public burden of taxation. This bill was passed in the House and is now before the finance committee of the Senate.

## NEW JERSEY

The Edge employers' liability bill has passed the Senate. This measure was introduced by Senator Edge at the instance of the special committee named a year ago by Governor Fort to consider this subject. On March 14 the House, which is Democratic, passed the Egan public utility bill, which provides for a new commission of three members at salaries of \$7,500 a year each with power to regulate rates and service of electric railway, gas, electric light, telephone, telegraph, water and other companies. It is understood that the program of the Senate, which is Republican, was to amend the present public utilities bill and confer rate-making powers on the commission. A bill has been introduced by Senator Lewis to require the consent and

approval of the Board of Public Utility Commissioners for the establishment of any public utility service by any municipality.

## OHIO

The Geleerd municipal ownership bill was defeated on March 15 in the House. When the bill came up for consideration figures and arguments were introduced to prove that municipal ownership in European cities was far from satisfactory. City Solicitor Schreiber, of Toledo, has prepared another bill which provides that a rival company, under grant of the city council, may condemn its way over the tracks of the existing company. At present the law provides that a company may condemn an amount of track equal to one-eighth of the track it actually has in operation at the time. The House passed a bill on March 15 which requires street railways to pave the street six feet each way from the center of a single track and three feet on each side of a double track with material prescribed by the city council. Another bill passed by the House requires that all interurban cars on routes more than 10 miles long shall be provided with toilet rooms, which must be closed within the boundaries of municipalities. A bill introduced by Senator Shaffer would give interurban railways and railroads the right to condemn trees which obstruct their operation. Both urban and interurban railways will be subject to the steam railroad laws governing the abolition of grade crossings if the Kennedy bill, passed by the House, is acted upon favorably by the Senate.

## PENNSYLVANIA

Up to March 18, 1911, 1,677 bills had been introduced into the Senate and House, 1,144 in the House and 533 in the Senate. Attorney General Bell and his assistants have completed the draft of the administration public utilities bill and the measure was considered by the Governor and a number of Legislators prior to submission to the Legislature. The bill provides for a commission of five, to be appointed by the Governor, who is also given authority to designate the chairman. The commission will have a general counsel, secretary, marshal and other officers. By the terms of the new measure the present State Railroad Commission is legislated out of office. The Public Utilities Commission would have headquarters in Harrisburg and branch offices in Philadelphia and Pittsburgh. The new bill gives the commission control of railways, street railways, express companies, car companies, sleeping car companies, freight companies, electric companies, telephone and telegraph companies, water companies, etc. The utilities are required to file with the commission schedule of rates, fares and charges and must also file copies of contracts, arrangements or agreements with other corporations. Rates, fares and charges are to be fixed by the commission. Consent of the commission must be obtained for the transfer of stock or franchises or to start the construction of street railroads or extensions.

Senator McNichol, of Philadelphia, has introduced a bill which provides for the merger and consolidation of motor power and street railway companies. In explanation of his action in introducing the bill the Senator said: "The bill was prepared at the suggestion of A. Merritt Taylor, president of the Philadelphia & West Chester Traction Company. It seems that there are certain companies supplying power to electric railways that are separate from the control of the actual operating corporation. It was Mr. Taylor's suggestion that there should be a bill that will make it possible for the power house corporations to consolidate with the car company." The Senate has passed the bill abolishing the offices of superintendent and assistant superintendent of the Bureau of Railways in the Department of Internal Affairs and creating a chief of the Bureau of Railways at an annual salary of \$2,500 and an assistant chief at \$1,800. The municipal corporations committee of the House has reported favorably the bill to limit public utility franchises to 30 years.

Representative Hunter introduced a bill making deliberate train wrecking a capital offence.

## UTAH

The public utility commission measure which was introduced by Senator Badger, of Salt Lake, as noted in the *ELECTRIC RAILWAY JOURNAL* of Feb. 4, 1911, was killed by a vote of 6 to 12 when it came before the Senate recently.



# Financial and Corporate

## New York Stock and Money Markets

March 21, 1911.

There was a brief moment of activity in the stock market yesterday when it became known that the decisions in the trust cases would not be handed down, but the flurry had no material effect upon the apathetic condition of Wall Street.

The bond market continues to be very satisfactory and money rates easy. Quotations to-day were: Call, 2@2½ per cent; 90 days, 2¾ per cent.

### Other Markets

Traction shares have been uncommonly dull in Philadelphia. The settlement of the refinancing plans seems to have eliminated all desire to trade. Prices have remained practically unchanged.

There was some desultory trading in the shares of the Metropolitan Elevated on the Chicago Exchange during the past week, but otherwise tractions were neglected. Prices for the common remained at former figures, while the preferred was a trifle stronger.

Boston Elevated and Massachusetts Electric are the only tractions which have been in evidence in the Boston market during the week. Prices are inclined to recede.

In the Baltimore market there has been rather active dealing in the shares of the United Railways at slightly higher figures. The bonds of the same company have also been fairly active at former prices.

Quotations of traction and manufacturing securities as compared with last week follow:

	March 14.	March 21.
American Light & Traction Company (common).....	a299	a293
American Light & Traction Company (preferred)....	a106	a106
American Railways Company.....	a44	43½
Aurora, Elgin & Chicago Railroad (common).....	a41	a44
Aurora, Elgin & Chicago Railroad (preferred).....	a85¾	a88
Boston Elevated Railway.....	a128½	a129
Boston Suburban Electric Companies (common).....	15½	15½
Boston Suburban Electric Companies (preferred)....	72	a75
Boston & Worcester Electric Companies (common)...	a9	8½
Boston & Worcester Electric Companies (preferred)..	41	41
Brooklyn Rapid Transit Company.....	77¾	77½
Brooklyn Rapid Transit Company, 1st ref. conv. 4s..	84	84
Capital Traction Company, Washington.....	a128	a126¼
Chicago City Railway.....	185	a185
Chicago & Oak Park Elevated Railroad (common)...	*3¼	½
Chicago & Oak Park Elevated Railroad (preferred)..	*7¼	6
Chicago Railways, ptcptg., ctf. 1.....	a92½	a92½
Chicago Railways, ptcptg., ctf. 2.....	a24½	a25
Chicago Railways, ptcptg., ctf. 3.....	a9½	a9
Chicago Railways, ptcptg., ctf. 4.....	a5	a5
Cincinnati Street Railway.....	a132	*132
Cleveland Railway.....	95	92½
Columbus Railway & Light Company.....	40½	*40½
Columbus Railway (common).....	a96	*96
Columbus Railway (preferred).....	100½	*100½
Consolidated Traction of New Jersey.....	a76½	a76
Consolidated Traction of N. J., 5 per cent bonds....	a105	a105
Dayton Street Railway (common).....	a30	a30
Dayton Street Railway (preferred).....	a105	a105
Detroit United Railway.....	a75	a70
General Electric Company.....	159	149½
Georgia Railway & Electric Company (common)....	a133	a134
Georgia Railway & Electric Company (preferred)....	a92	a91
Interborough Metropolitan Company (common)....	197½	19½
Interborough Metropolitan Company (preferred)....	527½	533½
Interborough Metropolitan Company (4½s).....	78½	78¾
Kansas City Railway & Light Company (common)...	a25	a24¾
Kansas City Railway & Light Company (preferred)..	a70	a70
Manhattan Railway.....	138¾	a140
Massachusetts Electric Companies (common).....	a17¾	17¾
Massachusetts Electric Companies (preferred).....	a88	a87
Metropolitan West Side, Chicago (common).....	a23½	a23½
Metropolitan West Side, Chicago (preferred).....	a68½	a69¼
Metropolitan Street Railway, New York.....	*15	*15
Milwaukee Electric Railway & Light (preferred)...	110	110
North American Company.....	71	72½
Northern Ohio Light & Traction Company.....	43¼	*43¼
Northwestern Elevated Railroad (common).....	a22	a23
Northwestern Elevated Railroad (preferred).....	a63½	a65
Philadelphia Company, Pittsburgh (common).....	a53½	a54½
Philadelphia Company, Pittsburgh (preferred)....	a43½	a43
Philadelphia Rapid Transit Company.....	a20¾	a20
Philadelphia Traction Company.....	a84	a84¼
Public Service Corporation, 5 per cent col. notes (1913)	100¼	*100¼
Public Service Corporation, ctf. 5.....	a105½	a106
Seattle Electric Company (common).....	a109½	a109½
Seattle Electric Company (preferred).....	a99½	a100
South Side Elevated Railroad (Chicago).....	a70	a70
Third Avenue Railroad, New York.....	a9¾	10¾
Toledo Railways & Light Company.....	a8½	a8½
Twin City Rapid Transit, Minneapolis (common)....	a110	a109
Union Traction Company, Philadelphia.....	a47½	a47½
United Rys. & Electric Company, Baltimore.....	17¾	17¾
United Rys. Inv. Co. (common).....	46	47½
United Rys. Inv. Co. (preferred).....	73	74¾
Washington Ry. & Electric Company (common)....	a35¼	a36¼
Washington Ry. & Electric Company (preferred)....	a87½	a89
West End Street Railway, Boston (common).....	91	92½
West End Street Railway, Boston (preferred)....	a102½	103
Westinghouse Elec. & Mfg. Co.....	67	67
Westinghouse Elec. & Mfg. Co. (1st pref.).....	a120¾	a120½

aAsked. \*Last sale.

## Annual Report of Cleveland, Painesville & Ashtabula Railroad

Earnings and expenses of the Cleveland, Painesville & Ashtabula Railroad for the calendar years 1910 and 1909 compare as follows:

	1910.	1909.
Earnings.		
Passenger revenue.....	\$114,275	\$106,871
Special car revenue.....	439	596
Express revenue.....	2,529	1,573
Milk revenue.....	2,260	1,782
Station and car privilege.....	138	141
Rent of equipment.....	13,649	14,491
Rent of buildings.....	.....	9
Power.....	2,957	1,604
Miscellaneous.....	35	35
Total.....	\$136,273	\$127,102
Expenses.		
Maintenance of way and structures.....	1910.	1909.
Maintenance of equipment.....	\$13,918	\$11,041
Conducting transportation.....	12,124	12,549
General.....	48,593	45,209
Total.....	18,472	17,252
Total.....	\$93,107	\$86,051
Net earnings.....	\$43,166	\$41,051
Interest and taxes.....	56,510	55,358
Deficit.....	\$13,344	\$14,307
Per cent. of operation.....	68.32	67.70

E. W. Moore, the president, refers to the following improvements made during the year: A siding and track connection, east of Geneva, with the New York, Chicago & St. Louis Railroad for receiving cinders and slag for ballast. A new station siding was constructed at Perry for handling carload shipments and to provide a meeting point for cars. A second trolley was strung from Ashtabula to Painesville, giving a double trolley the entire length of road. A passenger and express station was built at Perry to better conditions for handling traffic at that point.

Operating statistics for the two years compare as follows:

	1910.	1909.
Car miles.....	472,326	463,503
Income per car mile (cents).....	28.85	27.42
Operating expenses per car mile (cents).....	19.71	18.56
Net earnings per car mile (cents).....	9.14	8.86
Passengers carried.....	708,425	684,803
Earnings per passenger (cents).....	16.13	15.66

**Calumet & South Chicago Railway, Chicago, Ill.—**T. E. Mitten, F. D. Hoffman and J. L. Matson have been elected directors of the Calumet & South Chicago Railway to succeed G. E. Plumb, F. G. Murray and S. R. Jenkins. Officers were elected as follows: T. E. Mitten, president; J. L. Matson, vice-president; F. D. Hoffman, secretary and treasurer; W. W. Hill, auditor.

**Camaguey Company, Ltd., Camaguey, Cuba.—**Gross earnings in 1910 were \$142,893 as compared with \$133,667 in 1909. Operating expenses were \$78,904 as compared with \$75,174 in the preceding year. Net earnings were \$63,989 in 1910 as compared with \$58,493 in 1909. Charges for interest and sinking fund were \$35,816 in 1910 as compared with \$30,000 in 1909. The surplus was \$28,173 in 1910 and \$28,493 in 1909.

**Chicago (Ill.) City Railway.—**The annual meeting of the stockholders of the Chicago City Railway was held on March 16, 1911. James A. Spoor, chairman of the board of directors of the company; Edward Morris, P. A. Valentine and Honoré Palmer all resigned as directors of the company, and Ira M. Cobe, Harrison B. Riley, R. B. Hamilton and L. A. Busby were elected to succeed them. Mr. Cobe has been made chairman of the board. The report of the company for the year ended Jan. 31, 1911, as presented by T. E. Mitten, president of the company, showed gross earnings of \$10,105,443, as compared with \$9,094,047 for the previous year, and a surplus of \$185.43 for the year ended Jan. 31, 1911, as compared with \$618,440 for the previous year. The increase in the amount paid as dividends for the year ended Jan. 31, 1911, as compared with the previous year, however, was \$720,000.

**Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.—**Ladenburg, Thalmann & Company, New York, N. Y., and A. B. Leach & Company, New York, N. Y., have purchased the balance of the 4½ per cent bonds of the Fonda, Johnstown & Gloversville Railroad, due 1952, unissued under the first consolidated general refunding mortgage. The company was recently authorized by the Public Service Commission of the Second District to issue \$380,000 of these bonds at not less than 85, as noted in the ELECTRIC RAILWAY JOURNAL of Jan. 28, 1911, page 182.



**Indiana Union Traction Company, Anderson, Ind.**—The annual report for the year ended Dec. 31, 1910, shows gross earnings of \$2,364,627 as compared with \$2,103,018 for the preceding year. Of the total for 1910 the gross earnings of properties leased after June 15, 1904, were \$180,118 and the gross earnings of all other properties were \$2,184,509. Operating expenses of all the properties were \$1,239,314 as compared with \$1,113,428 in 1909. From the net earnings of \$1,125,314 there was deducted \$733,933 for taxes and underlying bond interest, leaving a net income in excess of taxes and interest on bonds of underlying and subsidiary companies of \$391,381. Dividends on stocks of the Union Traction Company of Indiana and the Munsey, Hartford & Fort Wayne Railway and interest on the Indiana Union Traction Company bonds amounted to \$289,641, leaving a surplus for the year of \$101,740. This surplus compares with a surplus of \$40,834 in the preceding year.

**Lehigh Valley Transit Company, Allentown, Pa.**—Charles M. Schwab, president of the Bethlehem Steel Company, has been elected a director of the Lehigh Valley Transit Company to succeed Tom L. Johnson.

**Lexington & Interurban Railways, Lexington, Ky.**—The Guaranty Trust & Safe Deposit Company, Philadelphia, Pa., trustee under the indenture of the Lexington & Interurban Railways, dated Feb. 2, 1906, will on April 7, 1911, sell at public auction at the Bourse Building, Philadelphia, the securities deposited under the indenture. The purpose of the sale is to liquidate the company and to turn over its assets to the Kentucky Securities Company, the plans of which were referred to in the ELECTRIC RAILWAY JOURNAL of Feb. 11, 1911.

**Manistee Light & Traction Company, Manistee, Mich.**—The sale of the property of the Manistee Light & Traction Company, under foreclosure, fixed for March 15, 1911, has been postponed until April 12, 1911, by order of the United States District Court.

**Maysville Street Railway & Transfer Company, Maysville, Ky.**—The property of the Maysville Street Railway & Transfer Company has been taken over by the Maysville Public Service Corporation, which has been incorporated with a capital stock of \$150,000.

**Metropolitan Street Railway, New York, N. Y.**—The Central Trust Company, New York, N. Y., for itself and in behalf of Kuhn, Loeb & Company, the Farmers' Loan & Trust Company and the Guaranty Trust Company, has purchased \$6,250,000 of 5 per cent receivers' certificates of the Metropolitan Street Railway, to be issued to take up a like amount of receivers' certificates which mature March 15, 1911.

**Public Service Corporation of New Jersey, Newark, N. J.**—The Public Service Corporation of New Jersey has sold \$13,850,000 of its 5 per cent general mortgage bonds to J. P. Morgan & Company, New York, N. Y., and Drexel & Company, Philadelphia, Pa. The proceeds will be used for improvements and betterments during the next two years and to redeem \$4,000,000 of collateral trust gold notes due Oct. 1, 1913. The bankers are offering the bonds at 94 and interest.

**Quakertown (Pa.) Traction Company.**—The Lehigh Valley Transit Company has renewed its offer to purchase the first mortgage 5 per cent bonds of the Quakertown Traction Company. The new time limit for deposit is March 25, 1911. The renewal of the offer was due to a letter addressed to the Lehigh Valley Transit Company on March 4, 1911, by Lawrence Barnum & Company, Bioren & Company, William H. Shelmerdine and the Independence Trust Company, in which they advised the Lehigh Valley Transit Company that they represented the holders of about \$225,000 of the entire issue of \$300,000 of first mortgage 5 per cent bonds of the Quakertown Traction Company, and that they believe they can secure such an additional amount of bonds as will justify the Lehigh Valley Transit Company in purchasing the amount secured.

**Washington, Baltimore & Annapolis Electric Railway, Washington, D. C.**—The property of the Washington, Baltimore & Annapolis Electric Railway was sold for \$2,501,000 at Annapolis Junction on March 20, 1911, to G. A. Craig, representing the reorganization committee, under decree of the United States Court to satisfy the first mortgage for \$3,000,000 and the second mortgage for \$1,000,000. The de-

tails of the plan of the committee representing the bondholders for the reorganization of the company were referred to in the ELECTRIC RAILWAY JOURNAL of Nov. 19, 1910, page 1044, and Nov. 26, 1910, page 1078.

**Watsonville (Cal.) Transportation Company.**—The property of the Watsonville Transportation Company, which consists of rolling stock, power plant, four miles of track between Watsonville and Monterey Bay, and a franchise and realty, has been sold by Edward White, receiver, to J. W. Forgeus, San Francisco, for \$22,000.

**Dividends Declared**

Bangor Railway & Electric Company, Bangor, Maine, quarterly, 1 3/4 per cent.

Carolina Power & Light Company, Raleigh, N. C., quarterly, 1 3/4 per cent, preferred.

Cincinnati & Hamilton Traction Company, Cincinnati, Ohio, quarterly, 1 1/4 per cent, preferred; quarterly, 3/4 of 1 per cent, common.

City Railway, Dayton, Ohio, quarterly, 1 1/2 per cent, preferred; quarterly, 1 3/4 per cent, common.

Cleveland (Ohio) Railway, quarterly, 1 1/2 per cent.

Frankford & Southwark Passenger Railway, Philadelphia, Pa., quarterly, \$4.50.

Lake Shore Electric Railway, Cleveland, Ohio, quarterly, 1 1/2 per cent, first preferred.

Manila Electric Railroad & Lighting Corporation, Manila, P. I., quarterly, 1 1/4 per cent.

New York State Railways, Rochester, N. Y., quarterly, 1 1/4 per cent, preferred; quarterly, 1 1/2 per cent, common.

Norfolk & Portsmouth Traction Company, Norfolk, Va., quarterly, 1 1/4 per cent, preferred.

Omaha & Council Bluffs Street Railway, Omaha, Neb., quarterly, 1 1/4 per cent, preferred; quarterly, 1 per cent, common.

Portland (Maine) Railroad, 2 per cent.

Seattle (Wash.) Electric Company, 3 per cent, preferred; quarterly, 1 3/4 per cent, common; 2 per cent, common (extra).

Stark Electric Railroad, Alliance, Ohio, quarterly, 3/4 of 1 per cent.

Tri-City Railway & Light Company, Davenport, Ia., quarterly, 1 1/2 per cent, preferred.

Union Traction Company of Indiana, Anderson, Ind., 2 1/2 per cent, preferred.

Winnipeg (Man.) Electric Company, quarterly, 2 1/2 per cent.

**ELECTRIC RAILWAY MONTHLY EARNINGS**

BANGOR RAILWAY & ELECTRIC COMPANY.						
Period.			Gross Revenue.	Operating Expenses.	Net Revenue.	Fixed Charges. Net Income.
1m.,	Jan.	'11	\$45,176	*\$22,260	\$22,916	\$12,116 \$10,800
1 "	"	'10	42,868	*20,743	22,125	11,704 10,421
7 "	"	'11	355,508	*157,860	197,648	84,206 113,442
7 "	"	'10	343,500	*152,847	190,653	82,190 108,463
CHATTANOOGA RAILWAY & LIGHT COMPANY.						
1m.,	Jan.	'11	\$73,533	*\$42,809	\$30,724	\$19,113 \$11,611
1 "	"	'10	65,946	*40,676	25,270	17,926 7,344
GRAND RAPIDS RAILWAY.						
1m.,	Jan.	'11	\$92,067	*\$51,035	\$41,032	\$15,102 \$25,930
1 "	"	'10	86,352	*49,066	37,286	16,048 21,238
KANSAS RAILWAY & LIGHT COMPANY.						
1m.,	Feb.	'11	\$599,951	\$321,764	\$278,187	\$190,263 \$87,924
1 "	"	'10	553,543	286,728	266,815	164,810 102,005
9 "	"	'11	5,770,148	3,378,428	2,391,720	1,701,579 690,141
9 "	"	'10	5,339,159	3,007,383	2,331,775	1,543,564 788,211
MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY.						
1m.,	Feb.	'11	\$382,026	\$201,168	\$180,858	\$115,644 \$65,214
1 "	"	'10	353,964	188,508	165,456	106,487 58,969
2 "	"	'11	800,453	419,996	380,457	235,126 145,332
2 "	"	'10	740,680	407,937	332,743	217,861 114,882
MILWAUKEE LIGHT, HEAT & TRACTION COMPANY.						
1m.,	Feb.	'11	\$116,819	\$35,118	\$81,701	\$68,350 \$13,351
1 "	"	'10	110,182	31,535	78,646	66,803 11,754
2 "	"	'11	238,085	71,889	166,196	137,472 28,724
2 "	"	'10	222,664	67,950	154,715	134,171 20,543
MONTREAL STREET RAILWAY.						
1m.,	Jan.	'11	\$370,125	\$239,983	\$130,142	\$39,155 \$90,987
1 "	"	'10	325,621	205,060	120,561	35,600 84,871
4 "	"	'11	1,500,185	908,384	591,801	140,809 450,992
4 "	"	'10	1,352,062	791,939	560,124	132,035 428,088
ST. JOSEPH RAILWAY, LIGHT, HEAT & POWER COMPANY.						
1m.,	Jan.	'11	\$90,987	*\$51,225	\$39,762	\$19,292 \$20,470
1 "	"	'10	89,308	*51,006	38,302	17,918 20,384
UNION RAILWAY, GAS & ELECTRIC COMPANY.						
1m.,	Jan.	'11	\$276,382	*\$162,373	\$114,009	\$59,395 \$54,614
1 "	"	'10	263,875	*163,499	100,376	58,268 42,108



## Traffic and Transportation

### Recommendations of the Trenton Street Railway

The Board of Public Utilities Commissioners of New Jersey has made certain recommendations to the Trenton Street Railway for improvements to its physical property as a result of the investigation which the board made recently at the request of the Common Council of Trenton. The Council, in the complaint to the commission, requested that the company be required to reconstruct certain portions of its roadbed, reconstruct part of its overhead system and provide all its cars with air brakes. The hearings by the board were conducted at Trenton and the members of the board and its engineers inspected the physical property of the company.

The board has suggested that the company substitute for the rail joint now in use a joint of the girder or of the continuous type to be supported on two ties instead of one, and that the ballast be improved so as to prevent further settling of the rails at the joints. It is recommended that part of the work covered by the order of the commission shall be begun before April 5, 1911, and be completed during 1911, and that the other work designated in the finding shall be begun and completed during 1912. The repairs to the joints as suggested by the commission are to be made wherever track reconstruction is carried out. The board says that the overhead work of the company has been subject to special attention within a comparatively recent time and that the inspection of the overhead work disclosed it to be in good condition.

All the cars which are operated by the company through the city to nearby municipalities are equipped with air brakes. The other cars of the company, including 10 prepayment cars, are equipped with hand brakes, but as there are no steep grades in the city and the speed maintained for urban traffic is normal the board considers the hand-brake equipment sufficient. The board has further ordered the company to equip each car operated by it, and not already so equipped, with an approved type of sand box.

The expenditures for the work recommended by the board are to be made out of the earnings of the company, the payment to be made from a depreciation account so far as practical. The board has recommended that hereafter such a sum be set aside annually to the credit of the depreciation fund as will suffice to maintain the physical property in good condition. The Hamilton Avenue line of the company is single track with turnouts, and the board has recommended the company to begin proceedings to enable it to construct an additional track on Hamilton Avenue from South Clinton Avenue to Chambers Street.

### Service in Atlanta

The Railroad Commission of Georgia has handed down its finding as a result of the inquiry which it conducted recently into the service furnished by the Georgia Railway & Electric Company, Atlanta, Ga. One of the principal points in the memorandum submitted to the commission by the petitioners was a request to the commission to order the company to establish an all-night service. Hearings were held by the commission in Atlanta, and the answer filed by P. S. Arkwright, president of the company, to the petition was referred to in the *ELECTRIC RAILWAY JOURNAL* of March 4, 1911, page 306. Mr. Arkwright referred at length in his answer to the question of all-night service and said that for a number of years the company had operated a limited all-night service which it felt met the needs of the public adequately. The Railroad Commission has agreed with the company that the all-night service now given is sufficient. In regard to the other questions brought up in the petition it has made the following suggestions:

The first cars in the morning on all lines should reach the center of the city not later than 5:30 a. m. The last cars on all lines should leave the city as late as 12:15 a. m., preferably 2:30 a. m. A tentative schedule should be submitted looking to these improvements. A 5-minute schedule should be established on the Washington Street line instead of the present 10-minute schedule. Two cars

should be run every 10 minutes on Luckie Street instead of one car every 10 minutes, until it becomes possible to run a 5-minute headway schedule.

On Marietta Street a schedule of two cars every 10 minutes should be established as follows: Leave corner Marietta and Broad every morning at 6:15, 6:25, 6:35, 6:45. This system of running two cars every 10 minutes should continue until Oct. 1, 1911, when larger cars are to be put on.

Magnolia and West Mitchell Streets should have a 10-minute schedule during rush hours.

All the 28-seat cars on Peachtree and Whitehall Streets should be replaced by 36-seat cars or larger within the next 30 days. The 5-minute schedule should be continued on these streets.

Ten-minute schedules instead of 15 should be operated on Piedmont and Central Avenues after April 1.

A 10-minute schedule should be instituted on West Peachtree Street beyond Sixth Street as far as Peachtree Road.

### Changes in Transfers in Chattanooga

The Chattanooga Railway & Light Company, Chattanooga, Tenn., has recently modified its transfer regulations principally to prevent passengers from looping. The company has instructed conductors to give passengers transfers punched with the transfer point and the final destination, and has also instructed conductors who receive transfers tendered by passengers not to issue other transfers unless the final destination is indicated on the slip which is presented. If more than two points are punched on a transfer when it is presented by a passenger who requests another transfer the conductor is instructed to punch the final destination. Conductors have also been instructed to turn in transfers and tickets collected during each round trip at the end of the trip. A placard addressed to passengers which has been posted in the cars of the company reads as follows:

"Passengers will please ask for transfers when paying fare and will see that the same are properly punched, as the company will not be responsible for errors in punching."

The following bulletin in regard to transfers was posted recently for the benefit of conductors:

"Transfers will be accepted only when properly punched and offered for ride by persons to whom transfers are issued at designated point within the time limit punched on transfer.

"Transfers must not be issued on transfers unless the final destination of the passenger is punched on the original transfer.

"When a passenger refuses to pay fare or presents a defective transfer or ticket, upon which in the judgment of the conductor the passenger is not entitled to ride, conductor must retain such defective transfer or ticket and secure the names of as many witnesses to the fact as is possible, whereupon the car must be stopped and the passenger requested to leave. If the passenger fails to comply with such request the facts in the case must be brought to the attention of the first inspector, dispatcher or official of the company who is met and the conductor must act according to the instructions received from such inspector, dispatcher or official.

"In all cases the passenger must be given the benefit of any doubt. When a passenger who refuses to pay fare requests to be allowed to leave the car the car must be stopped and the passenger permitted to alight."

"The Booster."—The Louisville & Northern Railway & Lighting Company, New Albany, Ind., has begun the publication of a four-page paper, *The Booster*, devoted to the interests of its employees. The first issue was dated March 1, 1911, and the purpose of the publication was stated as follows: "A publication for the employees of the North Side public utilities, in the interest of them both, as well as that of the communities they serve."

Complaint About Service Out of Buffalo.—The Public Service Commission of the Second District of New York has received a complaint about the irregularity of the service furnished by the International Railway between Buffalo, Tonawanda, North Tonawanda, Lockport, La Salle and Niagara Falls. The complaint alleges that the service is



irregular because the cars operated on the line between Buffalo and Niagara Falls are used in Buffalo to carry local passengers.

**Baggage on the Western Ohio Railroad.**—Baggage and the rules governing its transportation are defined as follows in the time-table of the Western Ohio Railroad, Lima, Ohio: "Baggage not exceeding 150 lb. in weight checked free on one full ticket and 75 lb. on one half ticket. No baggage will be checked free where the one-way fare is less than 25 cents. Where the fare is less than 25 cents, agents will check baggage under the rule by collecting the difference between the ticket fare and 25 cents. No single piece of baggage weighing over 250 lb. will be checked. Baggage consists of wearing apparel or personal effects necessary for use and comfort of passengers, and may be checked in trunks, valises, satchels, suit cases, boxes roped with handles. Sample cases, tool chests, packs and whip cases are not baggage, and when checked it is done as a matter of courtesy, and this company will not be responsible for any loss or damage to contents, reserving the right to refer such passengers to the express companies."

**Subway Ticket Sales in Brooklyn.**—A statement has been issued by the Public Service Commission of the First District of New York showing the extent of business done on the Brooklyn extension of the Interborough Rapid Transit Company's subway line since it was opened, in January, 1908. The statement gives the number of tickets sold at each station on the Brooklyn extension for each month from the opening up to December, 1910. Borough Hall station, which was opened first, began business in January, 1908. Other stations were opened in May, 1908. The grand total sales of tickets for all stations on the Brooklyn extension, from January, 1908, to and including December, 1910, were 85,211,798. The total traffic of the entire subway for the same period was 747,981,683. Brooklyn sales were therefore 11.3 per cent of the sales of the entire system. For 1910 Brooklyn sales were 33,378,518. For the same year total sales on the entire system were 270,221,490. The Brooklyn proportion of this total was in the neighborhood of 12.4 per cent.

**Excursion Business at Los Angeles.**—The Pacific Electric Railway, Los Angeles, Cal., has announced that excursions over its lines to points of interest near Los Angeles, operated in the past by private companies, will hereafter be handled by the company itself. The Balloon Route excursion over the lines of the Los Angeles-Pacific Company will retain the name by which it has been known for many years. T. M. Pierce, manager of the Balloon Route, has been made manager of the electric railway trips of the Los Angeles-Pacific Company and the Pacific Electric Railway. He will have as assistant M. J. Demster. The trips formerly conducted by George F. Tilton, manager of the Tilton's Trolley Trips, will hereafter be known as the Mission trolley trips. No charge in the routing has been made and the special sight-seeing cars over the lines of the Pacific Electric Railway will visit Los Angeles harbor, Long Beach, Miramar, San Gabriel Mission, Cawston's ostrich farm, Pasadena and other points of interest. The excursion department will, of course, come under the general supervision of D. W. Pontius, traffic manager of consolidated lines.

**Suggestions for Relieving Congestion in Los Angeles.**—In order to relieve traffic in congested districts and systematically to handle passenger and freight traffic in Greater Los Angeles, Theodore B. Comstock, engineer of the Board of Public Utility Commissioners of Los Angeles, has suggested that the traffic focus should be located in the vicinity of Santa Barbara Avenue and Alameda Street, where a union station could be constructed to accommodate both transcontinental lines and all rapid transit interurban railroads and from which point local street railway lines could radiate to all parts of the city; that street viaducts should be constructed over the main trunk steam lines along the Los Angeles River bed with a possible depression of these particular lines at some points, and that all rapid transit interurban electric railways enter the traffic focus or union station by means of either elevated tracks or subways, and that grade crossings be eliminated. Mr. Comstock is also reported to have said: "I firmly believe that the city itself must finally assume control of the local distribution of

freight. The construction of the municipal railway, if wisely planned as to terminals, will very largely provide the means of accomplishing this purpose as regards its initial stages."

**Advertisement on Preventing Accidents.**—The Portland Railway, Light & Power Company, Portland, Ore., carried a full-page advertisement in the recent fiftieth anniversary number of the Portland *Oregonian* devoted to the subject of street-car accidents. Four line engravings, each entitled "How It Might Happen," were used to illustrate the advertisement. They showed the consequences likely to follow when a passenger alights from a moving car, when a passenger crosses behind a car without looking to see if a car is coming in the opposite direction, when a child darts heedlessly into the street in play, and when a boy jumps from a car on which he has been stealing a ride. Each of these illustrations and the text which accompanied it occupied a space 6½ in. by 7 in. Two illustrations were arranged on either side of the page, with this message down the center of the page between the illustrations: "The Portland Railway, Light & Power Company, in its effort to prevent accidents, has inaugurated a campaign among our schools. It has engaged the services of a gentleman who devotes his entire time in going from one school to another and delivering lectures to the students and their teachers on 'The Prevention of Accidents.' He has, within less than one year, talked to all the school children and teachers of our city on two different occasions. This work the company intends to continue. This is not all this company is doing to prevent accidents in our city. It has set aside a large auditourium in its fine new office building at Seventh and Alder Streets, where weekly lectures are delivered to the trainmen on 'The Prevention of Accidents.' But the public must do its part if accidents are to be prevented altogether. Persons who ride in the cars, who traverse the streets on foot or in vehicles, passengers boarding and leaving cars must be careful. They must keep their eyes open. They must keep their wits about them. When they do this the number of street-car accidents will be largely reduced."

**Damage by Storm at Los Angeles.**—A storm which swept over Southern California early in March did a great deal of damage and affected the railroads and the electric railroads, particularly the lines in and about Los Angeles. The Los Angeles *Examiner* in its issue of March 11, 1911, in referring to the destruction of railway property by the rising of the rivers said in part: "The floods have thrown railroad transportation to and from Los Angeles into temporary confusion. All the steam railroads have suffered severely and nearly all the interurban electric railways are being operated in the face of great difficulties. On the Whittier line of the Pacific Electric Railway 12 bents of the bridge across the San Gabriel and 120 ft. of embankment approach have been washed out. Passengers yesterday walked across a sort of suspension bridge, consisting of rails and ties. The breach in the embankment east of the Puente Largo, the big cement bridge across the San Gabriel on the Glendora line, has been widened from 50 ft. to 300 ft., and workmen are attempting valiantly to prevent a further widening of the breach. On the Glendora line 75 ft. of bridge and 120 ft. of embankment at the approaches have been washed out in Lexington wash. Cars on this line are being operated only as far as Puente Largo, about 21 miles from Los Angeles. No car communication is to be had with Glendora. The bridge over the San Gabriel on the Santa Ana line has been weakened and about 100 ft. of embankment washed out. Cars on the Covina line of the Pacific Electric Railway are being operated only as far as Rosemead. Three small washouts have put the Huntington Beach line, extending from Santa Ana, out of commission temporarily. The Verdugo bridge on the Glendale line was weakened so that traffic was held up for several hours yesterday morning. The scenic line of the Los Angeles-Pacific Railway extending north of Santa Monica along the Palisades has been washed out. It will be several days, perhaps, before it is again put into operating condition. During the forenoon yesterday half a mile of track on the Colegrove line of the Los Angeles-Pacific Railway below Hollywood was under water. At noon the company was able, however, to operate cars over the flooded line."



## Personal Mention.

**Mr. H. S. Hyde** has resigned as storekeeper of the Chicago & Milwaukee Electric Railroad, Highwood, Ill.

**Mr. J. L. Matson** has been elected vice-president of the Calumet & South Chicago Railway, Chicago, Ill., to succeed Mr. W. W. Crawford.

**Mr. F. D. Hoffman** has been elected secretary and treasurer of the Calumet & South Chicago Railway, Chicago, Ill., to succeed Mr. F. G. Murray.

**Mr. J. H. Lahrmer**, superintendent of transportation of the Columbus, Delaware & Marion Railway, Columbus, Ohio, has been given the title of superintendent of the company.

**Mr. W. H. Crabbe** has resigned as master mechanic of the Joliet & Southern Traction Company, Joliet, Ill., and has accepted a position with the Illinois Construction Company.

**Mr. Ira M. Cobe** was elected chairman of the board of directors of the Chicago (Ill.) City Railway at the annual meeting of the company on March 16, 1911, to succeed Mr. James A. Spoor.

**Mr. John A. Shackelford**, formerly a Supreme Court judge in Washington, has been appointed counsel for the Tacoma Railway & Power Company, Tacoma, Wash., to succeed Mr. B. S. Grosscup, resigned.

**Mr. Wayne P. Hendricks** has resigned as purchasing agent of the Chicago & Milwaukee Electric Railroad, Highwood, Ill. Mr. Hendricks was formerly superintendent of the Sterling, Dixon & Eastern Electric Railway, Dixon, Ill.

**Mr. Frank K. Shuff** has resigned from the Iowa State College as assistant superintendent of fires, lights and incidentals to become superintendent of the Boone (Ia.) Electric Company, which operates the electric railway and electric light properties in Boone.

**Mr. T. E. Mitten**, president of the Chicago (Ill.) City Railway, has been elected president of the Calumet & South Chicago Railway, Chicago, Ill., which is operated by the Chicago City Railway. Mr. Mitten succeeds Mr. Ira M. Cobe as president of the company.

**Mr. E. H. Vivian**, whose resignation as claim agent and traffic manager of the Chicago & Milwaukee Electric Railroad, Chicago, Ill., was announced in the *ELECTRIC RAILWAY JOURNAL* March 18, 1911, has been appointed traffic manager and claim agent of the Michigan United Railway, Lansing, Mich., and has entered upon his duties with that company.

**Mr. John H. Pardee**, operating manager of J. G. White & Company, Inc., was elected on March 14 vice-president of the Augusta Railway & Electric Company and the Augusta & Aiken Railway, Augusta, Ga. Control of these companies has been acquired recently by a syndicate in which Redmond & Company and J. G. White & Company, Inc., are interested.

**Mr. Fred Hume** has been appointed superintendent of machinery of the Fort Dodge, Des Moines & Southern Railroad, Boone, Ia., in charge of the locomotive and car department, power house, substations, overhead and all matters pertaining to the operation and maintenance of the electrical and mechanical equipment. The master mechanic, chief engineer of power house, general line foreman and substation attendants will all report to Mr. Hume.

**Mr. J. C. McPherson** has been appointed assistant superintendent of the northern division of the Pacific Electric Railway, Los Angeles, Cal., in charge of the lines in Pasadena. Mr. McPherson resided in Pasadena until he was appointed superintendent of what was known as the city division of the Pacific Electric Railway with headquarters in Los Angeles. He has been with the company for 15 years in various capacities and previous to that was with the Santa Fé Railroad for 12 years.

**Mr. F. F. Barbour** has been appointed assistant to the president of the Pacific Gas & Electric Company, San Francisco, Cal., in which capacity he will manage the railway system of the Sacramento Electric Gas & Railway Company, Sacramento, Cal., and the commercial department of the Pacific Gas & Electric Company. Mr. Barbour was

formerly assistant to the president of the Portland Railway, Light & Power Company, Portland, Ore., and was at one time special agent of the General Electric Company at San Francisco.

**Mr. John H. Smith** has resigned as chief draftsman of the mechanical department of the Twin City Rapid Transit Company, Minneapolis, Minn., in which capacity he served for four years under Mr. W. J. Smith, master mechanic. Mr. John H. Smith has had extensive experience in railroad work, having served an apprenticeship in the shops of the Philadelphia & Reading Railway for which he subsequently was machinist, foreman, locomotive and car draftsman and designer. He was also designer for the American Locomotive Company.

**Mr. H. L. Weber** has resigned as chief engineer of the Columbus, Marion & Bucyrus Railway, Marion, Ohio, to become chief engineer of the Utah & Grand Canyon Railroad, Cedar City, Utah. Mr. Weber was formerly chief engineer of the Fort Wayne & Wabash Valley Traction Company, Fort Wayne, Ind. Mr. Weber was also city engineer of Bucyrus and city engineer of Richmond, Ind. While acting as city engineer at Richmond Mr. Weber served as consulting and bridge engineer of the Chicago, Cincinnati & Louisville Railroad.

**Mr. J. A. Doane** has been appointed superintendent of transportation of the Chicago & Milwaukee Electric Railroad, Highwood, Ill. Mr. Doane was formerly chief clerk to Mr. E. J. Bock, who has been appointed general superintendent of the company. Before becoming connected with the Chicago & Milwaukee Electric Railroad Mr. Doane was superintendent of the Elgin & Belvidere Electric Company. At one time he was connected with the Board of Supervising Engineers, Chicago Traction, and before that was chief dispatcher of the Aurora, Elgin & Chicago Railroad, Chicago, Ill.

**Mr. J. P. Clark**, vice-president and general manager of the Greenville, Spartanburg & Anderson Railway, Greenville, S. C., who has been acting as electric railway expert and consulting engineer to Mr. J. B. Duke, the president of the company, in connection with the developments being carried out by Mr. Duke and his associates in North and South Carolina, will continue to act in the capacity of consulting engineer in this connection. Mr. Clark is also managing director of the North Carolina Public Service Company, Greensboro, N. C., and retains his connection with the Michigan United Railways, Lansing, Mich., as vice-president.

**Mr. E. J. Bock** has been appointed general superintendent of the Chicago & Milwaukee Electric Railroad, Highwood, Ill. Mr. Bock has been superintendent of transportation of the Chicago & Milwaukee Electric Railroad for two years. Now that Mr. W. O. Johnson has been appointed operating receiver of the company with offices in Chicago and the position of general manager has been abolished, all operating heads will report to Mr. Bock at Highwood. As general superintendent Mr. Bock will take charge of the traffic department. Previous to his connection with the Chicago & Milwaukee Electric Railroad Mr. Bock was chief dispatcher of the Metropolitan West Side Elevated Railway, Chicago, Ill., for 12 years, and previous to that he was with the operating department of the Canadian Pacific Railway.

**Mr. Frederic W. Hild** has been appointed general manager of the Portland Railway, Light & Power Company, Portland, Ore., in charge of railway, light and power operating departments. Mr. Hild was formerly assistant general manager and chief engineer of the Havana (Cuba) Electric Railway. He was graduated as an electrical and civil engineer from Union College, at Schenectady, N. Y., in the class of 1898, and was for a time connected with the General Electric Company. While in the employ of this company Mr. Hild assisted in the important rehabilitation work carried out by the Twin Cities Rapid Transit Company, the Kansas City Railway & Light Company and the Chicago Edison Company. Mr. Hild assumed his duties with the Portland Railway, Light & Power Company on March 15, 1911.

**Mr. H. G. Stott**, superintendent of motive power of the Interborough Rapid Transit Company, New York, N. Y., was tendered a dinner at the Hotel Ansonia recently by the



members of his staff in recognition of his services during the 10 years he has been with the company. There were in attendance in addition to his present staff these former members: Messrs. R. D. Tomlinson, the Allis-Chalmers Company, Milwaukee, Wis.; H. W. Butler, with J. G. White & Company, Inc.; W. S. Finlay, Jr., and M. Serating, assistant engineer with the Public Service Commission. Telegrams and cablegrams of regret were read from Messrs. C. W. Ricker, of Havana Electric Railway; W. N. Ryerson, general manager of the Great Northern Power Company; G. F. Chellis, with J. G. White & Company; L. L. Gaillard, general manager of the New England Engineering Company; L. R. Parker, electrical engineer with the New England Engineering Company.

Mr. Robert W. Rockwell has been appointed superintendent of the Charleston Interurban Railroad, Charleston-Kanawha, W. Va., to succeed Mr. J. C. Rockwell, whose appointment to the operating staff of the Manila Electric Railroad & Light Company, Manila, P. I., with the title of superintendent of transportation or general superintendent was noted in the *ELECTRIC RAILWAY JOURNAL* of March 18, 1911. Mr. Robert W. Rockwell was formerly connected with the Interborough Rapid Transit Company, New York, N. Y., as foreman on the construction of the new steel cars for the subway. Prior to that he worked for the Brooklyn (N. Y.) Rapid Transit Company for two years. Before becoming connected with the Brooklyn Rapid Transit Company Mr. Rockwell was connected with the Syracuse, Lake Shore & Northern Railroad, Syracuse, N. Y., for a year and a half. Mr. Rockwell is a son of Mr. W. B. Rockwell, manager of the Eastern Pennsylvania Railways, Pottsville, Pa.

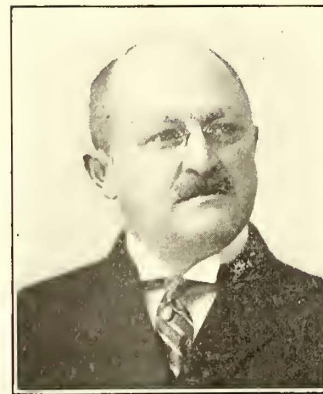
Mr. N. M. Argabrite has resigned as manager of the Public Service Operating Company, Belvidere, Ill., to become connected with the American Gas & Electric Company in charge of the Hartford City (Ind.) Lighting Company. Mr. Argabrite began his electrical career in 1898 with the Ashland Electric Light & Power Company and Ashland & Catlettsburg Street Railway, Ashland, Ky. Later he was connected with the Camden Interstate Railway, Huntington, W. Va., in charge of its branch at Ashland, Ky. Following this he was with the Ohio Valley Electric Company, which succeeded the Camden Interstate Railway. Mr. Argabrite next became superintendent of railways for the Winona Railway & Light Company, Winona, Minn., and later was appointed general superintendent and then manager of the same company. In 1909 Mr. Argabrite accepted the position of manager of the Public Service Operating Company Belvidere, Ill., which operates electric light, gas and heating plants.

Mr. C. L. Murray, whose appointment as general manager of the Northwestern Railways Company, Meadville, Pa., was noted in the *ELECTRIC RAILWAY JOURNAL* of March 18, 1911, page 481, was formerly general manager of the Schuylkill Railway, Girardville, Pa. Mr. Murray has had an extended experience in managing electric railway properties. He was assistant superintendent of the Philadelphia & Bristol Passenger Railway, Philadelphia, Pa., for three years, assistant superintendent of the Buffalo & Depew Railway, Buffalo, N. Y., for two years and general manager of the Elmira & Seneca Lake Railway, Elmira, N. Y., for three years. All of these properties were controlled by the Railways Company General. Mr. Murray was also assistant superintendent of construction for J. G. White & Company, Incorporated, New York, N. Y., for two years and was assistant to Mr. D. A. Hegarty, general manager of the Little Rock Railway & Electric Company, Little Rock, Ark., for two years.

Mr. W. S. Lee, chief engineer of the Southern Power Company, Rock Hill, S. C., has been elected vice-president and chief engineer of the Greenville, Spartanburg & Anderson Railway, Greenville, S. C. Mr. Lee was born in 1872, in Lancaster, S. C., and was educated in the common schools of Anderson County and at the South Carolina Military Academy, from which he was graduated in 1894. For a short time he was an instructor in the graded schools in Anderson. Later he took up engineering work and was promoted from transit man to resident engineer of the Pickens Railway. He then became resident engineer of the Anderson Water, Light & Power Company in charge of the construction of the Portman-Shoals hydroelectric

installation on the Seneca River. In October, 1898, Mr. Lee became resident engineer of the Columbus (Ga.) Power Company. This company's dam on the Chattahoochee River was completed late in 1900, and was subsequently carried away. Following the reconstruction of the dam Mr. Lee became chief engineer of the Catawba Power Company, with a dam at India Hook Shoals near Rock Hill, S. C. The output of this company was soon absorbed and the Southern Power Company was formed and purchased the property of the Catawba Power Company and acquired water power rights on the Catawba and Broad Rivers. Mr. Lee was made chief engineer of this company. Mr. Lee is a member of the American Institute of Electrical Engineers, American Society of Civil Engineers and the American Society of Mechanical Engineers.

Mr. J. R. Harrigan has resigned as general manager of the Columbus, Delaware & Marion Railway, Columbus, Ohio, to accept the position of vice-president of the Des



J. R. Harrigan

Moines (Ia.) City Railway and the Interurban Railway, Des Moines, Ia., in charge of the properties. For the last 10 years Mr. Harrigan has been connected with the electric railways in the vicinity of Columbus. He was formerly general manager of the Chippewa Valley Electric Railroad, Eau Claire, Wis., and before that for a year, in 1901, was general superintendent of the Dayton, Springfield & Urbana Railway, under Mr. A. E. Appleyard. In 1902 he became general manager of the Columbus, Buckeye Lake & Newark Traction Company and the Columbus, Newark & Zanesville Railway, and remained in that capacity four years, until the roads were purchased by the so-called Widener-Elkins syndicate. In 1906 he assumed the management of the Canton-Akron Railway, another Tucker-Anthony property, and was general manager of the company until it was absorbed by the Northern Ohio Traction & Light Company. In January, 1907, Mr. Harrigan was appointed assistant general manager of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y. Before he left Columbus for Des Moines Mr. Harrigan was visited by the officers and heads of departments of the Columbus, Delaware & Marion Railway and presented with a silver pitcher service as a token of esteem.

#### OBITUARY

Le Grand W. Perce, formerly president of the Union Elevated Railroad, Chicago, Ill., is dead. Mr. Perce was born in Buffalo in 1836 and was a lawyer by profession.

Mr. Edmund Hitchins, chairman of the street railway committee of the City Council of Cleveland, Ohio, died suddenly at his home in Cleveland on March 16, 1911. Mr. Hitchins took a prominent part in the traction negotiations during the Johnson administrations, and of late had charge of the legislation to allow the company to dispose of bonds.

John B. McDonald, who took the contract to build the present New York subway, died in New York on March 17, 1911. This contract was subsequently transferred to the Rapid Transit Subway Construction Company. Mr. McDonald was born in Fernoy, Ireland, in 1844, and was educated in New York City. He began his career as a clerk with the register of deeds, but resigned from this position to become a foreman of construction in connection with a large engineering contract. Later he went into the contracting business as a member of the firm of Dillon, Clyde & Company. He built the belt line tunnel in Baltimore and became president of the South Baltimore Car Works and the Eastern Ohio Railroad. He also constructed the Jerome Park reservoir. Mr. McDonald was a director of the Rapid Transit Subway Construction Company and the Interborough Rapid Transit Company, but resigned from these companies to become connected with the Metropolitan Street Railway.



## Construction News

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

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

### RECENT INCORPORATIONS

**\*Rockford City Traction Company, Rockford, Ill.**—Incorporated in Illinois to build an electric railway in Rockford. Capital stock, \$10,000. Incorporators: A. A. Anderson, Warren Partridge and P. B. Warren.

**\*Milwaukee, Peoria & St. Louis Railway, Springfield, Ill.**—Chartered in Illinois to build an electric railway from Peoria to Rockford, via the Counties of Tazewell, Woodford, Marshall, Putnam, Bureau, Lee, Ogle and Winnebago. This line will be part of a system to extend from Milwaukee to St. Louis, via Rockford and Peoria. Directors: Eugene C. Morton, Frank B. Reed, Frederick C. Vehmeyer, John H. O'Neil and Frank H. Gardiner, all of Chicago.

**Indianapolis & Delphi Traction Company, Indianapolis, Ind.**—Incorporated in Indiana to build an electric railway from Carmel to Delphi, via Sheridan, Hortonville, Westfield, Kirkland, Frankfort, Forest, Kempton, Russiaville, Burlington, Bingham and Flora. At Carmel connection will be made with the Logansport division of the Indiana Union Traction Company. The company has obtained franchises in all the towns through which it proposes to operate. Most of the right-of-way has been secured and grading will begin as soon as the weather permits. The first section of the line to be built will be from Carmel to Sheridan, a distance of 15 miles. Capital stock, \$100,000. Headquarters: Indianapolis. Incorporators: Henry L. Smith, Indianapolis; Edward Thistlewaite, Sheridan; Morris E. Cox, Milton C. Beals, Robert E. Johnson and W. M. Mendenhall, of Westfield. [E. R. J., March 18, '11.]

**\*Vincennes-Interstate Traction Company, Vincennes, Ind.**—Application for a charter has been made by this company to build urban and interurban railways in Indiana. Capital stock, \$10,000. Directors: J. L. Keymeyer, C. A. Benhain, C. E. Seeds, H. M. Lukens, C. W. Battin, A. W. Funkhouser and A. F. Funkhouser.

**\*Louisiana Company, New Orleans, La.**—Application for a charter has been made in Louisiana by this company to build electric and steam railways in Louisiana. The first line to be built will be from New Iberia to Berwick Bay, via Jeanerette, Franklin and Patterson. Capital stock, \$1,000,000. Officers: George W. Dallas, president; John R. Taylor, vice-president, and V. J. Smith, secretary and treasurer.

**\*Muskogee & Fort Gibson Interurban Railway, Muskogee, Okla.**—Application for a charter has been made in Oklahoma by this company to build a 10-mile electric railway from Muskogee to Fort Gibson. The line will be extended ultimately to Tahlequah, 35 miles southeast, and to Tulsa, 50 miles northwest. The company expects to build a bridge across the Arkansas River, for which it will be necessary to procure a special act of Congress for permission to build. Preliminary surveys are now being made. Capital stock, \$200,000. Directors: C. N. Haskell, W. N. Patterson, Thomas H. Owen, Thomas P. Smith, all of Muskogee; O. L. Hayes, Webber Falls.

**\*United Railways, Humbert, Pa.**—Chartered in Pennsylvania to build a 7-mile electric railway to connect Humbert and Barronsvale. Capital stock, \$70,000. Incorporators: I. W. Seamans, Uniontown, president, and T. B. Palmer, B. A. Smith, L. W. Fogg, J. H. Palmer, D. D. Johnson and Harold W. Seaman, Uniontown.

### FRANCHISES

**Haywards, Cal.**—I. B. Parsons has received a franchise from the Town Trustees to build a four-mile electric railway over certain streets in Hayward. By the terms of the franchise work must begin within three months. [E. R. J., Dec. 3, '10.]

**Los Angeles, Cal.**—Dr. W. F. McBurney has asked the City Council for a franchise to build a cross-town railway in Los Angeles, on Vermont Avenue, from Fourth Street to Vernon Avenue.

**Los Angeles, Cal.**—The Los Angeles-Pacific Railway has asked the City Council for a franchise to construct a double-track line connecting the Sixth Street line of the Pacific Electric Railway with the Hill Street line of the Los Angeles-Pacific Railway, at the intersection of Hill Street and Sixth Street.

**Oakland, Cal.**—The Southern Pacific Railroad, San Francisco, has accepted the franchise granted it by the Council to build its tracks on Seventh Street from Fallon Street to Bay Street, in Oakland.

**Marseilles, Ill.**—The Chicago, Ottawa & Peoria Railway, La Salle, has asked the City Council for a franchise to build its tracks through Marseilles.

**South Bend, Ind.**—The South Bend & Logansport Traction Company has asked the County Commissioners for a six months' extension of time of its franchise to build its tracks to Plymouth.

**St. Vital, Man.**—The Manitoba Rural Railways has received permission from the Council to build its railway through St. Vital. This proposed 5-mile electric railway will connect Winnipeg, St. Boniface, St. Vital and Emerson. Charles E. Lewis, Minneapolis, Minn., president. [E. R. J., Oct. 8, '10.]

**Ionia, Mich.**—The Detroit, Lansing & Grand Rapids Electric Railroad, Detroit, have asked the Common Council for a franchise to extend its tracks in Ionia. [E. R. J., March 11, '11.]

**Burgoon, Ohio.**—The Fostoria & Fremont Railway has received a franchise from the Council to build its tracks through Burgoon.

**Ottawa, Ont.**—A bill granting provincial rights has been received by the People's Railway from the Railway Committee to build its railway from Arthur to Flesherton and Collingwood, from Owen Sound to Collingwood and Midland, from Woodstock to Sarnia via London, from Watford to Hagersville, from Otterville to Tillsonburg, from Stratford to Goderich, from St. Thomas to a point in Grey County, and to connect with several other short lines.

**Medford, Ore.**—J. F. Reddy, Medford, will ask the City Council for a franchise to build an electric railway through Medford.

**Salem, Ore.**—The Oregon Electric Railway, Portland, has received a franchise from the City Council to build its tracks in the southern part of Salem. This means the expenditure of \$370,000 by this company, and in addition a connecting link with Albany, Eugene and intermediate towns.

**Erie, Pa.**—The Buffalo & Lake Erie Traction Company, Buffalo, has asked the City Council for franchises to double-track several of its lines in Erie.

**Johnstown, Pa.**—The Johnstown Traction Company has received the approval of the State authorities to build its extension to Southmont.

**Lock Haven, Pa.**—The Lock Haven & Jersey Shore Railroad has asked the City Council for a franchise to build its tracks through Lock Haven. It will connect Lockport, Dunnstable, Pine Creek, Charlton, Woolrich and Avis. Rights-of-way have been secured in Dunstable, Pine Creek and Avis. The commissioners of Clinton County have granted the company permission to cross the Susquehanna River between Lockport and Lock Haven. Among those interested are L. M. Patterson, Pittsburgh; C. E. Covert and W. H. Baker, Harrisburg, and A. Hoagland and R. S. Walton, Williamsport. [E. R. J., March 18, '11.]

**\*Saskatoon, Sask.**—This city is prepared to give a franchise to any company building a street railway in Saskatoon.

**Corpus Christi, Tex.**—The Corpus Christi Street & Interurban Railway has received a franchise from the County Commissioners to extend its railway to Epworth.

**\*Lynchburg, Va.**—L. W. Rush, Brookneal, has asked the City Council for a franchise to build an electric railway in Lynchburg from the Norfolk & Western Railway station to the Virginia Railway station.

**Vancouver, Wash.**—The Mount Hood Railway & Power Company, Portland, has received a 50-year franchise from the City Council to build its tracks through Vancouver.



**Vancouver, Wash.**—The Vancouver Traction Company has received a 50-year franchise from the City Council to extend its tracks in Vancouver.

**Tacoma, Wash.**—The Tacoma Railway & Power Company will ask for a 25-year franchise from the Municipal Commission to build its Bismarck line.

#### TRACK AND ROADWAY

**Helena Street & Interurban Railroad, Helena, Ark.**—This company will soon begin the extension of its tracks to the southern end of Helena.

**Los Angeles-Pacific Railway, Los Angeles, Cal.**—Palmer, McBride & Quayle Company has been awarded the contract by this company for the construction of a 10-mile extension from Hollywood to Lankershim, thence 5 miles west to Kester. Work is to begin at once.

**Pacific Electric Railway, Los Angeles, Cal.**—According to a contract between this company and the city of Long Beach, this company guaranties to build within 60 days a railway from the municipal docks to connect with its line on Riverside.

**Los Angeles & Redondo Railway, Redondo Beach, Cal.**—This company has begun the work of standardizing its railway. More than 25,000 narrow-gage ties will be replaced with standard-length ties.

**Owens River Valley Electric Railway, San Francisco, Cal.**—This company is making preliminary arrangements and surveys are being made between Bishop and Laws, for building its proposed electric railway through the Owens River Valley. H. N. Beard, general manager. [E. R. J., Dec. 3, '10.]

**San José (Cal.) Railways.**—This company will spend \$400,000 in standardizing its railway and paving between its tracks. The Ransome-Crummy Paving Company has the contract for the paving.

**\*Santa Monica, Cal.**—C. D. Middlekauf and associates are said to be promoting the building of a railway from Los Angeles to Santa Monica.

**Bridgeport & Danbury Electric Railway, Bridgeport, Conn.**—This company has awarded the contract to the Aetna Construction Company, New Haven, Conn., for building its proposed 20-mile railway to connect Bridgeport and Danbury via Trumbull, Monroe, Newton and Bethel. Preliminary arrangements have been made, rails, ties and copper wire have been purchased and work will begin at once. One steel bridge 400 ft. long and several small bridges will be a part of the line. Morton Plant, New London, is interested. [E. R. J., July 9, '10.]

**Augusta (Ga.) Railway & Electric Company.**—This company is considering plans for many improvements of its lines. The east-bound track of its Monte Sano line will be entirely rebuilt and curves will be eliminated on Monte Sano and Central Avenues. It will also build its tracks from Center Street to Third Street.

**Beach Grove Traction Company, Indianapolis, Ind.**—This company has completed and placed in operation its railway between Indianapolis and Beach Grove.

**\*Indianapolis & Seymour Traction Company, Indianapolis, Ind.**—This company is being organized to build an electric railway between Indianapolis and Seymour via Southport, Greenwood, Whiteland, Franklin, Amity, Edinburg, Taylorsville, Columbus and Reddington. It will parallel the Indianapolis, Columbus & Southern Railway. Among those interested are: M. L. Clawson, Indianapolis; J. B. Dill, A. G. Kelly and W. T. Todd, of Greenwood.

**Kansas City, Lawrence & Topeka Railroad, Kansas City, Kan.**—This company is considering plans for building an extension from its present terminal in Zarah to Bonner Springs, a distance of 6 miles.

**Cincinnati, Louisville, Lexington & Maysville Traction Company, Dry Ridge, Ky.**—This company is surveying for its proposed electric railway between Owenton and Dry Ridge. It will connect Cincinnati, Ohio, and Lexington, Ky., also Maysville and Louisville with a connecting line to Dry Ridge. W. T. Blackburn, president. [E. R. J., Oct. 1, '10.]

**\*Portland, Me.**—A company has been organized to build an electric railway at Peaks Island. Officers: Edgar E.

Rounds, president; Arthur H. Moulton, treasurer, and W. C. Whelden, clerk.

**\*Towson & Cockeysville Electric Railway, Cockeysville, Md.**—The Public Service Commission has approved the plans of this company to build an electric railway from Towson to Cockeysville, via Lutherville, Timonium, Texas and Marble Hill. The officers are: J. Alexis Shriver, president; William H. Wright, vice-president; James S. Nussear, secretary and treasurer.

**\*Big Fork, Mont.**—The business men of Big Fork and Columbia Falls have subscribed \$100,000, which with Eastern money will be used to build a 55-mile electric railroad on the Flathead reservation.

**\*Nipton & Searchlight Transportation Company, Searchlight, Nev.**—This company proposes to construct a 23-mile electric railway between Nipton and Searchlight.

**New York & Stamford Railway, Port Chester, N. Y.**—The Public Service Commission, Second District, has ordered this company to construct on or before July 1 such turnouts or switches in Mamaroneck as may be necessary for the operation of its railway and to secure a 10-minute headway for its cars used in the summer season.

**New York, Westchester & Boston, New York, N. Y.**—This company has ordered 5,600 tons of rails from the Pennsylvania Steel Company.

**Buffalo, Lockport & Rochester Railway, Rochester, N. Y.**—This company has awarded to the Lackawanna Steel Company the contract for the necessary rails for the double-tracking of a 5-mile section of its line from a point a mile west of Rochester to Gillette station near South Greene.

**Piedmont & Northern Railway, Charlotte, N. C.**—This company has awarded the contract to W. J. Oliver, Knoxville, Tenn., for the grading and building of bridges from Greenville to Spartanburg, via Hodges, Donalds, Honea Path, Belton, Williamstown, Pelzer, Piedmont and Gantt, a distance of 90 miles. The contract for the remaining section of this proposed electric railway from Spartanburg to King's Mountain, a distance of about 35 miles, will be let in the near future. This line will eventually connect Greenwood and Charlotte. W. S. Lee, chief engineer. [E. R. J., Mar. 18, '11.]

**\*Cobourg, Ont.**—It is said that citizens of Campbellford and Warkworth are negotiating for the building of an electric railway through Northumberland County.

**Dominion Power & Transmission Company, Ltd., Hamilton, Ont.**—This company will rebuild a number of its lines in Hamilton in the near future.

**United Railways, Portland, Ore.**—This company has completed and placed in operation its extension from Burlington to North Plains, 12 miles.

**Stroudsburg & Water Gap Street Railway, Stroudsburg, Pa.**—This company has begun the work on its extension from Portland to Delaware Water Gap. This stretch is the last link of a through line from Philadelphia to Delaware Water Gap, via Willow Grove, Doylestown, and Easton, or Chestnut Hill, Lansdale, Allentown and Nazareth. A. A. Holbrook, Wilkes-Barre, general manager.

**Wilkes-Barre & Lucerne Street Railway, Wilkes-Barre, Pa.**—This company increased its capital stock from \$6,000 to \$300,000. The company will build an electric railway in Wilkes-Barre and Kingston. E. L. Hessler, president. [E. R. J., Oct. 1, '11.]

**Quebec Railway, Light & Power Company, Quebec, Que.**—This company is receiving bids for the construction of about 4 miles of double-track from Beauport to Kent House Park. C. E. A. Carr, general manager.

**Seattle, Wash.**—An issue of \$800,000 of bonds will be sold in Seattle for the construction of a municipal railway in that city.

#### SHOPS AND BUILDINGS

**Northern Electric Railway, Chico, Cal.**—This company will begin work in the spring on its new carhouse and freight yards in Marysville, at the rear of Armory Hall. The Armory Hall will be made into a passenger station for this company.

**Fresno, Hanford & Summit Lake Interurban Railway, Fresno, Cal.**—This company is preparing plans for the erec-



tion of stations to be built in Fresno, Kingsburg and Sanger. The Fresno building will also be the main office building of the company. It will be a 2-story structure of brick construction. The cost is estimated to be about \$50,000. The structures at Kingsburg and Sanger will serve as the terminal offices of the company.

**Southern Pacific Railroad, Los Angeles, Cal.**—This company has completed and is now using its new car house at Alameda. It has awarded the contract to McKnight & Company, Beaumont, Tex., for building its new passenger station in Los Angeles. The structure will be 88 ft. x 38 ft. and of brick construction. The cost is estimated to be about \$20,000.

**United Railways of San Francisco, San Francisco, Cal.**—This company is receiving bids for the construction of a complete shop building and car house in San Francisco on Geneva Street, opposite the present brick structure which is now used as a division headquarters.

**Vallejo & Northern Railway, Vallejo, Cal.**—This company has purchased 15 acres in the extreme northern end of Vallejo as a site for a car house and switch yards.

**People's Railway, Wilmington, Del.**—This company has built a new station in Wilmington.

**Illinois Valley Gas & Electric Company, Streator, Ill.**—This company has awarded the contract to Phillip Schlacter, Streator, for building a sub-station at Dwight.

**Indiana Union Traction Company, Anderson, Ind.**—This company has awarded the contract to David Eshelman & Son, Anderson, for building a freight house at Anderson. The structure will be 1-story, 27 ft x 140 ft. Work has been begun.

**Chicago, Aurora & De Kalb Railroad, Aurora, Ind.**—This company is considering plans for building a car house in De Kalb.

**Omaha & Council Bluffs Street Railway, Omaha, Neb.**—This company will build a transformer station in South Omaha. The cost will be \$12,000.

**Ohio Electric Railway, Cincinnati, Ohio.**—This company is considering plans for building stations in Newark, Zanesville and London.

**Valley Traction Company, Lemoyne, Pa.**—This company is considering plans for building an office building at the west end of the bridge connecting Harrisburg and Wormleysburg.

**Parkersburg, Mariette & Interurban Railway, Parkersburg, W. Va.**—This company will build a new passenger and freight station in the lower part of the business section of Marietta.

**POWER HOUSES AND SUBSTATIONS**

**Phoenix (Ariz.) Railway.**—The New State Electric Supply & Fixture Company has been awarded the contract for building this company's new substation at Orangewood. The structure will be 22 ft. x 32 ft., of brick construction. A 100-kw generating set will be installed.

**Pacific Electric Railway, Los Angeles, Cal.**—The roof of the power substation at Luguna, on the Whittier-La Habra line of this company, was destroyed by fire on March 14. None of the machinery was injured and the damage was slight.

**Southern Pacific Railroad, Los Angeles, Cal.**—This company is ready to award the contract for building its new substation in Berkeley. The work will be executed in reinforced concrete and will be similar to the station built in Oakland at the beginning of the pier by this company.

**Augusta (Ga.) Railway & Electric Company.**—This company has ordered a steam turbine and electric generator of 4000 hp to be installed in an extension to one of its plants. John A. Adams, chief engineer.

**Springfield (Mass.) Street Railway.**—The American Ship Windlass Company is now installing new smoke-consuming stokers at this company's power plant at Springfield.

**Pan Handle Traction Company, Wheeling, W. Va.**—This company is considering plans for building a power plant on the Priest River, in Northern Idaho. It will have a capacity of 30,000 hp. A. J. Smith, general manager.

**Manufactures & Supplies**

**ROLLING STOCK**

**Stroudsburg (Pa.) Passenger Railway** expects to purchase a closed car.

**Cincinnati (Ohio) Traction Company**, it is reported, is in the market for 50 cars.

**Ferrocarril Umbano de Coloma, Coloma, Mex.**, expects to purchase six small open cars and six small closed cars.

**New York State Railways, Rochester N. Y.**, is in the market for 15 30-ft. 11-in. car bodies, of the prepayment type.

**Bush Terminal Railroad, New York, N. Y.**, has purchased a 40-ton locomotive from the General Electric Company.

**Duluth (Minn.) Street Railway** is building 16 cars in the shops of the Twin City Rapid Transit Company, Minneapolis, Minn.

**Utica & Mohawk Valley Railway, Utica, N. Y.**, has ordered four pay-as-you-enter cars from the G. C. Kuhlman Car Company.

**Freeport Railway & Light Company, Freeport, Ill.**, has ordered four single-truck motor car bodies from the Danville Car Company.

**Asheville & East Tennessee Railway, Asheville, Tenn.**, has ordered one 14-bench center-aisle open car from The J. G. Brill Company.

**Portland Railway, Light & Power Company, Portland, Ore.**, has ordered 100 22-E special trucks from Pierson, Roeding & Company.

**Greenville Railway & Light Company, Greenville, Tex.**, has ordered seven single-truck closed cars from the Cincinnati Car Company.

**South Covington & Cincinnati Street Railway, Covington, Ky.**, has ordered three 12-bench open car bodies from the American Car Company.

**Boise (Idaho) Railroad** has ordered two 30-ft. 8-in. closed motor car bodies mounted on Brill 27-G-1 trucks from Pierson, Roeding & Company.

**Ackley Brake Company, New York, N. Y.**, has made a shipment of 70 Ackley adjustable brakes to the Nagoya Electric Railways, Nagoya, Japan.

**Texas Traction Company, Dallas, Tex.**, expects to purchase three 60-ft., high-speed interurban cars, to be equipped with four GE-73 motors and 36-in. wheels.

**Philadelphia Rapid Transit Company, Philadelphia, Pa.**, has ordered from The J. G. Brill Company two 33-ft. 6-in. ash motor car bodies and two 33-ft. 6-in. steel underframes.

**Pittsburg, McKeesport & Westmoreland Railway, McKeesport, Pa.**, noted in the ELECTRIC RAILWAY JOURNAL of Feb. 4, 1911, as being in the market for two open cars, has ordered these cars from the Cincinnati Car Company.

**Corregidor Island (P. I.) Railroad**, noted in the ELECTRIC RAILWAY JOURNAL of Jan. 21, 1911, as expecting to purchase four electric passenger cars and four electric freight cars, through M. Gray Zalonski, Deputy Quartermaster General, U. S. A., has ordered these cars from The J. G. Brill Company.

**City Railway, Dayton, Ohio**, noted in the ELECTRIC RAILWAY JOURNAL of Feb. 25, 1911, as having ordered 10 cars from the Cincinnati Car Company, has specified the following details for these cars:

Type of car	.....closed	Curtain fixtures	...Forsythe
Bolster centers	..23 ft. 6¼ in.	Curtain material	...Pantasote
Length of body	...32 ft. ¾ in.	Gongs	....12-in. foot gongs
Over vestibule	.....5 ft.	Hand brakes	.....Peacock
Width over sills	..7 ft. 10½ in.	Heating system	...hot water
Over posts at belt	.....8 ft.	Motors	.....West.
Sill to trolley base	..8 ft. 6 in.	Push button signal	....Cons.
Body	.....wood	Roofs	.....turtle-back
Interior trim	.....cherry	Sanders	.....O.-B.
Underframe	.....composite	Sash fixtures	.....Dayton
Air brakes	.....National	Seats	.....Hey. Bro. & W.
Bumpers,	5/16-in. x 6-in. steel plate	Seating material	.....wood
Car trimmings	.....bronze	Trolley wheels	....Standard



**South Covington & Cincinnati Street Railway, Covington, Ky.**, noted in the *ELECTRIC RAILWAY JOURNAL* of Feb. 11, 1911, as having ordered 15 semi-convertible car bodies from the Cincinnati Car Company, has specified the following details for these cars:

Type of car.....closed	Curtain fixtures ....Forsythe
Length of body.....21 ft.	Curtain material....Pantasote
Over vestibule....30 ft. 6 in.	Destination signs....Hunter
Width over sills...7 ft. 11 3/4 in.	Fenders .....Hunter
Over posts at belt...8 ft. 2 in.	Gongs.....12-in. foot gongs
Sill to trolley base...9 ft. 3 in.	Heating system....electric
Body,	Headlights...U. S. inc'd'cent
composite wood & metal	Motors.....2 West. No. 49
Interior trim.....mahogany	Roofs .....Monitor
Underframe .....composite	Sanders..Cin. Car Co. type
Bumpers,	Seating material,
1/2-in x 6-in. steel plate	wood slat seats
Car trimmings .....bronze	Step treads.....Stanwood
Couplers .....Van Dorn	Varnish .....Murphy

#### TRADE NOTES

**Commercial Electrical Supply Company, St. Louis, Mo.**, has appointed Louis S. Hunt sales manager.

**Wigmore Brothers Company, Los Angeles, Cal.**, announces that the name of the company has been changed and it will hereafter be known as Alphonso A. Wigmore.

**McCord & Company, Chicago, Ill.**, have appointed H. E. Creer, mechanical expert of the company, to succeed D. J. McOscar, deceased. Mr. Creer was formerly general car foreman of the Missouri Pacific Railroad.

**Electric Service Supplies Company, Philadelphia, Pa.**, has announced that on account of the renumbering of buildings in Chicago, Ill., the new number after April 1, 1911, will be 417 South Dearborn Street, instead of 303 Dearborn Street.

**The J. G. Brill Company, Philadelphia, Pa.**, has recently shipped to the Bilboa Tramways, Spain, two 22-E trucks, to the Ikaho Electric Railway, Japan, one 21-E truck and to the Nagoya Electric Railway, Japan, six 21-E trucks.

**Richardson-Phenix Company, Milwaukee, Wis.**, has recently opened a branch office in the Keystone Building, 324 Fourth Avenue, Pittsburgh, Pa., under the management of H. M. Laughlin, who has been with the company for several years.

**Crocker-Wheeler Company, Ampere, N. J.**, has appointed Clarence E. Delafield district manager of the company, with headquarters in the Boston Safe and Trust Building, 201 Devonshire Street, Boston, Mass., to succeed R. N. C. Barnes, resigned.

**Whipple Supply Company, New York, N. Y.**, has recently elected T. W. Williams vice-president of the company. Mr. Williams has been connected with the General Electric Company for 18 years, the last four of which he has been connected with the gear and pinion department.

**National Carbon Company, Cleveland, Ohio**, has had at a recent meeting of the governing committee of the Chicago Stock Exchange \$4,500,000 preferred stock and \$5,500,000 common stock admitted to the regular trading list. This action was in the nature of a readmission, the stocks having been excluded last December on account of the action of the directors in declaring a dividend without any previous notification to the stockholders. This dividend, which was \$15 per share, was declared without any warning at all to the governing committee of the exchange.

**Electric Storage Battery Company, Philadelphia, Pa.**, had from 1910 operations \$1,120,012 available for dividends, equivalent to 6.9 per cent on the \$16,249,425 outstanding in common and preferred stock. After paying 1 per cent quarterly or 4 per cent on both common and preferred stock amounting to \$649,964, a net surplus remained of \$470,048. With this total surplus on Dec. 31, 1910, was \$2,771,042, an equity of 17 per cent on the outstanding stock. Besides this the company has accumulated a reserve account of \$351,746. Nominally the company has issued \$18,000,000 in stock, of which \$17,814,600 is common stock and \$185,400 is 1 per cent cumulative preferred stock. Of the common stock \$1,750,575 is held in the treasury as treasury stock. The report shows a working capital at the end of 1910 of \$2,576,630. During the year the com-

pany acquired all the patents and rights of the Westinghouse Storage Battery Company, including ownership of the rights of the General Storage Battery Company and the storage battery and patents of the Westinghouse Machine Company. Last year the company also perfected a new vehicle battery having greatly increased storage capacity. This battery has since been placed on the market.

**McLeer Electric & Manufacturing Company, Brooklyn, N. Y.**, states that the growth of its business since its organization two years ago has necessitated an increase in its capital stock from \$20,000 to \$200,000, \$100,000 preferred stock and \$100,000 common stock. All of its preferred stock has been subscribed for and paid in by the board of directors. The directors and officers of the company are: John F. O'Ryan, president and treasurer; Henry H. Rogers, first vice-president; Joseph F. McLeer, second vice-president; Edward McLeer, Jr., secretary, and Chas. B. McLeer, chief engineer. The company will specialize on electric railway repair work, in the manufacture of vacuum dried and impregnated field and armature coils, rewinding of armatures and rehabilitating electrical machinery of all kinds. For this class of work it has exceptional facilities. The latest type of vacuum drying and impregnating apparatus has been installed and there is a well-equipped machine shop. The company will also continue to manufacture electrical machinery. During the last two years the company has manufactured under contract a large number of motors for the electric lighting of steam passenger cars, and it is still engaged in this class of work. A great deal of experimental work has also been done in perfecting patents on electrical machinery.

#### ADVERTISING LITERATURE

**W. N. Matthews & Brother, St. Louis, Mo.**, have issued a post card describing the Matthews two-bolt guy clamp.

**Allis-Chalmers Company, Milwaukee, Wis.**, has issued Bulletin No. 1042, illustrating and describing the Allis-Chalmers "A B C" engines.

**Industrial Instrument Company, Foxboro, Mass.**, has issued Catalog No. 40, devoted to the complete line of Dr. Horn tachometers and tachographs.

**Railway Improvement Company, New York, N. Y.**, has issued a folder entitled "95% Ambitious," which shows how the coasting time recorder will help ambitious motormen.

**Wendell & MacDuffie Company, New York, N. Y.**, has issued a very attractive folder, announcing that the company has assumed the Eastern sales territory of the St. Louis Car Company.

**Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.**, has issued Circular No. 1190, describing type "E" engine-driven, alternating current generators from 50 to 1100 kva, for operating on 60-cycle, 240 to 2400-volt circuits.

**Milwaukee Locomotive Manufacturing Company, Milwaukee, Wis.**, has issued Bulletin No. 101, on gas-driven Milwaukee locomotives for mines, tunnels, contractors' service, industrial plants, industrial railways and cement works.

**W. R. Kerschner, New York, N. Y.**, has issued several circulars calling attention to a large amount of rolling stock and apparatus that he has for sale, among which are 36 nine-bench Laclede car bodies and 14 K-14 controllers.

**H. W. Johns-Manville Company, New York, N. Y.**, has published the "J-M Roofing Salesman," for March, 1911. The issue contains several interesting articles and a number of illustrations which show buildings roofed with J-M asbestos.

**American Rolling Mill Company, Middletown, Ohio**, has issued a booklet entitled "The Proof—American Ingot Iron Rust-Resisting." The booklet describes and illustrates different styles of American ingot iron and also contains tables on sheet metal work, black and galvanized sheets, roofing and culvert information.

**Prepayment Car Sales Company, New York, N. Y.**, is distributing in pamphlet form a reprint of its advertisement that appeared in the *ELECTRIC RAILWAY JOURNAL* of March 11, 1911. The pamphlet is printed in two colors and contains a list of patents of the Prepayment Car Sales Company and the benefits that result from the merging of the Pay-As-You-Enter Car Corporation and the Pay-Within Car Company.