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EDITORIAL NOTICE.

The news issues of the Street Railway Journal are devoted primarily to the publication of street railway news and current happenings related to street railway interests. All information regarding changes of officers, new equipments, extensions, financial changes and new enterprises will be greatly appreciated for use in its columns.

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

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The Convention of the A. S. R. A.

The convention of the American Street Railway Association opened at Kansas City, at 11:15 a. m., on Tuesday, Oct. 16, with President J. M. Roach in the chair. Mayor Reed delivered an address of welcome, in which he referred to the growth of railways in Kansas City, and their beneficial effect upon the city. The presidential address, which followed, was highly interesting, containing, as it did, quite a number of statistics, which were very flattering to the large body of street railway men who had the pleasure of listening to them. President Roach said that the total railway investment of America alone represents \$1,800,000,000, which paid dividends amounting to \$70,000,000; the wages paid to the 300,000 employees who were required to operate these vast properties were estimated at \$250,000,000 per year. In the course of his address President Roach urged amicable relations between the management of railway companies and their employees; and he also pointed out the advantages of co-operation between the railways and the traveling public.

After the reading of the reports of the executive committee and of the secretary and treasurer the first paper was presented. It was entitled "Consolidation of Street Railways and Its Effect Upon the Public," and was read by Daniel B. Holmes, counsel, Metropolitan Street Railway Company, Kansas City. He pointed out the economies resulting from the consolidation in the management of street railways, both in regard to the generation of power and its distribution, and in the stimulation of traffic. He thought that the benefit derived by the public from the generous extension of the transfer system could not fail but be reflected back upon the railway company. No discussion followed the reading of this paper.

The afternoon was pleasantly spent in renewing old friendships and making new acquaintances, and in the evening a delightful reception was tendered the delegates at the Midland Hotel, the headquarters of the association while at Kansas City.

The meeting on the second day, Wednesday, was occupied by the reading of two papers by the secretary. The first, "A comparison of the Various Systems of Electrical Distribution for Street Railways," by C. F. Bancroft, electrical engineer, Massachusetts Electric Companies, Boston, Mass., was received without comment or discussion, but the second, "Painting, Repainting and Maintenance of Car Bodies," by F. T. C. Brydges, superintendent of car shops, Chicago Union Traction Company, elicited a few interesting remarks from W. E. Harrington, manager of the Camden & Suburban Railway Company, Camden, N. J., in which he made a short statement regarding the cost of repairs to cars. During the session the ladies were given a most enjoyable trolley ride to the Country Club.

The paper read Thursday morning by N. H. Heft, president Meriden Street Railway Company, Meriden, Conn., on "Double-Truck Cars: How to Equip Them to Obtain Maximum Efficiency Under Varying Conditions," was quite generally discussed. In his paper Mr. Heft recommended the use of long double-truck cars holding sixty or more passengers. He spoke in favor of a car weighing but 473 lbs. per passenger, which is much lighter than the ordinary practice. Plans were shown of a novel construction for the car body, and also of a new type of truck which would make the system of operation proposed practicable. The discussion was participated in by E. C. Foster, Lynn, Mass.; E. Chamberlain, Brooklyn, N. Y.; W. E. Harrington, Camden, N. J.; E. G. Connette, Syracuse, N. Y.; H. H. Vreeland, New York; C. S. Sergeant, Boston, Mass.; I. A. McCormack, Cleveland, Ohio; R. McCulloch, Chicago. The serious illness of N. S. Hill, Jr., general manager Charleston Consolidated Railway, Gas & Electric Company, which kept him away from the convention, prevented his preparing the paper for which the programme called.

After the close of the discussion following the reading of Mr. Heft's paper, the regular election of officers for the ensuing year took place. Walton H. Holmes, president Metropolitan Street Railway Company, Kansas City, was elected president of the association, the other officers being as follows: First vice-president, H. H. Vreeland, president Metropolitan Street Railway, New York; second vice-president, N. H. Heft, president Meriden Street Railway Company, Meriden, Conn.; third vice-president, J. B. McClary, manager Birmingham Railway & Electric Company, Birmingham, Ala. The executive committee consists of Messrs. Roach, Chicago; Fuller, Wilkes Barre, Pa.; Baumhoff, St. Louis,

Mo.; Graham, Quincy, Mass., and Harris, Cincinnati, Ohio. The place of meeting selected for 1901 was New York City. A vote was taken in regard to the desirability of shortening the duration of the annual meetings, and it was decided in future to hold the convention on only three days, instead of four.

On Friday, the day set apart for the benefit of the supply men, the delegates inspected the large number of exhibits with which Convention Hall was filled. In the afternoon they were entertained by a vaudeville entertainment arranged by the representatives of the various exhibiting companies. Many of these companies had engaged parlors in the Midland Hotel, where they hospitably entertained their friends among the delegates.

A great deal of credit is due the members of the various committees for the efficient manner in which the programme was carried out and the various entertainments arranged. The executive committee consisted of President J. M. Roach, Vice-Presidents J. A. Rigg, H. H. Vreeland and F. G. Jones; C. S. Sergeant, N. S. Hill, Jr.; C. W. Wason, J. R. Graham and W. H. Holmes. The other committees were made up as follows: Entertainment and banquet committee, W. H. Holmes, chairman; L. E. James, D. B. Holmes, F. Hagerman, J. K. Cubbison, F. Walsh, W. E. Kirkpatrick, H. W. Walcott, A. A. Lesueur, H. Fleming, A. M. Hopkins, C. A. Snider, U. S. Epperson, H. C. Ward, J. McGowan and R. L. Gregory. Reception and ladies' committee, C. F. Holmes, chairman; J. A. Brown, G. T. Stoekham, C. F. Morse, W. H. Lucas, H. H. Medall, W. T. Osborne, J. W. Speas, F. C. Peck, H. Evans, R. M. Goodlett, S. H. Velie, J. A. Reed, L. Karnes, H. Friedberg and H. McGowan. Exhibit committee, W. A. Satterlee, chairman; C. W. Waddell, J. P. Loomas, H. C. Schwitzgebel, R. E. Richardson and F. M. Bernardin. Information bureau committee, J. O'Keefe, chairman; J. A. Harder, E. R. Royer and J. W. Mason.

The Meeting of the Accountants' Association

Auditor Kent, of Kansas City, opened the first meeting of the Street Railway Accountants' Association of America, which held its convention in Kansas City at the same time as the American Street Railway Association, with an address of welcome, in which he expressed his pleasure at the selection of the place of meeting. The president's address followed, and was succeeded by the annual reports of the executive committee and secretary and treasurer. The latter report showed that the members had taken kindly to the increase in the dues which was made last year. The first paper that was taken up was by John I. Beggs, general manager of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., and was entitled, "What Does the General Manager Want to Know from the Accounting Department?" Mr. Beggs gave an extended address upon this important subject, and brought out several practical points. He laid great stress on the desirability of having the head of the accounting department in accord with the manager's policy. He also expressed the opinion that it was right to make public the reports of earnings and expenses, and that he thoroughly believed in the benefits that would be derived therefrom.

At the session Wednesday morning C. O. Simpson, auditor, Augusta Railway & Electric Company, Augusta, Ga., read a paper on "The Routine of a Street Railway Electric and Gas Lighting Company," and Chairman H. C. Mackay, comptroller, Milwaukee Electric Railway & Light Company, Milwaukee, Wis., read the report of the committee which had been appointed to investigate the question "Is a Standard Unit of Comparison Practicable?" The long discussions which followed both of these papers, and in which all participated, prevented the presentation of the paper by H. L. Wilson, auditor, Boston Elevated Railway Company, Boston, Mass., on "Departmental Accounts," which was, consequently, held over until Thursday's meeting. In the course of the discussion of Chairman Mackay's report, H. H. Vreeland, president, Metropolitan Street Railway, New York, expressed the opinion that the accountants were better able to decide upon a standard than were the managers, but should such a standard be adopted it would most certainly receive his earnest consideration. C. L. Rossiter, president, Brooklyn Rapid Transit Company, Brooklyn, N. Y., also made a few pertinent remarks on this subject. It was finally decided to try the "car hour" for a year, and report the result at the next convention.

The first part of the session Thursday morning was taken up by the reading of Mr. Wilson's paper, and one on "Material and Supply Accounts," by W. M. Barnaby, accountant Brooklyn Rapid Transit Company, Brooklyn, N. Y. A short informal dis-

cussion was then held upon subjects of interest to the delegates, the reports of convention committees were read and the election of officers took place. The result of the election was as follows: President, W. F. Ham, Washington, D. C.; vice-presidents, Messrs. Harden, Kansas City; Smith, Toronto; McDole, Cleveland; executive committee, Messrs. Duffy and Hemenway, New York; Tripp, Seattle; Mitchell, Pittsburgh. The same place was chosen for the next meeting as selected by the American Street Railway Association, New York, and the convention then adjourned.

A most important feature of the Accountants' Association's convention was the extremely interesting collection of blanks and forms which was exhibited. These were contained in sixteen large books, which were placed on a long table near the meeting room, and were carefully examined by the delegates.

Toy Hoop Causes Temporary Suspension of Traffic in Washington

Traffic had to be temporarily suspended on part of the system of the Washington Traction & Electric Company, of Washington, D. C., Oct. 4, because a steel hoop, which was being rolled by a little girl, fell into the conduit. Current had to be shut off until the hoop could be extracted, and meanwhile the child was lamenting her loss. As a result of this experience a police order has been issued prohibiting the rolling of hoops in Washington.

Brooklyn Power House Damaged by Fire

The power house of the Brooklyn Rapid Transit Company, situated on Third Avenue, between Second and Third Streets, was badly damaged by fire Oct. 3. The fire was caused by a short circuit, and three alarms were turned in at fire headquarters. The big switchboard was destroyed, and the damage is estimated at \$35,000. The fire occurred at 11:15 a. m., and fifteen lines of cars were tied up until connections were made with the company's Kent Avenue station.

Unique Electrical Effects in a Cleveland Celebration

In addition to the street illuminations, the most striking and unique electrical displays made during Cleveland's "Home Week" celebrations last week were those made by the Cleveland City Railway Company. One of these was the private car of the directors of the company, beautifully decorated with numerous colored incandescent lamps. The ends of the car were decorated with immense signs bearing the words "Cleveland's Population 381,768." The other attraction was even more novel, being a marching club composed largely of street railway men. Each man carried an incandescent lamp, the officers having two or more. The lamps were connected in series of five, the wires running around on the outside of the marching column and each man holding a wire. There were 125 in all. The circuit was obtained through a long trolley pole to the wires above on one side, with a ground to the car tracks below on the other. The ground connection was made through a short pole, having at the end a half section of a trolley wheel. The lights were of various colors, while at the head of the column was a sign bearing the words "C. C. R. R. Escort Club" in white incandescents. The idea was devised by Fred Feld, an electrician of the company.

A French Sprague Company

The demand abroad for American electric railway apparatus and methods is strikingly instanced by the organization of different European companies to handle exclusively American ideas and devices. The number of these companies has been increased recently by the formation in Paris of an organization to be known as the "Société Française Sprague." This company, which has ample financial backing, will undertake, immediately and on a large scale, a practical demonstration of the operation of the multiple unit system control, as developed by the Sprague Electric Company, of New York. Its offices are at 6 Rue de Madrid. The president is M. M. Monthiers, the vice-president is M. J. Micart, and among the directors are directors of the Comptoir National D'Escompte, the Banque de Consignation, and the Société Breguet.

To carry out the initial purposes of this organization there have recently been shipped to Paris about 60 tons of trucks, motors, controllers, etc., which are now being installed by Frederick Brush, one of Mr. Sprague's former assistants, on a trial train on the Western Railway of France. When completed this train will be put into operation on the Versailles division of that

road, on the branch running from the Quai d'Orsay, which branch is already equipped with a third-rail supply for about 27 miles, and is supplied from a modern high-powered station at Moulins. This is the same line on which two-car train units are now operated with a hand control at each end, the main controlling circuits being carried from car to car, and for which a number of electric locomotives are being built by four different companies for tests. It is expected that the demonstration made on this line will be far reaching in its influence upon railway development on the Continent. In addition to this demonstration, a trial train on the Sprague Multiple Unit System will, in the near future, be operated on the new Berlin Railway under the auspices of the Siemens & Halske Company.

The Metropolitan Street Railway Association's Entertainment

On the evening of Saturday, Oct. 6, this association entertained the families and friends of the members with a vaudeville exhibition at Carnegie Hall. The performance celebrated the fourth anniversary of the association, and the immense auditorium was crowded to the doors by a most enthusiastic audience. As is customary at these meetings, President H. H. Vreeland welcomed the guests in a few well chosen remarks followed by a short but expressive address to his employees and their associates. Mr. Vreeland's efforts as a leader in the cause of uplifting labor and the practical sympathy for the men which his own elevation from the ranks gives him, peculiarly fit him for an address of this kind; and the vigorously applauded words of praise, caution, fellow-feeling, gratitude and admonition reflected his true emotions in a manner that few other occasions could produce. In the course of his remarks he advised his employees to be wary of false promises made by outside interests, reminding them that his counsel was always at their disposal, and that he knew their aspirations for themselves and families. After the applause which followed Mr. Vreeland's closing sentence had subsided, the entertainment was continued by the introduction of some of the best theatrical talent from the New York stage.

The Metropolitan Street Railway Association was organized four years ago by the employees of the company, and has increased in membership from 100 to 3312. Its objects are to secure to its members free medical attendance, about one-half of their usual wages when illness overtakes them, and \$150 in case of death. There are no paid officers, and the members, therefore, receive a larger percentage of the dues paid than in other mutual assessment associations. The monthly cost of membership is but 50 cents, a scarcely perceptible tax on any man in steady employment. The association has already paid out in benefits \$43,916; owns five bonds of the Metropolitan Street Railway Company, from which it receives an annual income of \$250; has a bed in St. Vincent's Hospital, the gift of President Vreeland, and controls a circulating library of 1300 volumes. The annual reports of the secretary and treasurer were presented at the meeting.

Supreme Court Decides in Favor of the Milwaukee Company

The Supreme Court of Michigan has just handed down a most important decision in which it reverses the decision of Judge Ludwig, and upholds the 4-cent fare and franchise-extension ordinance granted to the Milwaukee Electric Railway & Light Company by the Common Council. The decision is a sweeping one and a clean-cut victory for the company; it is also of special interest to street railway companies at large, because of the important points involved.

The opinion of the court is based upon the discretionary power of the Common Council, as granted in the city charter, to determine what shall be the best interests of the citizens as a whole, the Supreme Court holding that this power is absolute and cannot be questioned in any court, so long as no wilful waste or squandering of public property, rights, or funds can be shown. Regarding the \$100,000 offer by an independent company, the court ruled that this was also a matter entirely within the discretion of the Council, and that it may have acted wisely in refusing it, because a new company would find it almost impossible to give as complete and thorough a service to the citizens as the established one. The court holds that the franchise is valid, and that the street railway company may proceed with its line extensions, which will require an expenditure of more than a quarter of a million dollars, at once. On every point raised the Supreme Court rules in favor

of the street railway side of the case. Of the constitutionality of the franchise the opinion says: "Another claim is that the ordinance is unconstitutional because it is in effect a special or private law granting corporate powers or privileges, and so prohibited by Section 31 of Article 4 of the constitution. The argument is that the ordinance attempts to confer corporate powers and privileges, and that it is a special act of legislation; that in enacting it the City Council was simply exercising legislative power attempted to be delegated to it by the State; that under the constitutional provision above cited the Legislature itself could pass no such law, and that the City Council can possess no greater power than the Legislature. While such franchises as were here granted are legislative grants, they are not corporate powers or privileges within the meaning of the constitution. When granted to a corporation they become the property of the corporation, and so may be called franchises of the corporation; but they are not franchises essential to the existence and granted as part of the organic act of incorporation."

The Special Train to Kansas City

A large party of delegates to the nineteenth annual meeting of the American Street Railway Association left New York on Sunday, Oct. 14. As it pulled out of the Grand Central Station at 10 a. m., the special vestibule train which had been placed at the disposal of the committee on transportation was one of the finest ever made up by the New York Central & Hudson River Railroad, and carried nearly all the prominent street railway men of the vicinity. The train consisted of baggage cars, a combination smoking and buffet car, a dining car, four Pullman drawing-room sleeping cars, and a private car. The dining car accompanied the party all the way to Kansas City, so that there was never a delay in the serving of meals, and no doubt as to the quality. The success of the train was largely due to the personal efforts of Milton C. Roach, general Eastern passenger agent of the New York Central & Hudson River Railroad, who accompanied it from New York to Albany.

The private car was occupied by H. H. Vreeland, president of the New York State Street Railway Association, and a few friends. Among the other prominent railway men who composed the party, or joined it *en route*, may be mentioned C. L. Rossiter, president of the Brooklyn Rapid Transit Company; Col. N. H. Heft, chief of the electrical department, New York, New Haven & Hartford Railroad; E. G. Connette, vice-president and general manager of the Syracuse Rapid Transit Company; H. H. Littell, of Buffalo; H. S. Cooper, of Ithaca, and C. S. Blackman, of the Big Four Railroad. Other names which appeared on the list of passengers and are familiar in street railway circles were: E. Peckham, of the Peckham Motor Truck & Wheel Company, New York; H. F. J. Porter, of the Bethlehem Steel Company, Bethlehem, Pa.; R. H. Beach, of the General Electric Company, Schenectady; F. D. Russell, of the Rochester Car Wheel Works, Rochester, N. Y.; J. M. Jackson, of the Jackson & Sharp Company, Wilmington, Del.; Col. A. C. Woodworth, of the Consolidated Car Fender Company, Providence, R. I., and J. H. Stedman, of Rochester. W. H. Welch, traveling passenger agent of the New York Central & Hudson River Railroad, went through to Kansas City. Many ladies, wives and friends of the delegates, accompanied the party, and, while enjoying the trip themselves, greatly increased the pleasure of their companions.

The New England contingent came through in a special car from Boston, and joined the main train at Albany. The addition thus made included Hon. E. P. Shaw, Newburyport, Mass.; E. C. Foster, vice-president and general manager of the Lynn & Boston Railroad Company; C. S. Sergeant, vice-president of the Boston Elevated Railway Company, and H. L. Wilson, auditor of the same company; E. A. Newman, secretary and treasurer of the Portland Railroad Company; R. S. Goff, president Globe Street Railway Company, Fall River, Mass.; C. N. Wood, vice-president of the Frank Ridlon Company, Boston; J. A. Granger, Boston Car Wheel Company, Boston; H. L. Rideout, Walworth Manufacturing Company, Boston; and G. C. Tripp, auditor, and C. F. Wallace, engineer, of Stone & Webster, Boston.

Special cars were also sent from Chicago over the Atchison, Topeka & Santa Fe Railroad and from Philadelphia over the Pennsylvania Railroad. The former carried J. M. Roach, president of the association, and the latter some twenty to twenty-five people from Philadelphia and neighboring cities, including C. E. Flynn, E. W. Ash, H. C. Moore, W. E. Harrington, F. W. Darlington, C. J. Mayer, F. B. Musser, W. H. Heulings, Jr., J. B. MacAfee, J. W. Perry, and C. A. Bragg.

The unavoidable delays which so often interfere with the running schedule of a special across the country caused the train to lose a few hours before St. Louis was reached. The time, however, was not missed by the passengers, but passed quickly for the numerous groups of old friends into which the family party had naturally divided itself. The Bullock Electric Manufacturing Company increased its popularity during the ride by the distribution of highly appreciated "souvenirs" in small glass receptacles. Finding that the train could not arrive in Kansas City until late at night the transportation committee made arrangements with the Wabash Railroad officials to hold it in St. Louis until 10:15 p. m., thus giving the delegates several hours in St. Louis, which were greatly enjoyed. The party arrived at its destination at 7 o'clock Tuesday morning, which gave the members plenty of time to refresh themselves after their long ride from the East before taking their places in Convention Hall.

Ninth Annual Convention of the Pennsylvania Street Railway Association

The ninth annual convention of the Pennsylvania Street Railway Association was held at Reading, Oct. 10 and 11, and was attended by about 150 persons. The sessions were held in the Mansion House. The association was called to order at 2 P. M. on Oct. 10 by President Given, after which the delegates listened to an address of welcome by Mayor Leader of Reading. To the mayor's welcome a fitting reply was made by William B. Given, Lancaster, president of the association. The regular proceedings of the association were then begun.

An interesting paper on "Railway Joints and Tracks" was first presented by George L. Hall, of the Weber Railway Joint Manufacturing Company. This paper is published elsewhere in this issue.

The second paper on the programme was by Samuel D. Missimer, chief engineer of station motive power of the United Power & Transportation Company, who spoke upon "The Successful Station Manager and His Responsibilities." This is also published elsewhere. Both papers were discussed at length. Other topics of interest to the members were considered, after which reports were received from Secretary S. P. Light, Treasurer W. H. Lanius and the several committees.

Addresses were made by William B. Given, Lancaster; W. H. Lanius, York; J. H. Stedman, Rochester, N. Y.; Major S. E. Ancona and William D. Smith, Reading.

Then followed the election of officers, which resulted as follows: president, John A. Rigg; first vice-president, E. H. Davis, Williamsport; second vice-president, A. L. Johnson, Allentown; secretary, S. P. Light, Lebanon; treasurer, W. H. Lanius, York; executive committee, John A. Rigg; William B. Given, Lancaster; W. H. Lanius, York; B. F. Meyers, Harrisburg. This closed the business session.

In the evening at 8:30 o'clock the guests and hosts and a number of Reading's most influential business men assembled in Rajah Temple, where a most sumptuous banquet was enjoyed.

When the covers were removed, Richmond L. Jones was made the toastmaster and the list of toasts was begun. Mayor Leader responded briefly to the toast, "The City of Reading." Richmond L. Jones followed, his subject being "Welcome to Our Guests." President Given then spoke and complimented Reading upon having one of the best equipped and best managed railways in the State. He also referred to the princely hospitality shown by the Union Traction Company in entertaining the association and other attendants at the convention. Mr. Rigg, the president-elect, then addressed the guests and thanked his associates for the honor conferred upon him. He introduced John D. Missimer, who responded to the toast, "The Press." "Our Ladies" was the toast assigned to J. H. Stedman, and it was delivered in his own inimitable way and caused roars of laughter. Impromptu remarks were later made by Major Brennan, of Lancaster; Hon. W. Willis Bland and William Rosenthal, of Reading. The assembly then sang "Auld Lang Syne" and dispersed.

On Thursday morning the attendants were given a trip by electric cars to the Neversink Mountain House, over one of the most picturesque routes in the country. The weather was ideal for a trip of this kind, and it was heartily enjoyed by all. In the afternoon, again as guests of the United Traction Company, an excursion was made by special cars to the Mt. Penn Gravity Railroad, at the summit of which the visitors had the opportunity to view the city and its beautiful surroundings. Upon returning to the city, the party proceeded on a trolley ride to Womelsdorf and return. The Christensen Engineering Company, of Milwaukee, Wis., has equipped a large number of the cars at Reading

with motor compressors and air brakes, and F. C. Randall, of that company, improved the opportunity to invite a number of the railway managers to take a trip in one of the closed cars on which they had been installed. The car was started and stopped quickly on grades, and many favorable remarks on the working of the system were elicited.

The convention was one of the most successful and largely attended in the history of the association, and the bounteous hospitality offered to all by the Union Traction Company was heartily appreciated.

The Successful Station Manager and His Responsibilities*

BY SAMUEL D. MISSIMER

The station manager of to-day must be honest and sober, positive in character and approachable, thoroughly conversant with the modern and ancient machinery which constitutes the ordinary power-house equipment.

The wondrous machinery, both steam and electrical, installed to-day for electric traction and electric light service, makes it mandatory on the part of the manager to fully acquaint himself with every detail of its construction and operation, in order to be fully independent and capable to render a continuous and efficient service to the public, and an economical, careful and safe management of the property.

It is criminal to-day to suffer the abuse of good machinery, and a competent manager will excuse no one for a flagrant transgression that may mean interruption of the service, to say nothing of loss of property. It is required of managers to-day to allow no man in his employ who does not fully appreciate the importance of faithfully rendering his full duty, or any other man's duty, if necessary, about the station.

It is required of managers to unceasingly promote discipline (not abuse) by truth and sober thought, and to impart to all employees information which will lead to a full understanding of what is needful to promote the greatest economy of station operation, the care of the machinery and an uninterrupted public service. The employees must be held accountable for many things, but, at the same time, managers must not run away from trouble. On the contrary, it should be a proud satisfaction to surmount the ups and downs, serious and otherwise, that come to all who are in authority.

Managers should be able to supervise the detail requirements that constitute the general make-up of station equipment. He should be in a position to suffer no imposition by reason of unnecessary repairs to machinery or the buying of any material not consistent with safe and continuous service. He must, by personal inspection, be able to pronounce judgment upon any disorganized machinery and to tell the extent of repairs needed. The pencil and tablet must accompany him upon his daily rounds without fail; the eagle eye will detect any disorganization about the station, and good management will prompt its immediate looking after and repair.

A careful supervision of the installation of new equipment is highly incumbent upon the manager. No time is lost, which is used in exacting careful erection of machinery. The writer has personally observed the most slovenly disregard in erecting new machinery, which foreordained much trouble and anxiety for those who should have been exempt from the results of such indifference.

Station managers have no time for vacations as long as the general public is not through with theirs. Absence from station supervision at the busy season is a mistake. Then, above all other times, there must be careful watchfulness to assure continuous and good service.

Managers must be content with whatsoever they may have as station machinery so long as it is equivalent to the service demanded. All things being equal, in the absence of an unavoidable accident, there is little excuse for the interruption of continuous service, and there will be few mishaps to the service where the manager educates his people to their full responsibilities.

Railway Joints and Track †

BY GEO. L. HALL

Most managers of electric railway systems realize that good track is absolutely necessary. Not only is this fact forcibly illus-

* Paper read before the Pennsylvania Street Railway Association, Oct. 10, 1900.

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trated by the increased wear and tear on the rails, joints, bonding, etc., where bad construction is used, but no small item is the damage to the rolling stock.

The best track that can be constructed is that which is absolutely free from any movements or impacts that can be prevented by the judicious use of the proper material and labor. Different conditions of heavy weights moving at high velocities must be dealt with, and any failure to provide accurate gage, correct line and true surface will result in increased damage to both track and equipment. The structure must be adequate for the load and speed which it is expected to stand. The track is not primarily injured by the weight of the car, as weight in itself is an element of stability. Heavy weights moving at high speed striking irregularities of surface or line produce shocks and impacts which constantly multiply these defects and make the condition worse and worse. Therefore the management is justified in any additional outlay for labor and material that will reduce such irregularities in line or surface, and these facts should not be overlooked when considering first cost.

The general condition of track must not be judged altogether by how long it has been constructed or how lately worked over, but we must take into consideration the number of cars passing over, the kind of motive power used, and if in a city, the character of the street and street traffic.

There are many seemingly unimportant details that enter into the construction and maintenance of good track, and there is no part of a railway that requires more careful or painstaking observation and scientific methods of investigation in order to secure the desired results at a minimum cost. From experience, the writer is of the opinion that too much attention cannot be given to accurate gaging. Many apparent imperfections in track are due entirely to irregularities of this kind. Especially is this the case on suburban lines and track constructed where there is no paving to assist in holding it to line. No matter how true the surface and alignment may be, if the gage is not accurate, poor riding track and more or less oscillation of the car will result.

As a rule there are not many cross-overs or turnouts on electric railway lines, but a word about gaging at frogs would not be amiss. The proper alignment at such places is more important than it is generally considered to be. The practice of leaving the gage a little wide at the frog-point should not be followed except where the conditions demand widening, and when such action is necessary the guard-rail distance should also be increased exactly as much as the gage is widened. It is an error to suppose that the all-important point is to make the guard-rail distance exact, without regard as to whether or not the gage is true. What should be kept in mind is the distance from the running-rail of the frog to that side of the guard-rail with which the wheel comes in contact. A frog may cause a noticeable lurch to the passing car when in exact position if the remainder of the track is too wide to gage, either from its natural tendency to widen or from poor construction.

Some evidences of imperfect gage are as follows: (1) When the frog receives a blow from the passing wheel or shows evidence of unnatural strain; (2) when near the end of the guard-rail there is an abrupt change from a badly worn rail to a full head; (3) where there is a similar mark at either end of the frog; (4) when the guard-rail or the wing-rail of the frog is unnaturally worn and it is difficult to keep in proper position.

It is to be regretted that too often in the construction of electric railways it is necessary to close up the track before it is possible to work over the same after it has been in use for a short time. Especially does this refer to the surface and general condition of the joints. When the track material is new we have a solid riding surface, but this is largely due to the general strength and stiffness of the material. In a comparatively short time, varying with the traffic, the track does not ride as well as should be expected; the rails are slightly out of line and surface; the joints begin to bend, more or less play having developed; a dip appears near the rail end, and the joints are low. Without taking into consideration the damage to equipment and the use of labor which otherwise might be available for the constant improvement of the road, we are face to face with the question of repairs.

Theoretically and practically, everything that has to do with track work is subordinate to perfect line and surface. Work to exact gage, perfect level and true line, with correct spiking, thorough tamping, good drainage and other details essential to their preservation, and one will be surprised at the good results that will follow.

One of the most important details of track work is the rail-joint, and under average conditions it is the weakest part of track construction. The amount of wear at the joint naturally depends on traffic. Once the fastenings begin to show failure they grow rapidly worse, and while weak, are not necessarily dangerous,

but they cause a rough riding track, increase the wear of the rails and damage the rolling stock. Much of the ultimate deterioration of joints could be avoided if there was not a general tendency to purchase cheap material and keep down the cost, and if angle-bars are used proper attention should be paid to their design and general efficiency, especially as to bearing area. A joint is simply a fastening that holds together horizontally and vertically the ends of the two rails. In addition to being held up, the rail must also be held down. This fact is apparent from the manner in which angle-bars break. Investigation shows that 90 per cent of broken angle-bars break from the top down, this being caused by the leverage of the rail, the shoulder ties acting as a fulcrum. This action is augmented by the irregularities in the wave motion. The remaining 10 per cent of broken angle-bars have been broken from the bottom up by suddenly applied loads. In a perfect joint the construction must be such as to make the joint as strong and as stiff as the rail; at the same time the elasticity must be sufficient to carry the wave motion uniformly along the track and allow no permanent set or deflection to take place, the joint returning to its proper position after each passing load.

One great difficulty with the joint question has been to decide which is the best design, other conditions being equal. The original outline of the angle-bar, together with some combination giving base support and adding strength, has shown the best results.

If the rail and joint are of about equal strength and flexibility the wear on the ends of the rail is true, while if the joint is stronger than the rail the wave motion is broken and the wear at the joint is irregular. If the fastening is weaker than the rail the joint will become dipped and rail and joint kinked and worn.

Due allowance must be made for expansion and contraction, taking into consideration the fact that calculation of expansion and contraction must be based on the temperature of the rail itself, and not the temperature of the air at the time the rail is laid. Too much opening between rail ends is necessarily bad, and causes pounding. At the same time the elastic limit will not take care of great expansion and contraction.

It is estimated that the loss of energy caused by the resistance to traction offered by low joints is 2 hp-hours per mile of track. In addition to this there is the loss by wear and tear on cars, track material, etc. Therefore any increased outlay necessary to secure a good joint is more than balanced by the saving in the cost of maintaining the track and equipment.

Snow and Snow Plows*

BY RICHARD E. DANFORTH.

Our friend, the supply man, tells us that the proper time to consider the question of snow fighting apparatus is when the leaves are on the trees and the shirt waist man is in evidence. Following this very proper suggestion, your attention is called to some of the problems connected with the removal of snow and ice, with the hope that a comparison of experience will lead to a general improvement in the appliances used and the methods followed in handling this troublesome substance.

It might be stated as a general proposition that street railways have, in their snow plow equipment, failed to keep pace with their improvements along other lines. A dozen years ago it was thought sufficient to equip passenger cars with 10-hp motors. The severe strains placed upon these motors during winter months caused manufacturers to increase the capacity of motors from time to time, and this and other kindred reasons have led to the final adoption of motors averaging a capacity of 50 hp each.

Passenger car bodies and trucks have increased in dimensions and weight so that it is not an unusual thing at the present day to see in daily service passenger cars 40 ft. long, weighing, with motor equipment and trucks, 23 tons. Street railway managers and manufacturers have failed in many cases to realize that a car built to effectively remove snow from the tracks and ice from the rails must be heavier and equipped with more powerful motors than the passenger cars operating on the same lines. Five years ago a snow plow, equipped with two 35-hp motors and having a total weight of 6 tons or 8 tons, was considered a fine piece of apparatus for removing snow. These plows, during heavy storms, and with the aid of one or more passenger cars as pushers, have been able to keep a few miles of track clear. Experience has shown, however, that the plow above referred to is not perfection.

Each manager, aware of the defects in his snow fighting apparatus, has endeavored to make improvements, with varying re-

* Read at the convention of the New York State Street Railway Association, Buffalo, Sept. 18, 1900.

sults. A road at one corner of the State copies the steam road rotary snow plow. A road at the other corner of the State builds share and nose plows of great weight, and still another road tries sweepers.

In comparing notes with our neighbors, it will be well to remember that conditions vary in the different cities and parts of the State. What might give most excellent satisfaction in Binghamton might prove most unsatisfactory in Buffalo, and might not be permitted by the Common Council in Greater New York.

It might be well to first consider the different kinds of snow which usually falls during the three or four winter months, and its effect upon the transportation facilities of the locality. It is generally conceded that a wet snow is a bad snow, and that systems having grooved rails are most liable to be blocked by this snow. A wet December snow falling in considerable quantity, before the frost has fully entered the ground, puts a most severe test upon the capacity of the transportation department to keep the cars of a system in motion.

The first few inches' fall melts as it strikes the rail, and, in melting, cools the same. By the time 6 ins. have fallen, a coating of slush is formed over and about the rails, which, upon the passage of a wagon or other vehicle, whose wheels press out the moisture, becomes a coating of ice upon the rail and in the groove. The ordinary snow plow, equipped with gravity flanges or diggers, fails to make any impression upon this coating of ice, and usually lands in the gutter. With the usual equipment of one plow to from 5 miles to 10 miles of city track in streets where there is considerable wagon traffic, and the cars at frequent intervals, the result of the above conditions is a tip-up and a call for the track department with picks (and salt.)

The Toronto Railway Company successfully meets this situation by equipping its cars with track scrapers, which are not only supplied with a steel flange of proper form for removing ice from the groove, but are connected so that a powerful leverage can be placed upon them when required. These track scrapers cut the ice from the rail as easily and smoothly as a planer takes a cut from a piece of metal. Properly adjusted, they can be run through switches and around curves with safety.

Experience has shown many of us the necessity of equipping all snow plows with devices having the same action as the above described track scrapers, but we have yet to learn that the best way to meet this condition is to equip our passenger cars so that we may at all times be sure of having a clean track groove.

When the thermometer approaches zero the conditions change. With fine, dry snow, which forms hard drifts, but doesn't freeze nor attach itself to the rail, the difficulty then arises of obtaining sufficient traction between the frosted wheels and rail. Light-weight cars and plows make no headway without the use of sand, and at this time we find the advantage of weight in our equipment. The use of salt under these conditions but aggravates the case by the formation of slush, which sticks, and finally freezes, to everything it touches. Sand is but a makeshift, and soon causes trouble by filling up the grooves in the rail, and causing flat wheels; but it is of great service in keeping cars in motion, as well as in stopping them when under headway.

When the temperature is in the neighborhood of 20 degs., the falling snow is usually feathery and light, and easily handled. Two feet of this snow doesn't cause the trouble that 6 ins. of wet snow will make. The problem in removing this snow from the track during a heavy fall is one of having plows running at close intervals or those designed to remove from the track large quantities without delay. This snow drifts quickly and under a light wind. On lines operated through thinly settled districts and subject to large drifts, we find at this time a rotary of great value. A share plow will do the work perhaps more quickly during the first storm, but as the banks at the side become high, and are frozen solid (unless carted away), the share plow is of little service, having no place to shove the snow, while the rotary picks it up and scatters it to great distances.

SNOW PLOWS

A description of the various types of snow plows and snow handling appliances might well be given at this time. A relic of horse car traction is found in the walkaway plow, which is nothing more or less than a crude road machine drawn by horses, consisting of four wheels, a modified wagon frame and board. This machine proves valuable in leveling back drifts beyond the reach of electric snow plows.

The step from a walkaway to the leveler is but a short one, the leveler being merely a light flat car, drawn by power outside of itself, and having suspended under its body boards placed diagonally across the track.

Next in order comes the electric leveler, having its shares, or boards, placed diagonally under the body and between the wheels,

the motive power being transmitted to the wheels through sprocket chains, from motors upon the car floor.

Following steam railroad practice, plows are also constructed with a board placed in front of the plow proper and diagonally across the track, so that the work of removing snow is done *in front of the car* instead of being done *under the car*, as by the above described levelers. The first of these plows were blunt affairs, ramming the snow and forcing it horizontally to one side. A modern plow of this type is more carefully designed, the share being so constructed as to first lift the snow, and then roll it over and over until it is clear of the track. This plow is further equipped with powerful flanges and easily controlled long wings or flukes.

Sweepers in various forms have been in use for years. Many roads still use the rattan sweeper, with its pair of brooms set diagonally across the track, and driven by a motor placed in the cab. These sweepers will remove the snow down to the pavement, if run early and often, but are slow, and fail entirely in a great quantity of rapidly falling wet or heavy snow.

Sweepers with steel instead of rattan brooms have been constructed and operated with some success. The advantage of this form of broom is found in its great strength and stiffness. The steel brushes will cut hard snow with great ease, do not bend, break or wear out rapidly. They are only stalled by drifts so high that the brooms cannot throw the snow out of the way. With them a drift may be bucked as successfully as with an ordinary share plow.

Six years ago the first *electric rotary snow plow* was put in operation. It was a crude affair, having for its cutting blades a segmental screw, whose front view gave the appearance of a propeller wheel, and back of which was placed an ordinary fan blower, with a suitable spout. A pair of light motors were mounted on the shaft in a small car, to rotate this screw. A passenger car was used to shove this appliance along, and at the end of the road a pin was pulled and the plow body rotated on its truck, so that the plow pointed in the opposite direction; the passenger car was then placed behind the plow, which proceeded on its journey.

In the following fall the writer built a modified form of this rotary snow plow (under contract with the patentee), having its truck equipped with motors, thereby doing away with the necessity of a pusher. The ease with which this appliance cut through huge drifts, depositing the snow at a distance from the track, led the Buffalo Railway and other companies to construct similar plows, making the plows two-ended; by means of suitably arranged clutches, the blades at either end of the plow may be cut in or out. The cutting blades are also arranged so that they can be given a lead or pitch in either direction, and be rotated right or left-handed. By this arrangement it is possible to always throw the snow in the most advantageous direction. The motor equipment on each plow consists of two 35-hp motors on the truck, and two 35-hp to 50-hp motors on the rotary shaft.

A modification of this rotary, intended to overcome inherent defects in the above described design, has been built at Charlotte. This plow has a twin screw, thereby getting the cutting blades down closer to the rails, and reducing the dead-snow load, which, in the former design, frequently stopped the travel of the plow.

The writer's experience has included work with all of the above described general types of plows and sweepers.

In the city of Buffalo, situated, as it is, at the foot of Lake Erie, subjected to high winds, and having at all times a more or less humid atmosphere, these plows, rotaries and sweepers are rated and berated by operatives about as follows:

The *walkaway* is invaluable in leveling back drifts at a distance from the track, opening up gutters and walks, and in performing similar work otherwise requiring manual labor.

The *leveler*, or *windsplitter*, as it is here called, has no excuse for existing, beyond that of furnishing something to run through the streets when all the plows are crippled and in the shop.

The *electric leveler* leaves a beautifully smooth street, cleans close to the rail, but is no good when snow falls 6 ins. an hour, for 6 ins. of ordinary snow stalls it, unless a pusher is used. It can seldom be operated during the day with less than five men, and usually requires six or eight.

The *share plow*, of light weight, requires a fairly good pavement and few hidden obstacles to operate without damage. It requires a pusher in heavy snow, leaves the track readily, lacks traction, and therefore fails in emergency.

The *heavy share plow*, with compression flangers, high-curved shares, long, heavy wings or flukes and powerful motors meets all city conditions well. It fails between high, frozen drifts close to the track, and in cuts on suburban lines, because it has then no place to shove the snow, and, when built for double track, unless weighing over 19 tons, is liable to shove off the track in a hard-packed drift.

The *rotary* is of value in keeping lines open during a heavy fall

of snow, through high snow drifts, and at times when all other plows fail.

It does not easily handle very wet snow, unless equipped with powerful motors. Its present design is faulty, but the faults might easily be overcome in new machines. In heavy work it must be moved slowly, with the fans rotating at very high velocity. It is an invaluable part of our snow plow equipment.

The *rattan sweeper* in this climate is too slow and expensive in maintenance. After trying one under varying conditions we have concluded that it is not for us, nor we for it.

The *steel broom sweeper* ranks next the rotary. It cannot work as well in deep drifts, but excels in hard packed or wet snow. It frightens horses, and, therefore, is not used during the day in the business districts of the city. When these steel-broom sweepers were built, *W. P. 50* motors were the latest type out. These plows have therefore been equipped with these motors, and as a result made frequent visits to the repair shop. Hereafter these sweepers will be equipped with *G. E. 1000* motors, and will be expected to give more reliable, if not more satisfactory, service.

Anticipating your question, the snow plow equipment of the International Traction Company's interests consisted last winter of: One McGuire sweeper, two T.H. steel broom sweepers, one single-end rotary, eight double-end rotaries, seven heavy share plows, Buffalo pattern; two Taunton share plows, one Brill share plow, sixteen electric levelers, ten trailer levelers, ten walkaways. This equipment operated over 190 miles of track in Buffalo, 18 miles in Niagara Falls, 5.50 miles in Lockport, 10 miles in Tonawanda, 56.50 miles of suburban and interurban track, a total of 280 miles of track.

The organization for the removal of snow and ice in Buffalo covered 190 miles of city track, and 30 miles of suburban track.

The Buffalo snow plow equipment consists of: Four rotary plows, three sweepers, fourteen electric levelers, ten share plows, seven trail levelers (in reserve), seven walkaways.

Giving an average of one snow plow for each 5 miles of track, or one heavy plow and one light plow for each 13 miles of track.

The superintendent was the head of the organization. The assistant superintendent and the assistant engineer of way acted as aids, each supervising the operation of one-half of the territory, which was further divided into twelve districts. Each district was under the personal supervision of an inspector. Each inspector controlled two or more snow plow crews, under a captain, and one or more gangs of shovelers, under a track foreman. The general track foreman had immediate charge of all shovelers, arranged their reliefs, furnished extra men and emergency aid of all kinds, and in all cases working with the district inspector.

By means of a private telephone exchange the two aids and the general track foreman, the superintendent kept in communication with the plows and men on each line. Inspectors reported by 'phone hourly, when possible, and in all cases kept the superintendent informed of their movements and the condition of their lines. The snow plow captains reported each time they passed a company telephone, and otherwise from a public telephone, in case of accident to their plows, or when in need of aid.

At the first sign of a storm all snow plow crews, track shovelers and switch cleaners reported at the designated headquarters of their district. The walkaways and teams, with sleighs, were subject to the call of the inspectors through the superintendent. They were sent to the various districts as required, the foreman of teams supplying from outside sources the additional teams and sleighs required, arrangements for which were made before the first snow fell.

The inspectors, upon approach of a severe snow storm, saw that the snow plow crews were on hand, and, if necessary, reduced the passenger car service to give the plows ample power and aid.

In case the snow plow equipment in a district was insufficient to insure the continuance of service on any line, aid was at once obtained from some neighboring district, instructions being transmitted by telephone or by one of the aids to the districts affected.

The aids and the general foreman were supplied with horses. During severe storms the instructors of motormen and conductors and clerks in the superintendent's office acted as special messengers, and when required, assisted the inspectors in operating the passenger cars, and acted as substitute inspectors while the inspectors were resting.

Last winter's severe storms proved a severe test of snow fighting appliances generally, and Buffalo's experience satisfied the management, as well as the operatives, that one-half the equipment was useless in emergency, and that the traction of all plows should be increased; that each type of heavy plow, sweeper or rotary has its place, and is of value to the company only when given the class of work for which it is designed.

London Letter

The royal assent having been given to the Houghton and Sunderland Electric Tramways bill, a start will be made at once with the preliminary work. The line will commence at Grangetown, on the southern boundary of Sunderland, and will pass through the populous colliery villages of Ryhope, Tunstall, New Silksworth, New Herrington, Philadelphia, Newbottle, Houghton-le-Spring, Hetton-le-Hole, and Easington-lane. There will also be branch lines, the total mileage being about 20, and the population of the district 60,000, exclusive of Sunderland. It is also proposed to extend the line to Workington and Usworth, affording communication with Newcastle. The overhead trolley system will be used, and it is proposed to carry goods by day and night in special trucks. The various local bodies in the district have given their sanction to the scheme, which has been promoted by the United Kingdom Tramways, Light Railway & Electrical Syndicate. The engineers for the scheme are D. Balfour & Son, civil engineers, and Handcock and Dykes, electrical engineers, both of Newcastle-on-Tyne and London. Major Tulloch, C. B., R. E., late chief engineer of the local government board, is chairman of the United Kingdom Tramways, Light Railway & Electrical Syndicate, the promoters of the scheme.

Some interesting figures are given in a paper recently read by Algernon H. Binyon, where it is stated the London tramways—horse and cable—carry 309,000,000 passengers, or 45 per cent of the total traffic; the underground railways 128,400,000, or 19 per cent of the total traffic; and the omnibuses 248,600,000, or 36 per cent of the total traffic. The whole population of London—5,500,000—travel 124 times in a year; while the New York population of 3,500,000, travel 210 times yearly.

The city of Leeds, which was one of the first cities in England to experiment with electric traction, is making distinct progress, and the tramways committee has recently decided upon a number of new routes, which it proposes the City Council should seek the necessary powers to construct in its bill to be promoted in the next session of Parliament. Leeds, like many other cities in England, is still using steam trams, and it is to be hoped that with the progressive spirit shown by the above, with its tramway committee under Mr. Smithson's excellent chairmanship, the electric trams will soon take their place. A steam tram can never be made pleasant traveling, and though the steam cars, both in Leeds and Bradford, are much superior to the ones in Birmingham, still in these days of electric transportation, we should soon see the last of them, and they will disappear without much regret.

Mr. Yerkes, the street railway magnate of Chicago, when in London in July, was impressed by the lack of traveling facilities between the northern and southern system of railways entering London, and returned to Chicago with a big scheme in his head. His plans are now set forth. Mr. Yerkes is said to have purchased the rights of the Charing Cross, Euston and Hampstead railway, and to have formed a syndicate, exclusively of American capitalists, to build an underground railway between these points, with an extension to Camden Town. The estimated cost of the undertaking is £2,400,000. There will be ten stations and four tracks—two for express and two for local trains—the motive power being, of course, electricity. The engineers for the railway are Sir Douglas Fox, president of the Institute of Civil Engineers, and William Robert Galbraith. In any case, such a road is badly wanted in London, as at present there is no good means of transportation between the three great northern termini, Euston, St. Pancras and King's Cross and the large railway terminus of Waterloo in the southern part of the city. The Baker Street & Waterloo Underground Railway, now under construction, would do much to help the situation, but still undoubtedly there is room for more, and in the present congested state of London streets, the underground electric railways are the natural solution of the difficulty.

So great has been the success of the "two-penny tube" that at certain hours the guards have had to prevent passengers getting in when others are getting out. The crowding is worse, of course, at the time when men and women are going to and returning from business. It is not surprising, therefore, that people are beginning to talk of another tube which will connect the city with the West End. The most crowded omnibus road in London is not that along Holborn, Oxford Street and Bayswater, but that from the Bank along Cheapside, Fleet Street, Strand and Piccadilly, and on to Hammersmith. In fact the part between the Bank and Charing Cross is at certain hours of the day almost impassable, owing to the congestion of traffic, it being no uncommon thing to take forty to forty-five minutes for the 2 miles journey on a bus. It will be over this route that the next tube, if ever constructed, will be carried. Such a line would be stoutly opposed by the Metropolitan and District companies, for it would prove a most formidable rival to that part of the underground system which runs close to the

Thames on to Victoria, Sloane Square and Kensington. The underground people have long been making experiments with the view of substituting electric for steam traction. The sooner they do something to improve the atmosphere of their tunnels and the comfort of their carriages the better, for though it may be a long time before we have a 2-penny tube between the Bank and Hammersmith we may have it some day, if the Metropolitan and District companies do not bestir themselves in earnest. Meantime the Central London is doing all it can to encourage patrons, and has built large bicycle sheds at its western terminus for passengers who live somewhere in the vicinity, bicycle to Shepherds Bush, and there for a moderate sum put up their bicycle till they return in the evening.

To find out just how far the omnibus companies have been affected by the establishment of the "2-penny tube," the *Financial News* publishes the following table of comparative traffic returns:

LONDON ROAD CAR

Aug. 9	£6,908,	against last year,	£7,779
Aug. 16	6,260	" "	7,644
Aug. 23	6,880	" "	7,074
Aug. 30	6,381	" "	7,132
Sept. 6	6,289	" "	6,775

LONDON GENERAL OMNIBUS

Aug. 9	£22,629,	against last year,	£24,490
Aug. 16	20,737	" "	24,030
Aug. 23	23,055	" "	22,506
Aug. 30	21,405	" "	22,871
Sept. 6	21,119	" "	21,856

The English Lake district has been threatened with electric tramways, and the scheme has called forth a large amount of correspondence on the subject, the preponderating opinion evidently being in favor of leaving this most beautiful country free from such desecration. Public meetings have been held, and it now appears that the garden spot of all England will escape. We do not hold that the judicious installation of tramways would utterly spoil the scenery, but still perhaps it is just as well to have a few places on earth where the mechanical modes of transportation do not penetrate, and where nature may hold sway undisturbed. H. D. Rawnsley, honorary secretary of the "National Trust for Places of Historic Interest or Natural Beauty," in concluding a letter to the *Times* on the subject, says:

"The Bowness Urban District Council, it is true, has at a small meeting of its members by a majority of 1—I believe this was a casting vote—expressed itself in favor of the undertaking. The Ambleside Urban District Council has not yet expressed itself definitely for or against; but from all sides one hears expressions of regret that a great London company, in conjunction with a local electric lighting company, should have determined to exploit the English Lake District for its own selfish ends and to disfigure forever one of the most beautiful roads we have in Westmorland. More and more it looks as if some nationalization of this little 20 miles square of undisturbed recreation ground would be the only means of keeping it for the best use and enjoyment of future Britain."

A new electric tramway route at Bradford has been opened for traffic. The length of the route is 2837 yards, consisting of 2007 yards of double line and 830 yards of single line. As in the other Bradford tramways, the narrow gage—a width of 4 ft.—has unfortunately been adopted, with an interspace between the double lines of 4 ft., 3 ins. The average gradient is 1 in 37, and the steepest parts have a gradient of 1 in 17.46 for a distance of 75 yards, and 1 in 18.48 for a distance of 175 yards. The tramway is paved with granite setts, 6 ins. x 3 ins., on a concrete foundation 6 ins. thick, composed of one part of cement and eight parts of broken stone and clinker. The setts are grouted in pitch. The line is worked by electric motors, supplied by Witting Bros., Ltd., of London, and the car bodies by the Brush Electric Company, of Loughborough. The steel rails are of the trough type, 5 ins. deep, and they weigh 70½ lbs. to the yard. They are packed with concrete, consisting of one part of cement to four parts of granite shingle, and have been supplied by Demerbe & Company, of Belgium, who are also the contractors for the points and crossings. The total length of the tramway now laid in Bradford is 40 miles 694 yards, when reduced to single line. The whole of the overhead work is being done by Macartney & McElroy, of London, who have recently received orders for some very large extensions. This enterprising firm, who have the entire overhead construction work of Glasgow and Aberdeen in hand, have also received the contract for the overhead equipment of Manchester.

Leonard W. Holmes and E. H. Johnson, of the Johnson-Lundell Electric Traction Company, Ltd., who have but recently returned from the Continent, where they secured some good orders, and entered into most satisfactory negotiations for the disposal of

Continental patents, have sailed for the United States, where they will stay for about a month. Among other things which they contemplate doing, they will arrange for the prompt manufacture of the Lundell street car motor, as they have not yet got facilities enough in England for that purpose, though the generators will be continued to be made in England. Many of Mr. Johnson's old friends will be delighted to see him again, and we feel sure that Mr. Holmes will also receive a cordial welcome, and will, in the short time which he will reside in the States, make many pleasant acquaintances.

The Worthington Pumping Engine Company, London, has just issued an interesting pamphlet in French and English descriptive of its magnificent exhibit at the Paris Exposition. The first page gives a plan of the Exposition, showing where each Worthington pump is installed, a large number of them being used for the Chateau d'Eau at one end of the Champ de Mars, where the crowds are never tired of looking at the beautiful cascade and fountains. The whole comprises the largest exhibit of pumping machinery ever exhibited. The exterior and the interior of the Pavilion Worthington are also illustrated, in which were situated four Worthington triple-expansion, high-duty, pumping engines, having a capacity of 40,000,000 imperial gallons per day. The equipment of the Eiffel Tower is also described, and the various exhibits in the Machinery Hall. The pamphlet is profusely illustrated with cuts of the various types of Worthington pumps, and is well worth having in one's possession. A. C. S.

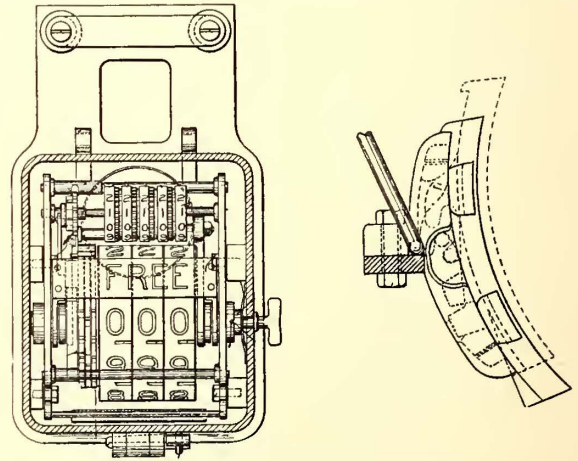
Street Railway Patents

[This department is conducted by W. A. Rosenbaum, patent attorney, 177 Times Building, New York.]

ELECTRIC RAILWAY PATENTS ISSUED OCT. 2, 1900

658,816. Protecting Apparatus for Tramway Cars or Similar Vehicles; A. Thiels, Hamburg, Germany. App. filed Nov. 21, 1899. Consists of a scoop composed of a series of independent bars held normally, elevated by a latch common to all the bars, and an arrangement of levers to release the bars by contact with an obstruction.

658,854. Car Fender; H. Lutzenkirchen, Hartford, Conn. App. filed Feb. 14, 1900. The fender has a part that is automatically thrust forward to catch and retain a body that falls upon the fender, it being operated by the weight of the body and not by contact therewith.



PATENTS NOS. 659,421 AND 659,629

658,856. Brake Shoe; T. W. Mitchell, South Omaha, Neb. App. filed Feb. 28, 1900. Embodies a plurality of removable wear blocks arranged longitudinally and adapted to co-operate with different portions of the surface of the wheel in order that the wear may be equalized.

658,864. Step-Over Car Seat; C. K. Pickles, St. Louis, Mo. App. filed July 22, 1898. Relates to a construction whereby the shifting of the back will also shift to tilt the seat slightly, the back-supporting arms lying wholly below the seat and out of the way of the occupant.

658,932. Metallic Railway Tie; O. Vill, Minnesota, Minn. App. filed Feb. 15, 1900. Structural details which provide for locking the rail to the tie and preventing shifting or creeping of the tie.

658,949. Car Seat; P. M. Kling, St. Louis, Mo. App. filed Feb. 28, 1898. Similar to patent No. 658,864.

658,950. Car Seat; P. M. Kling, St. Louis, Mo. App. filed March 30, 1900. Relates to reversible car seats. In this case the

back can be changed from one side to the other by swinging it around the seat in the arc of a circle in a horizontal plane.

658,951. Seat; P. M. Kling, St. Louis, Mo. App. filed March 30, 1900. Relates to seats intended for out-door or summer car use, when the seat is liable to become wet. By shifting the back from one side to the other the seat will be turned over or reversed.

658,964. Rail Joint; W. F. Sellers, Gallitzan, Pa. App. filed May 23, 1900. Comprises a chair having a fixed longitudinal fish-plate, an opposite hinged fish-plate and a wedge driven transversely between the hinged plate and the chair, the wedge forming a lock for the hinged plate.

658,972. Brake Beam; F. B. Alger, St. Louis, Mo. App. filed April 9, 1900. Structural details.

ELECTRIC RAILWAY PATENTS ISSUED OCT. 9, 1900

659,220. Convertible Street Car; G. N. Fillis, Canton, Ohio. App. filed Jan. 11, 1900. The sides of the car are provided with hinged bodies which form the side step when the car is open, but which, when turned up, afford tracks or guide ways for the sliding sections which are used to close the car.

659,257. Railway Rail Fastening and Brace; J. N. Powell, Wichita, Kan. App. filed April 4, 1898. Details.

659,294. Track Clearer; M. B. Eaton, Boston, Mass. App. filed Dec. 14, 1899. Designed to clear the rail by throwing what there may be on the rail in front of the moving clearer outside the track, and by throwing any object which may fall immediately upon the track after the front moldboard of the clearer has passed toward the opposite rail.

659,325. Switch-Turning Mechanism; W. L. Sellers, Pittsburgh, Pa. App. filed April 12, 1900. A mechanical arrangement of specific construction for operating switch tongues by levers carried on the car.

659,408. Track Cleaner and Oiling Device; W. Morck, P. Krickau and W. Boehle, Oakland, Cal. App. filed March 13, 1900. Provides for connection between an adjustable track clearer which is carried upon the car truck, and the car body, which is movable transversely independent of the truck.

659,421. Registrating Machine; J. Schinneller, Pittsburgh, Pa. App. filed Oct. 7, 1899. When used on cars is designed to secure the registration of every fare by making such registration of possible pecuniary advantage to the passengers. At irregular intervals in the operation of the device, instead of registering a number it will display a sign; for instance, the word "free" indicating that a fare is to be returned.

659,454. Switch-Operating Mechanism; F. A. Tuff, Detroit, Mich. App. filed Nov. 22, 1898. Relates to that class of electric railway switches in which the operating circuit is cleared through an insulated section of the trolley conductor and the motor circuit on the car, the invention lying chiefly in the details of construction of the insulated section.

650,517. Hydraulic Brake for Railway or Tramway Vehicles; C. Durey, Paris, France. App. filed Nov. 9, 1899. Employs a liquid pump having a piston constantly acting when vehicle is in motion, and valves controlled by a switch for making the liquid flow effective or non-effective in applying the brakes.

659,573. Apparatus for Lifting and Gripping Ropes, Cables or Chains of Rope or Similar Railways; W. P. Bullivant, London, England. According to this invention the locomotive or other vehicle is provided with two manually operated devices for lighting the cable, and between these a cable-gripper operated by steam is located.

659,629. Automatic Brake Block; W. H. Sauvage, Denver, Col. App. filed Feb. 5, 1900. The brake-shoe lies loosely in its support so that when the beam carries the same against tread of wheel the friction will cause shoe to move upwardly. This produces a wedging action which is utilized to brake the wheel.

PERSONAL MENTION

MR. E. A. WURSTER, secretary of the Falk Company of Milwaukee, sailed for Europe Oct. 6 on a three months' pleasure trip.

MR. CHARLES G. WINGATE, formerly superintendent of construction for the Long Island Railroad, has just been appointed division superintendent of the elevated division of the Brooklyn Heights Railroad.

MR. HENRY G. ISSERTEL has recently become connected with the Sprague Electric Company, and will devote his time principally to the split-pole machines which the company is now manufacturing. Mr. Issertel is well known in the street railway field, having been one of the early pioneers in electric railroading

with the Thomson-Houston Company, and later having been prominently identified with the Walker Company.

MR. E. M. BUSHNELL, formerly vice-president and manager of the United States Supply Company, of New York, died of typhoid fever at his home in Flatbush, L. I., Sept. 24, after an illness of but a few days.

MR. D. F. CARVER, who was for many years connected with the Brooklyn Rapid Transit Company, of Brooklyn, N. Y., as engineer in charge of buildings, has severed his connection with that company to accept the position of chief engineer of the Cleveland Electric Railway.

MR. RICHARD D. BLACK, a prominent attorney, electric railway promoter and stockholder of the Indianapolis & Greenfield Electric Railway Company, of Indianapolis, Ind., was accidentally killed in Indianapolis a few days ago. He attempted to board one of the cars of the company from the wrong side and was crushed to death by coming in contact with a central pole.

MR. H. S. COOPER, formerly general manager of the Ithaca Street Railway Company, has opened an office at 290 Broadway, New York City, and will engage in the business of reconstructing and developing unprofitable street railway systems. Mr. Cooper's ability as a practical street railway manager is well recognized, and having had a long experience in different parts of the country, he is well able to carry out the work which he is undertaking. He has issued a circular calling attention to his new plan, and there is no doubt but that he can suggest many practical economies which may often make a striking difference in the net earnings of a property.

MR. EDWARD C. SPRING, who has recently been appointed superintendent of the Newton & Boston Street Railway and the

Wellesley & Boston Street Railway, to succeed Mr. L. H. McLain, was born in Boston in 1863. He attended the public schools of that city, and fourteen years ago entered the electrical department of the Thomson-Houston Company at Lynn, Mass., where he remained for a long time. He was later appointed assistant superintendent of the Norfolk Suburban Street Railway Company, which position he resigned to accept the superintendency of the Norfolk Western Street Railway and the Medfield & Medway Street Railway. Mr. Spring has made countless numbers of friends during his connection with the electrical industry,



EDWARD C. SPRING

and has always been held in high esteem by his employees. When he severed his connections with the Norfolk & Western Street Railway and the Medfield & Medway Street Railway he was presented with a handsome gold watch by the employees.

MR. A. H. WOLCOTT, formerly superintendent of the South Shore & Boston Street Railway Company, has been transferred to the Quincy division of the Brockton Street Railway Company. Mr. Wolcott started railroading with the Lynn & Boston Railroad Company. From there he went to the Quincy & Boston Street Railroad Company, where he was employed for some time under Superintendent Benjamin J. Weeks, whom he now succeeds. Seven years ago he accepted the position of superintendent of the Rockland & Abington Street Railway Company, and, when that road became part of the South Shore & Boston Street Railway system, he was made superintendent of the entire system.

MR. BRET HARTER has just been appointed mechanical and electric engineer of the Detroit, Rochester, Romeo & Lake Orion Railway, of Detroit, Mich., and of the other roads built and projected by the Winter, Law & Andrews syndicate. Mr. Harter was formerly superintendent of the Detroit, Rochester, Romeo & Lake Orion Railway. He will have charge of the design and construction of the power house, and the high-tension transmission line which will be built for the Grand Rapids & Holland Electric Railway, which company has absorbed the Holland & Lake Michigan Railway, and also the Saugatuck, Douglas & Lake Shore Railway, making a system of some 50 miles. The Detroit, Rochester, Romeo & Lake Orion Railway has now in hand the erection of a high-tension transmission line, and sub-stations on its extension from Rochester to Oxford and Flint.

MR. FRED. L. BLOSS, who was at one time assistant electrician of the Metropolitan Street Railway Company, of Kansas City, Mo., and who was also prominent in electrical enterprises in the West, died at his home in Kansas City Oct. 2. Mr. Bloss was twenty-eight years of age. He was born in Potsdam, N. Y., June 4, 1872, and received his early education at Montreal, Can. He graduated from the Kansas City high school, and then took a course in electricity at the Kansas State University. After completing this course he entered the employ of the Thomson-Houston Company and later the General Electric Company. In 1893 he became connected with the local lighting company at Kansas City, and entered the employ of the Metropolitan Street Railway Company of that city two years later. The Kansas City & Independence dummy line and Northeast and Brooklyn Avenue cable lines were converted into electric lines under his supervision. He is survived by a wife and one child.

MR. LLEWELLYN H. McLAIN, of Newton, Mass., has recently been appointed an inspector of railways by the Board of Railroad Commissioners of Massachusetts. Mr. McLain is a practical street railway man, and is well versed in street railroading.



LLEWELLYN H. McLAIN

Having started as a street car driver, his experience has been very broad, and he is well qualified to fill the important position in which he has been placed. Heretofore there have been only three inspectors, but the rapid increase in the mileage of electric lines has been so great during the past few years that it has been found necessary to appoint an additional inspector at this time, as provided under the law of 1894. The board now proposes to make a more thorough and systematic inspection of the street railway lines than has been possible in the past with only three inspectors. Mr. McLain was born in Hope,

Maine, in 1861, and was educated in the public schools of that State. Coming to Boston when quite a young man, he entered the service of the Metropolitan as a driver in 1881, and after the organization of the West End Street Railway worked in several of the divisions. In 1890 he left the employ of the West End Street Railway Company and accepted a position as a driver on the Newton Street Railway, which was one of the first electric roads in Massachusetts. Two years later he had charge of the construction work during the building of the Newton & Boston Street Railway, and in 1894 he was appointed superintendent of the road, as well as superintendent of the Wellesley & Boston Street Railway, which position he resigned Oct. 1 to accept the position tendered by the Railroad Commissioners. He was also, for some time, superintendent of the Commonwealth Avenue Street Railway Company, of Newton. He has always been held in high esteem by his employees, and was presented with a handsome silver service when he severed his connections with the Newton & Boston Street Railway and Wellesley & Boston Street Railway. Mr. McLain is vice-president of the New England Street Railway Club.

ENGINEERING SOCIETIES

BROOKLYN ENGINEERS CLUB.—At the regular meeting of this club, Oct. 11, Mr. Frank C. Cudworth presented a paper entitled "The Electric Conduit Railway: Its Development and Construction."

AMERICAN SOCIETY OF CIVIL ENGINEERS.—At the regular meeting of this society, held Wednesday, Oct. 17, 1900, the paper entitled "The Preservation of Railway Ties in Europe," by Otave Chanute, was presented for discussion.

NEWS NOTES

PINE BLUFF, ARK.—J. B. Bradley, of Chicago, has become associated with W. H. Keyser, who projects the construction of a street railway and lighting system here, and both gentlemen were here a few days ago looking over the ground and laying plans. Mr. Keyser has recently been granted an extension of three months in which to begin the construction of the line under the original franchise grant.

BAKERSFIELD, CAL.—The Mountain Valley & Bakersfield Railroad Company has made application for a franchise here. The company contemplates the construction of an electric railway from this city to the South Fork country.

BRISTOL, CONN.—The Bristol & Plainville Tramway Company has made application to the Borough authorities for permission to build an electric line from Bristol to Terryville. The company has also made application to the Selectmen for permission to build from the borough line to the town line of Plymouth, and application will also be made to the Selectmen of Plymouth for similar privileges.

CHICAGO, ILL.—The Street Railway Commission has received an offer from a syndicate of a 3-cent fare in exchange for a blanket franchise covering the territory occupied in this city by the Chicago City Railroad Company and the Union Traction Company.

CHICAGO, ILL.—Nine persons were injured in a grade crossing collision between a car of the Calumet Electric Street Railway and a suburban passenger train on the Lake Shore & Michigan Southern Railway at Stony Island Avenue and Seventy-Ninth Street, Oct. 8.

EAST ST. LOUIS, ILL.—The strike on the Collinsville, Caseyville & East St. Louis Electric Railway was declared off Oct. 2.

CHICAGO, ILL.—The Citizens' Street Railway Association has made application to the Secretary of State for a charter. The object of the company is to construct street railway lines to be capitalized at the actual cost of constructing the line, on which the fare is to be 4 cents. The plan of the company is to sell out to the city at the actual cost of construction at any time the municipality may see fit to purchase it. It is proposed to construct an experimental line between Twenty-Second Street and Lincoln Park, Chicago, a distance of 4 miles. The incorporators of the company are Charles L. Bonney, Lyman M. Paine and Emil A. Basener, of Chicago.

LAFAYETTE, IND.—An electric railway is projected to extend from this place through the corn belt region to Veedersburg.

INDIANAPOLIS, IND.—The Board of Public Works has ordered the Indianapolis Street Railway Company to change its system of overhead feed wires and place them under ground in the downtown districts.

WABASH, IND.—The right of way has at last been secured for the proposed electric railway between Wabash and Peru, and it is announced that Eastern capitalists are to furnish the funds for constructing the line. Frederick C. Boyd is largely interested in the project.

KEOKUK, IA.—The Keokuk Electric Railway & Power Company has filed amended articles of incorporation with the Secretary of State of Iowa. The company is empowered to construct electric railway lines, do a general electric lighting business, furnish heat and power and maintain and operate steam heating, hot water heating, gas and telephone systems in and near Keokuk.

SIOUX CITY, IA.—The Benevolent Order of Street Railway Employees of Sioux City is the name of a new organization formed here recently. The society has been organized for the mutual protection and benefit of its members, who are all employees of the Sioux City Traction Company. The officers are: Frank Lovell, president; William Glenn, vice-president; N. J. Lucian, secretary; J. V. Gibbons, treasurer. These officers, together with George Dunham, George Llewellyn and Andrew Anderson, constitute the board of directors.

WICHITA, KAN.—A car of the Wichita Railway & Light Company jumped the track Sept. 30, plunging into Chisholm Creek. About thirty persons were injured.

WATERVILLE, MAINE.—The Franklin, Somerset & Kennebec Railroad Company has petitioned the Railroad Commissioners for approval of highway crossings, and crossing the Somerset Railway and the Maine Central Railroad, on its line to Waterville. This road is partly constructed toward Sharon, and this petition indicates that the company contemplates building to Waterville.

AUGUSTA, MAINE.—The Gardiner Street Railway Company has again petitioned the Railroad Commissioners for approval of articles of association for a new route, which it is supposed will do away with the opposition of the Maine Central Railroad Company, through whose objections its former applications were rejected. The new line will not parallel the Maine Central Railroad, as the layouts in the former applications did. The new line will be 10 miles in length, and the capital stock is to be \$45,000. The directors are: B. M. Turner, John K. Foy and Ammi Davenport, of Gardiner.

ELKTON, MD.—The City Council has passed an ordinance granting the Elkton & Chesapeake City Electric Railway Company a franchise for the construction of an electric railway here, and also for the operation of an electric lighting plant.

MILFORD, MASS.—Five persons were injured here a few days ago in a head-on collision between a passenger and repair car of the Milford, Holliston & Framingham Street Railway Company. Both cars were derailed and badly damaged.

HOLYOKE, MASS.—The Summit House, owned by the Mount Tom Railroad, was destroyed by fire Oct. 8. The loss is estimated at \$25,000.

BOSTON, MASS.—The Boston Elevated Railway Company has placed an order with the Sprague Electric Company for one hundred equipments, instead of sixty, as generally reported.

MILFORD, MASS.—The Milford & Uxbridge Street Railway Company has voted to call an assessment of 20 per cent on the stock. The directors have decided to accept the franchises granted the company in Hopedale, Mendon and Uxbridge, and will probably have the line in operation early next spring.

TAUNTON, MASS.—The Railroad Commissioners have granted the Brockton Street Railway Company permission to operate over the lines of the Taunton Street Railway Company in this city.