

Electric Railway Journal

DAILY EDITION

Published at the Annual Conventions of the American Electric
Railway Association and Its Affiliated Associations

Vol. XLII

NEW YORK—TUESDAY, OCTOBER 14, 1913—ATLANTIC CITY

No. 15A

PUBLISHED DAILY BY

McGraw Publishing Company, Inc.

JAMES H. MCGRAW, President; C. E. WHITTLESEY, Sec'y and Treas.
239 WEST THIRTY-NINTH STREET, NEW YORK.
MILLION DOLLAR PIER, ATLANTIC CITY, N. J.

TERMS OF SUBSCRIPTION

For 52 weekly issues, and daily convention issues published from time to time in New York City or elsewhere: United States, Cuba and Mexico, \$3.00 per year; Canada, \$4.50 per year; all other countries, \$6.00 per year. Single copies, 10 cents. Foreign subscriptions may be sent to our European office.

Requests for changes of address should be made one week in advance, giving old as well as new address. Date on wrapper indicates the month at the end of which subscription expires.

Copyright, 1913, by MCGRAW PUBLISHING COMPANY, INC.

Application made at the Post Office in New York for entry as mail matter of the second class.

Of this issue of the ELECTRIC RAILWAY JOURNAL, 9000 copies are printed

TUESDAY, OCTOBER 14, 1913

PROGRAM FOR TO-DAY

CONVENTION MEETINGS

- 9:30 a.m. Opening Meeting of Accountants' Association, Accountants' Hall, Second Floor of Convention Pier.
9:30 a.m. Joint Session of Engineering and Transportation & Traffic Associations, Engineers' Hall, Convention Pier.
9:30 a.m. Session of Claims Association, Claims Hall, Second Floor of Convention Pier.
2:00 p.m. Opening Meeting of American Association, Greek Temple, Convention Pier.

ENTERTAINMENT

- Golf, Qualifying Round for A. E. R. M. A. Tournament, Country Club, Northfield, N. J.
11:00 a.m. Concert by William Fenrich and Orchestra, Lobby, Convention Pier.
1:00 p.m. Get-Together Luncheon, Accountants' Association, Marlborough-Blenheim Hotel.
3:00 p.m. First and Second Rounds, Ladies' Auction Bridge Tournament, Persian Garden, Convention Pier.
3:00 p.m. Ladies' Euchre and Five Hundred Contests, Persian Garden, Convention Pier.
9:00 p.m. Informal Dancing, Ballroom, Convention Pier.

Time and the Program

It is difficult for the chairman of a large association meeting to make the proper distribution of time so as to complete the full program of papers and reports within the session allotted to them. It is especially difficult to do this in the case of our association meetings, where the length of the reports and the time which ought to be given to the discussion necessarily differ so greatly. A plan has been adopted successfully in some associations of appointing an official time keeper, of giving each subject a certain period of time, and then of discontinuing further consideration after the expiration of the period thus fixed. This is neither practicable nor desirable here. It suggests, however, an informal plan of action which the presidents of the various associations may find they can carry out without the loss of matters that should be brought to the attention of the association and without the loss of time which might be fatal to the completion of the whole program. This is a careful survey of the known business to be transacted at each session, a rough estimate of the proportion of time that can fairly be given to each topic and then an effort to approximate this rough schedule. It is better to restrict slightly the discussion on all of the papers than to reach the end of the session, as happened on one occasion in the past, before any consideration had been given to an important report that unfortunately occupied the last place on the program.

The Entertainment This Year

The isolation of Atlantic City is an excellent thing from the standpoint of convention efficiency, but this condition also makes the compilation of a satisfactory entertainment program an important matter. To be sure, the annual meeting of the American Electric Railway Association is primarily a business gathering, but the entertainments further this end by promoting the spirit of sociability and relaxation among people who see each other only at rare intervals. Atlantic City is especially well suited for the improvement of the social side of the convention because of the proximity of the hotels and the opportunities for social gatherings in the large pier ballroom.

The entertainments for the week were auspiciously begun last evening by the brilliant annual ball and reception extended to the officers and ladies of the main and affiliated associations. The rest of the entertainment program promises to be equally attractive. Each morning and each afternoon, except Friday, daily concerts will be given in the reception room on the pier by the large orchestra. The great evening event yet to come, of course, will be the promenade concert and ball on Thursday evening. The remaining evenings will be devoted to dancing in the ballroom this evening and a trip to Steeplechase Pier on Wednesday. This takes the place of the usual vaudeville entertainment or ball game and promises to be even more popular and funny, because all may actively participate. Since the ladies are not likely to find much interest in the business sessions of the convention, their daylight hours will be made to fly under the allurements of auction bridge and euchre. And, to crown all, the golfers will have an opportunity to seek in their ranks for another Schmidt or Ouimet.

The Exhibits

The annual five-day exhibit of the American Electric Railway Manufacturers' Association may be likened to a very short but highly profitable course at a university. To the newcomer this year, the exhibit is a veritable revelation of the technical complexities of electric railroading, while even the most experienced veteran annual must find something new worthy of his study.

Even before the visitor enters the pier his attention is attracted to the group of near-side vehicles on the exhibition track opposite. The first is a double-truck car for two-man service, the second, a single-truck car for one-man operation, and the third, a double-deck bus, which illustrates the adaptation of trackless transportation to American conditions. Once upon the pier, the visitor can study the improvements of cars in detail, beginning with trucks, particularly the radical axle type. He will find further that the up-to-date car body may now have the same composition material for the floors, panels, headlinings, partitions, roofs and even the dash. It is natural to learn also that the increased use of arch-roof cars has been both accelerated and accompanied by improvements in automatic ventilators. While novelties in fare collection are not so prominent as at former conventions, many devices shown do so many diverse things well that they tend to make the conductor little more than a fare collector, street announcer and door operator. Complete operating equipments have been installed to permit the track engineer to study the practical merits of various machines for installing rail joints, for honing, for grinding and for removing corrugations. The

transmission engineer has been catered to by what is probably the most elaborate feature of the exhibit, namely, a complete high-tension tower and substation. "Safety First" in car operation is emphasized by diverse operating signal equipments ranging from the lightest overhead contact type to the most elaborate track circuit.

In conclusion, the promising technical advances of the industry could not be better indicated than by the showing of insulators and other equipment for operating railways on 2400-volt direct current.

Progress in Standardization

It has been said that any industry in which practice has been rigidly standardized is moribund. It cannot be denied that the absolute removal of the incentive or opportunity for introducing innovations is hardly conducive to a healthy condition. But standardization as understood in railway work means not so much standardization of design and method as standardization of dimensions. Within these limits the genius of the inventor has ample play. For instance, no part of steam railroad equipment is so thoroughly standardized as couplers, yet at every steam railroad convention there are exhibits of a great variety of improved couplers, all of which are "standard." On the other hand, the absence of standards, even of the crudest kind, is a serious handicap. This condition is always in evidence in the development of any comparatively new art or process, an instance in kind being found in automatic block signaling, where practice is so varied that not even the fundamentals can be agreed upon.

The electric railways have suffered for a long time from this lack of universally established practice and design, although in view of the comparative youth of the industry this was only to be expected. Of late, however, sufficient agreement by majorities has been reached in many cases, so that the field for standardization has become a wide one. The work of the committee on standards for the past year has shown no exception to this tendency, for the committee's report contains recommendations for the adoption of standards of the most direct importance to the industry.

The Manual of Standards

The work of the committee on standards was not confined to this report, however, for time was also found for the development of a new code of procedure and the compilation of a manual of existing standards and practices. The reason for this new method of publication is that the action of the standards committee on each subject brought before it has been incorporated in the report of that standing committee which has developed the proposed new standard or practice, and the findings will appear only in this manner.

Among these findings will be found approved designs for 7-in. and 9-in. girder-grooved and girder-guard rails, standards which cannot fail to have a marked influence in reducing the cost of track construction and maintenance. Accompanying them are designs for splice bars and joint plates and a revised specification for girder and high T-rails, which have been approved as recommended practices. The tendency toward permanent standardization is further indicated by the revision of the present standard design of brakeshoes and the approval of a standard cap and cone design.

The value of standard designs as permanent records of committee work and their universal use depend almost entirely upon a thorough representation and a careful consideration of their merits. It seems therefore that the committee has treated wisely the proposed standard for 600-volt overhead construction, a most comprehensive and valuable specification prepared during the year by the committee on power distribution. Action on this, on account of the opportunity for introducing the personality of the individual into construction even so susceptible of standardization as overhead work, was deferred by the committee to permit discussion on the floor of the convention and thus allow opportunity for the presentation of the possibly divergent views of the different member companies.

The Man Who Stays at Home

The electric railway man obliged by circumstances to remain away from the convention makes a serious mistake if he concludes that the great gathering in Atlantic City has no message for him. He will do well to realize that in any industry of national scope only a comparatively small proportion of its workers can be spared at any one time and place for attendance at a convention of the organization as a whole and that as the meetings are held in different parts of the country the personnel of the delegates is bound to vary widely. This may disabuse his mind at once of any feeling that convention privileges are limited to certain groups of men who are in attendance year after year. It should also help him to realize that even if he cannot attend this year he may be able to do so next time, particularly if the convention city selected happens to be in his section of the country. The real question for the man who stays at home is how to profit by the convention when not in its midst, how to maintain his interest in its deliberations—in short, how to get the maximum good out of the entire occasion.

Certainly no thoughtful man can long entertain the belief that the convention is planned and carried forward solely for the benefit of those fortunate enough to attend it. The good of the industry is its object, even when the proceedings become local in character, as in occasional committee work and discussions on the floor. If a company has one or more representatives present as delegates, there are a number of very direct ways in which the man who has had to stay behind can benefit thereby. In the first place, by studying the program, he can often communicate with his associates in time to get a good deal of information from them along special lines before they leave for home. Even if they have no specialized knowledge of the subjects with which the man at home is familiar, they may still have the opportunity to submit written discussions and contributions of pertinent interest from the fellow left behind, to put others in his line of work in touch with him through the wire or mails and to send him plenty of data from the exhibits if he will only take the trouble to ask for the material. Thus, an engineer of motive power forced this year to remain close to a plant in process of reconstruction may write or telephone to his company's auditor asking the latter to send or bring home all the printed data he can pick up in the exhibit hall on the subject of condensing apparatus, mentioning the principal companies supplying this sort of equipment. The immediate gains might be greater if the engineer himself could see the exhibits, but he can acquire some valuable information through his company's delegate if each one utilizes the possibilities of co-operation.

We hardly need to point out that one of the chief purposes of the Convention Daily issue of the *ELECTRIC RAILWAY JOURNAL* is to give the man at home a faithful record of all the "high spots" touched in the convention, and whether others of his company are in attendance or not, it will pay him to run hastily over each day's proceedings as fast as the daily issues come to hand. In this way he easily can size up the trend of interest in all the important subjects covered. He can then mark special features for further investigation by mail or in person, and in not a few instances he can set about new lines of practice at home as a direct result of ideas gathered from the convention. In some ways the man at a distance has a better opportunity to review the proceedings as a whole than has the man in the midst of the crowd. The latter gets the stimulus of personal contact with other delegates and thereby gains a sense of common interests that in itself is worth the cost of the trip, but the former by a few moments' reading surveys quickly the work of many minds without the expenditure of time in the meeting hall. As a result he obtains ideas which will not only help to increase his efficiency, but will also give him a wider knowledge of current practice in the industry that will be of immense value when his time for attendance comes.

Conventionalities

Back again, eh! How'd ya like the air?

Have you seen Hawley's new center-entrance car?

Bill Sawyer's here! Pipe the magenta Norfolk jacket. SOME rags!

United States Senator Claude Swanson, of Virginia, is the guest of President Harries.

Terre Haute has sent us Mr. and Mrs. Grover, of the T. H., I. & E. Many thanks, Terre Haute.

Coming in on the St. Louis special More-Jones Evans said he wasn't going to shave beyond Pittsburgh. What part of his chin is that?

This is some busy convention. Fifty-eight committee reports are to be made, twenty-three addresses delivered and nine papers read.

One of our correspondents has propounded to us the question: "Can the Board walk?" Our answer to this is: "Yes, sometimes after midnight."

One of our friends, a motorman, got fired recently for failing to ring his gong. He says that the rest of the platform men are going to strike ———.

Vice-president S. K. Colby, of A. E. R. M. A., is a close second to the Million Dollar Pier sea-lions. He may be seen sporting in the tank opposite the Pickle Pier almost any evening from six until seven.

It seems impossible—to wit, Harry Donecker attending a convention unfettered and happy; but have you noticed the joyous insouciance of Bernie Swenson every time he takes a peek at the annual hurly-burly?

As usual, R. E. Danforth has brought a lot of his men here for convention week. He says that when they get back from the trip they're always full of ginger. Guess they must do a lot of snappy work.

S. Walter Mower, now snugly ensconced as general manager of the Otsego & Herkimer Railroad, has the honor to announce to all of his friends that he has now resumed the dignities, burdens and emoluments of American citizenship.

Harlow C. Clark, publicity agent of the association, is an enthusiastic baseball fan. He also has a genial, breezy manner and is a good blower for the association—not a vacuum or an exhaust fan, but a high-pressure blower.

H. J. Kenfield, publisher of *Electric Traction*, whose presence here has come to be looked upon as indispensable at the convention, is detained in Chicago by the grave illness of Mrs. Kenfield, who suffered a paralytic stroke on Wednesday of last week.

We don't know and can't even conceive what an Atlantic City convention would be like without "Nate" Garland pointing out the straight and narrow path to the erring caddie and "Pa" Wilkinson directing the maneuvers of the Black Horse Brigade.

Among the famous visitors from foreign shores is Bill Wood, of the New York & Queens County Railway Company, who is reported to have come all the way from Long Island City to attend the convention. However, we rather doubt the rumor. It's too long a trip.

Charles Rufus Harte, construction engineer, Connecticut Company, meandered in on Monday. If he is convinced that the pier is a safe place for his assistants, five of them—Messrs. Young, White, Bates, McDonough and Kellas—will be found among the attractions on Tuesday.

Have you seen the Poultry Exposition just beyond the seal cage? Several earnest railroad men, whose wives were evi-

dently at home, complained, after hanging around there yesterday, that all the chickens had men with them. We think it's a funny way to run a poultry show ourselves.

B. B. Davis, dean of the Claim Agents' Association, is one of those who like to visit Atlantic City 'tween conventions, too. Our genial secretary opines that while they have crowds in Columbus, they are smaller than those in Atlantic City. Hence he prefers this town because of the greater diversity factor in "mugs."

Large portraits of the association's presidents hang over the desks of the presiding officers in the various meeting rooms. President Schreiber of the Engineers gazed with admiration upon his presentment and declared it to be so true to life that there was no real reason why he should attend the meetings while it was in position.

James W. Perry, general manager of the electrical department of the H. W. Johns-Manville Company, and E. B. Hatch, president of the Johns-Pratt Company, Hartford, were among the very early arrivals. They went out to the golf grounds on Saturday afternoon, but according to special reports they didn't think very much of the course.

A happy anticipation expressed in the year 1607: "We must especially observe that compression and similar violence have a most powerful effect in producing locomotion, and other motions of the same nature, as may be observed in engines and projectiles."—From Francis Bacon's "Novum Organum," Book II, Aphorism L.

A correspondent of our revered contemporary *Motorman and Conductor* says, "The company has men around visiting the joy places and taking pictures of any found in them in uniform. They have a camera about the size of a watch. You can avoid being mugged by keeping out of those places." Sure! But where else can you get a drink?

S. M. Wilson buttonholed us on Saturday, and in commenting on the fine new Brill sign—sure, its fine—became somewhat sarcastic about our dear old relic of the first convention. We neglected at the time to call attention to the fact that the flight of years has eliminated from our sign errors such as reversed "N's." Look your sign over again, Sam, and fire your proofreader.

Professor Richey, the genial instructor of Worcester youth, has fallen for the efficiency engineering idea to the extent of inaugurating a personal bookkeeping scheme. He enters the time devoted to each client in a little notebook, charging accordingly, and balances a time account each week. Grand scheme! But whom does he soak for the time he spends at his meals?

The weather, whatever it is, is no better than it ought to be to recompense for its didoes on Saturday night, when the wind and rain "messed up" a lot of the exhibits in the Annex. Director McConnaughy had provided for a storm from all directions but the west. This particular storm came from all directions, but especially from the west. The director, of course, at once thought of Chicago as partly west, and then he thought of wind, and then he didn't say what he had in mind.

Thomas E. Finigan, of San Francisco, appears at this convention a changed man. He is now "on the other side of the fence." Instead of being the purchasing agent of the United Railways of San Francisco, buying things, he is vice-president of Pierson, Roeding & Company, and his particular purpose and delight in life is to sell things. Mr. Finigan succeeded that other Adonis of the industry, S. K. Colby, who is now allen and pecking in the Far East of the United States.

The annual meeting of the Manufacturers' Association will be held at 4 p. m. on Wednesday, in Engineers' Hall. At

this meeting members of the executive committee will be elected to succeed the following, whose terms expired with the present convention: E. H. Baker, Galena-Signal Oil Company; Scott H. Blewett, American Car & Foundry Company; William H. Heulings, Jr., The J. G. Brill Company; J. L. Replagle, Cambria Steel Company, and E. M. Williams, Sherwin-Williams Company.

President W. H. Heulings, Jr., of the Manufacturers' Association, surprised and delighted his friends by appearing at the Marlborough-Blenheim on Sunday. He has been very ill and it was feared that he would not be able to attend the convention at all. But the kindly fates, together with a power for rapid recuperation and a somewhat assertive will, have enabled him to grace the occasion. Mr. Heulings is far from being the only one who is pleased at his recovery and his presence at the convention.

After Friday it will no longer be Secretary Donecker, but Assistant General Manager Donecker. The Public Service Railway has tapped the association's high-tension line and taken to itself a supply of energy which is going to be mighty useful to the New Jersey corporation. It might seem as if operation in the A. E. R. A. would be slowed up a trifle. BUT—There is E. B. Burritt, the secretary-elect, who is being tested out for voltage. Special committees on power generation and distribution are in charge. It may be stated confidentially that there is some current flowing over the new live wire and that there isn't much danger of a suspension of service at 29 West Thirty-ninth Street.

The very attractive and finished appearance of the lobby, which so impressed the early visitors to the Convention Pier yesterday morning, was not only pleasing in itself, but it was indicative of the general condition of finish and completeness of the exhibits as a whole. Director McCaughy and the entire membership of the Manufacturers' executive committee deserve all of the congratulations and thanks which were showered upon them yesterday for the excellent fruition of their great labors during recent months of preparation for this convention. The exhibits are not only gratifying from the fact that they are of more than usual educational value and represent a larger number of exhibitors than were ever brought together at previous electric railway conventions in Atlantic City, but also from the fact that the show was ready on time for the opening yesterday morning.

Here's enterprise for you! The Public Service Railway of New Jersey has sent no less than ninety men to the convention, renting a floor of the Hotel Dennis for their accommodation and making, wherever possible, special provisions for their transportation. Most of them will stay for the two days of the convention on which are discussed the subjects of special interest to them, although a number will remain for the whole week, assisting the registration committee and otherwise helping out in the hard detail work of the various associations. During an interview on the subject, R. E. Danforth, general manager Public Service Railway, said in his characteristically forceful manner: "When we started sending men to the convention it was largely out of a sense of duty, but we soon found that everybody came back chock full of new ideas and renewed interest and fairly loaded with good old 'pep.' Now we are sending everyone who can get away without actually crippling the service, and we are all keen about the scheme. About one-third of our company section will attend the present convention at some time during the week." There may be more enterprising companies in this regard than the Public Service Railway, but it doesn't seem to be possible. However, if anyone can beat this record at the present convention, or any other, it would be an interesting fact to be brought to light and due prominence will be given to it in these columns. In the meantime, the congratulations of friends and the thanks of the association are in order.

ENTERTAINMENTS OF THE WEEK

A glance over the program of the entertainments, with notes of general information, which has been prepared by the entertainment committee, will convince the visiting delegates that unusual provision for their amusement and comfort during free hours has been made. These programs are being distributed from the registration booth and contain in addition to the program of entertainment an outline of the special privileges which have been accorded to the wearers of the official badge.

The entertainments, which began yesterday with concerts in the morning and afternoon and the annual reception in honor of the officers and ladies of the American Association and the affiliated associations, will be continued this morning with a concert in the lobby of the Convention Pier, by Fenrich's orchestra, well known on account of the prestige which it has attained in New York City through its rendition of music for the present popular dances. This orchestra, it might be added, has been permanently engaged this winter to play before a number of the exclusive dancing clubs in New York. This afternoon the preliminary rounds for an auction bridge tournament for ladies will be commenced, and in addition arrangements have been made for euchre and "500" contests for ladies who prefer these games.

Moving pictures will be displayed in the lobby of the Convention Hall during the entire week, but, contrary to the usual custom, these will be of educational character. Scenes of special interest to the electric railway industry will be displayed as a supplement to the various exhibits shown upon the Convention Pier.

Medal play for golfers will be continued at the links of the Country Club of Atlantic City, Northfield, N. J., during the whole week, and any of the delegates who wish to play should qualify on Tuesday and Wednesday afternoons for the blind handicap which will be held on Thursday afternoon.

On Tuesday evening informal dancing will be held at the ballroom, Convention Pier, and at this time Mr. Chidsey and Miss Judson, whose spectacular entrance at the dance last night was a feature of the evening, will again be present.

On Wednesday Fenrich's orchestra will give concerts in the morning and afternoon, and the final consolation round of the auction bridge tournament will be held in the Persian Garden, Convention Pier. Wednesday evening has been designated as "Steeplechase night," when all visiting delegates and guests are invited to appear at the Steeplechase Pier on the Boardwalk, opposite Haddon Hall, for an informal evening. This will be a unique entertainment as well as one of the most enjoyable of the week. Admission to the pier will be by badge only, as the entire pier with all of the amusement devices has been leased by the entertainment committee for the whole evening and is placed at the convenience of the delegates and their guests.

On Thursday concerts will be given in the morning and afternoon, and in the evening the annual promenade concert and ball of the association will be given at the ballroom, Convention Pier.

ROLLING CHAIRS

Delegates and others in attendance at the convention should bear in mind that one of the services supplied by the Manufacturers' Association this year, as formerly, is the free service of rolling chairs. The chairs available for this use will carry signs indicating that they are at the disposal of those in attendance at the convention. All that is necessary to secure this service is to show the official badge to the attendant. W. H. Wilkinson, Pressed Steel Car Company, who has most efficiently handled this portion of the entertainment program at past conventions, is the chairman of the chair committee this year.

OUR GOING AND COMING SECRETARIES

When in April of this year the announcement was made that H. C. Donecker would resign on July 1 as secretary-treasurer of the American Electric Railway Association to become assistant general manager of the Public Service Railway, Newark, N. J., regret at his departure was mingled with felicitations at his advancement. Few men have shown such devotion and enthusiasm for their work as Harry Donecker. His diplomacy and executive power have insured the smooth running of the association machinery through a period of tremendous expansion, while his grasp of details has endeared him to more than one committee chairman overwhelmed by masses of undigested data. These qualities did not remain unobserved by his new executive chief, Thomas N. McCarter, during the latter's presidency of the American Electric Railway Association. Mr. Donecker has been in charge of association work since February, 1910. Previous to that he had spent twenty years in the operating and commercial sides of the electric railway field. He resigned officially on July 1, as noted, but by special arrangement with Mr. McCarter he was enabled to give the association as much of



H. C. Donecker



E. B. Burritt

Copyright by Harr's & Ewing

his time as necessary up to the end of the present convention. Harry Donecker enters his new work with the hearty godspeed of all who are acquainted with his unfailing good humor and his readiness to advance the standing of the electric railway industry.

There is every reason to believe that the association's happy selection of Mr. Donecker in years past will be repeated in the choice of E. B. Burritt as his successor. As secretary to Gen. George H. Harries, now president of the American Electric Railway Association, Mr. Burritt has already obtained the necessary insight into the traditions and executive policies of the association. His service with the Washington Railway & Electric Company dates from January, 1907, and is coincident with his service in the electric railway field. It is an interesting fact, however, that he began professional life in the steam railroad field, by employment with the Southern Railway at Washington in 1893. After six years with that company he enlisted in 1899 as a member of Troop A of the United States Cavalry and served with distinction with the cavalry branch of the army in the Philippines until compelled to resign after eighteen months because of disability. After some time in an army hospital he entered the commissary division of the transport department at Manila and soon after was advanced to the position of head of the manifest department, Manila depot. Later he was transferred to the subsistence department at Washington, where he remained until he entered the service of the Washington Railway & Electric Company in 1907. While with that company his work has been largely of an administrative character and he has also had an opportunity through his close association with General Harries to be-

come thoroughly acquainted with and to participate in association work, so that with his experience, his pleasing personality, executive ability and energy, it is safe to say that he will worthily maintain the high standard set for the secretaryship of the American Electric Railway Association.

THE ANNUAL RECEPTION

Last evening's reception in honor of the officers and ladies of the various associations proved to be a great success in every respect, and the excellence of the arrangements gave forecast of an unusually pleasant week to come. Gen. George H. Harries for the American Association, assisted by the officers of the affiliated associations, together with a number of ladies, received the visiting delegates and their guests in the ballroom of the Convention Pier, the length of the line which passed before them showing that the attendance at this year's convention bids fair to exceed all previous records.

One of the features of the evening most noticeable to the onlooker was the large number of ladies in attendance, their modish gowns forming a striking contrast to the somber black and white worn by the men. In addition, the lighting scheme of the ballroom assisted in imparting brilliance to the spectacle, as the ceiling of the room was illuminated by subdued rays from colored lamps, while the brighter white lights were arranged around the sides of the main hall and in the booths.

At the conclusion of the reception informal dancing began, and, judging from the enthusiasm displayed by the devotees of the art, the reputation of Fenrich's orchestra was fully sustained. Incidentally it should be said that Fenrich plays for many of the most important dances in New York, and the entertainment committee is to be congratulated on its foresight in securing his services during the entire convention week.

A spectacular feature of the evening was the entrance of Miss Judson and Mr. Chidsey, who had been brought from New York by the entertainment committee to give interpretations of the present fashionable dances. This was the unexpected feature of the program, as the general dancing was suddenly stopped by the lowering of the lights, and a brilliant spot-light was turned on the booth in which the two dancers appeared, the light being kept focused upon them during their dance. The generous applause with which this was received was fully warranted by the grace of both dancers and the refined quality of their exhibition. This, of course, was to be expected, as the dancers have followed a rule to accept engagements only before private audiences and have, in consequence, never appeared upon the stage.

After the exhibition, general dancing was resumed, and it was continued until an hour as late as was consistent with the prospective hard work in convention during the following day. Especially prominent among the most expert dancers was the ex-secretary of the American Association. However, it is reported that Mr. Donecker was seen practising on Sunday afternoon so that his skill and verve may be partly accounted for on these grounds.

SUNDAY MORNING ON THE JERSEY CENTRAL

The Jersey Central train that reaches the shores of Atlantic City at 1.10 p. m., or just in time to cheat the local hotels out of a meal, brought a goodly group of "conventioners." Among them were some New Englanders who did not join the trolley party, namely, Professor Richey, of Worcester Polytechnic; Lee Parker, of Stone & Webster; Clarence and Mrs. Sprague, and G. W. Palmer, Jr., Bay State Street Railway. Others in the party were Major and Mrs. Evans, W. C. Wilson, Charles R. Ellicott, James H. McGraw, E. H. and Mrs. Mason, C. G. ("Cliff") and Mrs. Chamberlin, J. P. Barnes, Syracuse & South Bay Railway;

J. L. Crouse, New York, New Haven & Hartford Railroad; J. J. Dempsey, transportation department, and Messrs. Goss and Clifford, mechanical department Brooklyn Rapid Transit System. Last, but not least, a caddie bag, accompanied by "Nate" Garland.

BADGES AND BADGE PRIVILEGES

The departure from the ribbon type of badge which was inaugurated at the 1912 convention has been retained this year, square badges with marine blue center being used to distinguish members of the Railway Associations and pentagonal badges with coquelicot red center those of the Manufacturers' Association. Each type of badge in turn is differently colored at the corners to indicate further subdivisions as follows: For the square badges—marine blue corner, American Association; brown corner, Engineering Association; orange corner, Accountants' Association; gray corner, Transportation & Traffic Association; green corner, Claims Association; light blue corner, American Association guest; white corner, American Association lady; purple corner, American Association individual member. The pentagonal badges with coquelicot red centers indicate the Manufacturers' Association; light blue corner, Manufacturers' Association guest; white corner, Manufacturers' Association lady.

BADGE PRIVILEGES

The arrangements described hereinafter have been provided for the exclusive use of members and guests of the American, affiliated and allied associations, but it is requested that the official badge be worn at all times in order that the special privileges may be obtained. Notes on the individual privileges follow:

Information Bureau—Left of entrance, Convention Pier. Open from 8:00 a.m. to 11:00 p.m. All information pertaining to convention matters.

Post Office—All mail addressed care of Young's Million Dollar Pier will be received and distributed from information bureau.

Telegraph Service—Western Union and Postal companies. Apply information bureau for messenger service.

Telephones—Free local service from all exhibit booths.

Stenography—L. H. Marvel, official stenographer. Office in gallery of main building, Convention Pier. Telephone connection to all booths.

Rolling Chairs—Stations at Convention Pier, Marlborough-Blenheim Hotel, Chalfonte Hotel. Hours—9:00 a.m. to 7:00 p.m., Oct. 13 to 17 inclusive. Chairs will be in service from 8:00 p.m. to 10:00 p.m. for transportation between hotels and convention pier only on Monday and Thursday evenings. On Wednesday evening this service will be for transportation between hotels and Steeplechase Pier. A special rate of 25 cents per person has been arranged for the wearers of the official badge for Reed's or Skill's chairs which may be required after hours for direct runs from the Convention Pier or Steeplechase Pier to hotels or from hotel to hotel.

Bathing—Admission to Brighton Casino—Rooms and suits, 50 cents per person. Indoor swimming pool and surf bathing, solarium, reading room and smoking room.

Private Electric Brougham Service—M. W. Harper, chauffeur, Coast telephone 2288-R; Bell 2733-A. Arrangements have been made with Mrs. Harper to provide this service for the convenience of members and guests. Ladies will find this luxurious service particularly desirable for shopping, sight-seeing or visiting. The following rates will apply: Sightseeing tour, \$1.00 for each person; hourly rate, \$3.50; 50 cents for one or two persons to any place within city limits.

Taxicabs—Richard G. Edwards, 1204 Atlantic Avenue, Coast telephone 192; Bell 192. Bergdoll Taxicab Company, New York Avenue and Boardwalk, Coast telephone 1700, Bell 600. Branch station at the Shelburne hotel. Rates are

50 cents for one or two persons to any place within city limits.

Touring Cars—Richard G. Edwards, Bergdoll Taxicab Company, five-passenger touring cars \$3.50 per hour; seven-passenger touring cars \$5.00 per hour.

Garages—Richard G. Edwards, garage 1204 Atlantic Avenue; Bergdoll Taxicab Company, garage New York Avenue and Boardwalk. Rates—75 cents a day, \$1.50 per day including washing and polishing, and \$7.00 per week including washing and polishing. Other garages as follows: Atlantic Automobile Company, 12 and 14 South North Carolina Avenue, Coast telephone 364, Bell 750; Marlborough-Blenheim hotel, for guests of hotel only. The information bureau will furnish rates or additional information.

Golf—Guests' privileges may be obtained at the Country Club of Atlantic City, Northfield, N. J. The regular charge of \$1 a day will be made for play. Cars to the clubhouse leave Florida Avenue and Boardwalk at quarter of and quarter past the hour; Virginia Avenue and Boardwalk, twenty and fifty minutes past the hour except 7:25 a.m., and 8:25 a.m., 12:25, 4:40 and 5:10 p.m.

Special golf events are referred to elsewhere in this issue.

LADIES' AUCTION BRIDGE TOURNAMENT

The ladies' auction bridge tournament will consist of two afternoons' play, namely, Tuesday and Wednesday; two rounds of three rubbers each to be played each afternoon. Members only can participate, and ladies will be requested to display badges at the entrance to the Persian Garden on the Convention Pier. The card committee is composed of Henry N. Ransom, chairman, H. A. Hegeman and H. H. Helms. The first day will be devoted to the first round (preliminary), for all players, and to the second round, in which the highest sixty-four net scores play for a championship prize. The others will play for a consolation prize.

The second day will be devoted to the third round (championship), in which the highest net score at each table of the second round is to play, while the consolation prize will be played for by the highest sixteen net scores in the second round. The fourth round (both championship and consolation) will be open to the high net score at each table of the third round. The players of the fourth round at the championship table will be awarded first, second, third and fourth prizes. The winner of the highest net score in the fourth round at the consolation table will be awarded the consolation prize.

The rules for play will be as follows:

Each lady upon entering the Persian Garden will receive an identification card showing the number of the table at which she is to play the preliminary round. The player should write her full name upon this card and enter upon it at the end of each rubber the number of points won or lost. At the end of the third rubber the player should add the total number of points won and the total number of points lost and deduct one from the other, entering the net points won or lost for the three rubbers.

The individual cards will be collected by the committee as each table finishes the third rubber. Make-up of tables for second round will be announced by the committee as soon as all the players' cards have been handed in. One player at each table is to act as scorer and is to play one rubber with each of the other three players. Values of points are to be computed by the new count (Royals).

In scoring, place honor count above the line and points below the line. At the end of each rubber add total points and honors of each side and deduct the smaller from the greater total. The net result is the points won or lost for the rubber, which is to be entered by each player upon her identification card.

Players are to cut for deal at beginning of each rubber—

ace low. In cutting, hearts are low, diamonds next, then clubs and spades in the order named. Standard bridge rules will govern. Penalties for revokes must be enforced. In event of tie high scores at any table after the first or preliminary round an additional rubber shall be played, partners and deal to be determined by cut.

SPECIAL TRAINS

The special train from St. Louis, composed of five sleepers, a library observation car, a diner, and a buffet-smoker, all of steel, arrived in Atlantic City at half-past five on Sunday evening. The entire route was over the Pennsylvania lines and a number of passengers were picked up en route, although the majority of the delegates on the train came from St. Louis and the Southwest. A total of eighty passengers made the journey. The feature of the trip was a "get-together" table d'hôte dinner on Saturday evening which the cook—we mean our E. B. Cooke—pronounced to be the finest ever prepared on a dining car even though it was largely "dry." Next to this in importance, according to the ideas of our informant, was the fact that many of the delegates were accompanied by their wives, whose conspicuousness in number was exceeded only by the high average of good looks.

Among the special features of entertainment was a shepherd-plaid cap worn by Mr. Walsh, of the United Railways of St. Louis. It had the cutest little bow in the back! Oh, safety pins! Incidentally it appears that George Smith, of Kansas City, held more threes than the number of pairs acquired by all the other students of Hoyle put together, and this created almost as much comment as the lack of patriotism shown by Nick D. Grand in drinking an orange-colored cocktail.

The Chicago special which arrived early yesterday morning made practically schedule time over the Pennsylvania System. It consisted of six standard Pullmans, two diners, two compartment sleepers and a combination observation and buffet smoking car. The train was well loaded upon leaving Chicago, but a number of railway and supply men joined a party at Fort Wayne, Mansfield and Pittsburgh, making a total of 152 passengers, including sixteen ladies.

The journey was a most enjoyable one as entertainment of various sorts had been provided. On Sunday afternoon a pink tea for the ladies was given in one of the dining cars, at which time bouquets of flowers and boxes of bonbons packed for the occasion were distributed. During the afternoon a ladies' drawing contest was given, in which the first prize, a chafing-dish set, was won by Mrs. Joseph S. Wells; and the second prize, a tea urn, was awarded to Mrs. G. W. Kalweit, the third prize, a fountain pen, being won by Mrs. E. C. Faber.

Several pools on the time of arrival of the train at given points afforded considerable excitement. The first of these was based on the time of arrival at Alliance, the first, second and third prizes being awarded to G. R. Lyman, G. W. Kalweit and W. T. Hubbard. The largest pool was made on the time of crossing the high bridge over the Delaware River, and in this the prizes were awarded to Walter Achepohl, E. L. Kirk, G. D. Casgrain and J. J. Brennan. As an educational feature of the trip the crowd learned that Ohio was 225 miles wide and "dry."

CHARLES S. MELLEN---HIS GOAT INDUSTRY

Neither Governor Foss nor the newspapers will let Charles S. Mellen rest in peace with his goat industry at Stockbridge. When Mr. Mellen left the New York, New Haven and Hartford Railroad the *Boston News Bureau* asked him concerning his future plans, and he replied:

"I am going back to Stockbridge to raise goats; there seems to be a growing demand for goats."

One of the most noticeable faults of Charles S. Mellen is his wit—so keen as not to be popularly appreciated. At Stockbridge Mr. Mellen is receiving letters from all over the country inquiring as to the size of his farm, the number of his goats, their breed, cost of raising, how many he has for sale, and the terms.—*Boston News Bureau*.

LADIES' GOLF TOURNAMENT

In addition to the men's golf tournament, mentioned elsewhere in this issue, the golf committee of the A. E. R. M. A. decided on Sunday evening to hold a ladies' tournament this week at the grounds of the Country Club, Northfield, N. J. Any lady in attendance at the convention is eligible to enter. It was found that a number of ladies who are present at the convention had brought clubs, prepared to play, and it was believed that if an announcement was made promptly of such a tournament there would be a number of entries.

There will be two trophies for the ladies, one first prize and one second prize. The prize for which they are to enter is a blind handicap, subject to the same conditions as the men's blind handicap, as set forth in the official entertainment program. The ladies may play for this competition at any time during the week up to Thursday evening and are to turn in their score cards to some member of the golf committee. They are limited, however, in the competition to one round, which must be declared before the start. It is understood, of course, however, that, preliminary to this round they may play as many practice rounds as they please. Under the rule adopted by the committee also, any competitor for the ladies' prize in the tournament round must also declare her club handicap to her partner before playing the tournament round.

The official program contained no reference to this ladies' tournament, because the decision to hold one was not reached until after the official program was printed.

DEATH OF C. E. FLENNER

C. E. Flenner, auditor of the Aurora, Elgin & Chicago Railroad Company, Wheaton, Ill., and secretary of the Illinois Electric Railways Association, died suddenly at his home in Wheaton, Oct. 12, 1913. He had been slightly ill for a short time, afflicted with acute indigestion, and the direct cause of death was from heart failure. Mr. Flenner assumed the position of auditor of the Aurora, Elgin & Chicago Railroad when it began operation in 1902. He has also served as secretary of the Illinois Electric Railways Association since its inception. Mr. Flenner leaves a wife but no children.

REPORT OF COMMITTEE ON INDIVIDUAL MEMBERSHIP*

BY L. C. BRADELY CHAIRMAN

Your committee desires to report that, pursuant to the instructions of your executive committee, it has endeavored to increase the individual membership of the Transportation & Traffic Association. In this work it has co-operated with a similar committee of the American Association and has been aided greatly by President Stevens.

During the year the membership has been increased by close to 225 members, so that the total membership is now well in excess of the 500 mark.

This work is such as to seem to demand the individual touch, though it is hard to understand why, with the returns provided for the exceedingly small amount of dues, there should be any difficulty in substantially boosting the membership.

*Report presented before the American Electric Railway Transportation & Traffic Association, Atlantic City, N. J., Oct. 13-17, 1913.

ADDRESS OF PRESIDENT SCHREIBER OF THE ENGINEERING ASSOCIATION

A brief perusal of the advance papers and reports sent out by our efficient secretary will convince most of you that the association is making substantial progress. This is well attested by the reports of the standing and special committees which are submitted for your consideration. We should be very grateful that our members have been willing to turn from the press of regular duties and assail the problems before us in such a thorough and painstaking manner, for it should be borne in mind that the work was voluntary and was often done at considerable personal sacrifice.

Your executive committee has not instigated many radical departures from the ordinary routine followed in the past. Still, marked improvements were accomplished by the committee in assigning specific duties to the vice-presidents. The personnel of the standing and special committees and the subjects assigned to them were thus definitely determined upon before the first of the year. Proper direction of the committees' activities was made possible by a systematic supervision of expenditures.

Also, important developments in deriving and improving methods for adopting standards and recommended practice and the introduction of the "Manual" should not be passed over unnoticed. These have been thoroughly and ably carried out, even to the most minute detail, by a special committee reporting to the standards committee.

I would call your attention to the fact that our association was the first to take up the study of the subject of electrolysis and that finally the investigation was made a joint one at the request of the American Association. The large interest that is being taken in the topic of electrolysis is evidenced by the fact that a national committee has been created to investigate it in connection with other interested national societies and technical bodies. I am pleased to be able to state that our association will be well represented on that committee.

The progress that has been made by the co-operation of our committees with other technical bodies similar to our own is also worthy of your consideration. The reports show that at least two specifications recommended for adoption by our association have been standardized by others. To my mind this is very significant. Such co-operation not only clearly broadens our point of view but certainly strengthens our conclusions and recommendations.

Permit me to suggest that we remember that the *Aera* is the official publication of the American Electric Railway Association. The members of the Engineering Association can do much to assist in establishing the true position of this periodical. Electric railways, even to the most minute details, are being surrounded by new laws and governmental regulations. Some of these regulations are beneficial and wise; others are created by irresponsible persons and are a menace to the public, for they check development. In this connection it is the duty of the members of the association, even as citizens, to contribute to the education of the public to the realization of the just rights of the electric railway.

Although splendid results are being attained by co-operation with other technical associations, a valuable suggestion has been made for improving the method of carrying on this work. It has been our custom to appoint a number of individuals to represent us, but this procedure has not met with proper success. Conflicting opinions on their part, which are natural when there are two or more representatives, were noticeable at committee conferences with other organizations. Why not definitely determine our own position first and then appoint but one representative to confer with the foreign society along those definite lines as far as possible? Any compromise of importance may then be made, if it is deemed wise, after a consultation with the committee hav-

ing jurisdiction over the subject. I heartily approve of this plan and feel that better results will be obtained by its introduction.

In conclusion, I wish again to thank the executive committee for its hearty and loyal co-operation, the secretary for his untiring devotion to duty, and the other committees for the splendid work which they have accomplished.

ADDRESS OF PRESIDENT AVANT OF THE CLAIMS ASSOCIATION*

Our second president hit upon the advisability of this association maintaining a national index bureau, and every president since has advocated it. At our last midwinter meeting your president was instructed by our executive committee to take the matter up with Secretary Donecker to sound the managers of the different properties as to the advisability of the scheme. I regret to report no tangible results, but the matter will be followed up to a successful termination. Your president, by virtue of his office, was placed on the executive committee of the parent association and brought the matter up at our first meeting. He has been hammering on it ever since, and some tangible results may be forthcoming during the present convention.

In an article published in the *Aera* I pointed out the advantages obtained by membership, and since then I have followed this up with a personal letter to each of the non-member claim agents and others whom I knew personally. In these letters I used the argument (giving names and circumstances) that I had saved the Birmingham Railway, Light & Power Company large sums of money by being connected with the association, and I suggested that a button on the coat lapel would point the way to friends and success in a strange land.

We have a short program for this meeting, but it embraces important subjects handled by able men, and I venture the prediction that our time will be spent hearing the best papers and discussions on the most important subjects of all. Our executive committee very wisely avoided any repetition and confined the work to four subjects, but each paper is to be criticised in writing. Afterward you are all expected to discuss them verbally. In this way, we shall get out of the convention all that is to be had.

During the life of our association we have handled a great many subjects. Possibly some have the same titles as those just referred to, but we have a new subject entitled "Motor Vehicles and Their Bearing on Damages." This should have careful attention, as we are living in an age of gasoline, which plays a part in the injuries and enables the snake feeder to get on the grounds at once. I desire to make a few suggestions as to our future, with the hope of their meeting with your approval.

In making laws governing our organization, we should go slowly as lawmaking bodies are prone to enact unjust and unreasonable statutes, and no law at all is better than a bad law. We should be careful concerning the selection of our officers, bearing in mind the fact any vice-president is liable to become president, and above all things we should shun politics. Our conventions have, so far, been free from such influence, but it might be well to have it as our unwritten law that politics should not be indulged in at all. In making your selections give preference to those in line of promotions, provided all other things are equal.

In conclusion, permit me to thank you, one and all, for the many courtesies extended me, and say that I have endeavored to steer the boat so as to avoid breakers. I have had for my assistants a very able and efficient executive committee and have benefited from the untiring efforts of Mr. Davis and the retired presidents. If this is not our banner convention, we shall all be disappointed.

*Abstract of address delivered before the American Electric Railway Engineering Association, at Atlantic City, N. J., Oct. 13-17, 1913.

*Abstract of an address made before the American Electric Railway Claims Association at Atlantic City, N. J., Oct. 13-17, 1913.

ADDRESS OF PRESIDENT STEVENS OF THE TRANSPORTATION & TRAFFIC ASSOCIATION*

It is my desire briefly to review the activities and progress of this association during the past year. The plan of forming the various committees early in the association year, so strongly recommended by President Shannahan at the 1912 convention, was adopted, and at the first meeting of your executive committee in New York on Dec. 3, 1912, the chairmen of practically all of the committees were present. Their presence greatly assisted the executive committee in reaching conclusions as to the scope of the work to be undertaken by the various committees.

At the meeting of Dec. 3 it was decided to consolidate the two committees on rules, the personnel of the consolidated committee to be three representatives of city systems, three representatives of interurban systems and one representative of combined city and interurban systems. It was deemed advisable to divide the work of the committee on train operation and a new committee was formed to take up the subject as relating to interurban service. The executive committee recommended that it should be the policy of the association in future to reappoint a proportion of old members of committees to succeed themselves in order that committee work might be continuous and duplications of investigation be avoided. The efforts of your committees have produced very gratifying results, as shown in their reports. I feel certain that you will discover from them that real progress has been made during the past year by your association.

The growing membership of the association is very gratifying. Special effort has been made during the past year to increase the membership, and great credit is due L. C. Bradley, chairman of the membership committee, for his excellent and successful work. [Mr. Stevens then referred briefly to the report of each committee, calling special attention to that of the committee on rules.]

I sincerely trust there will be a liberal and broad discussion of all papers and reports submitted, as it will be impossible to secure the best results without free expressions of opinion from those present.

The development of the association magazine, the *Aera*, into a most valuable adjunct to the association work has been remarkable. The magazine, now under the direction of an experienced editor, is increasing in usefulness with every issue. I wish to impress all members with the necessity for their co-operation in providing articles for the magazine and questions and answers for the Question Box. This is the association magazine, each member has a distinct interest in it and every one should aid in its support.

Valuable publicity work, both of a general and local character, has been inaugurated by the association this year. Press clipping sheets have been sent to hundreds of newspapers throughout the country, and comments have been sent to member companies and their co-operation requested in having these comments published in their local papers.

A matter of great importance to the association was the resignation of H. C. Donecker as secretary-treasurer. Mr. Donecker very kindly, however, agreed not to sever his official connection with the association until after the 1913 convention. The question of a successor to Mr. Donecker was a matter of grave importance. The executive committee finally selected E. B. Burritt, Washington representative, for this position. Mr. Burritt consented to accept the position of secretary-treasurer of the American Electric Railway Association and thus automatically becomes the secretary-treasurer of the Transportation & Traffic Association. His selection by the executive committee is sufficient guarantee of his fitness, and his previous experience is such as to insure his

carrying out the work of the association in a highly satisfactory manner.

I feel that all the members of the association share in the regrets of the officials of this association in the loss of Mr. Donecker's efficient services as secretary-treasurer. Mr. Donecker's ability and work have meant much to the successful growth and progress of the American Electric Railway Association, and also of the affiliated associations. I know that every one wishes Mr. Donecker the greatest success in his new field of activities. I wish to ask for Mr. Burritt the hearty co-operation of the members of the Transportation & Traffic Association.

The members of this association will not secure the full benefit they should receive from this convention unless they attend the meetings of the American Association which will be held in the Greek Temple on the afternoons of Oct. 14, 15 and 16. The program for this year's work is most instructive and interesting.

I wish to thank the officers and members of the association and the members of the various committees for their co-operation and splendid work during the year.

REPORT OF THE SECRETARY-TREASURER OF THE ENGINEERING ASSOCIATION*

BY H. C. DONECKER

There is one matter concerning which I want to say a few words—that is the question of your secretaryship. One year ago you paid me a real compliment by asking me to serve in the capacity of secretary-treasurer. At that time I hoped that what I might be able to do for you would warrant your continuing to have me serve as one of your officers. It has been decreed otherwise, however, as probably most of you know that at the conclusion of this convention I will devote my whole time to duties with the Public Service Railway of New Jersey. My connection with your association during the past year and before that time has been of a nature that will not be forgotten by me. It is a great privilege to be allowed to meet and treat with those who can point to actual accomplishments such as shine in the records of the Engineering Association. You have a great and efficient organization; you have given time to the details of procedure and are continually improving in execution. Your proceedings speak for themselves, and your joint work with affiliated associations and with other great national bodies points to a recognition of your standing that cannot be controverted. As for myself, lacking in the technical training with which your members have been favored, association with you all has been doubly appreciated. I want to thank each and every one of you for the many things you have done for the association and for me at my request and to ask your pardon if these demands of mine have at times seemed somewhat insistent. Be assured that whatever I have asked of you has been for what in my judgment seemed to be for the best interests of your association. If in the future any efforts of mine can be applied for the good of the Engineering Association, you will not have to wait to ask me to put on the pressure.

The Spanish Government has abrogated the concession for construction of the horse tramway at Badajoz, as less than half a mile of line, out of a total of about 3 miles, has been built within the time allowed in the concession. The concession of the Sociedad General de Ferrocarriles Vasco-Asturiana for a steam tramway from the right bank of the Trubia River in Oviedo to the freight station at Trubia, the suburban tramway at Cordoba, and several small lines in Barcelona has also been abrogated for the same reason.

*Abstract of address presented to American Electric Railway Transportation & Traffic Association, Atlantic City, N. J., Oct. 13, 1913.

*Abstract of a report read before the American Electric Railway Engineering Association, at Atlantic City, N. J., Oct. 13-17, 1913.

REPORT OF THE SECRETARY-TREASURER OF THE TRANSPORTATION & TRAFFIC ASSOCIATION*

BY H. C. DONECKER

While the present year has shown considerable increase in membership, due in large measure to the work carried on by your president and L. C. Bradlee, the total enrolment is very disappointing. The transportation departments of the member companies undoubtedly embrace a tremendously large number of individuals, much greater than the engineering departments, and are made up of men, we must conclude, who are as eager to keep up to date and in touch with new developments as those in any other branch of our business. Nevertheless, there is a decided lack of response to the calls for enrolment as individual members of the association. These appeals for increases in the individual membership are not from any selfish motive; the returns certainly justify the exceedingly small amount of dues involved. The Transportation Association investigates subjects many of which are new and in a formative state; and those which are not new, as, for instance, the question of fares and transfers, involving the collection and safeguarding of the company revenue, would seem to be topics on which the latest information would be almost a necessity to the operating officials and employees. There are some 300,000 persons connected directly with the electric railways of the country, a very large majority of this number being attached to member companies, which represent more than 80 per cent of the capital invested in our business. In spite of this army, our total membership at this time is only 3000, and I am frank to say that this number would soon appear insignificant if the heads of the transportation departments of our companies would interest themselves in the development of this class of membership. I refer especially to the heads of departments, for the reason that the subordinate officials and employees would quickly appreciate the advantages to be derived from participation in association work if the attitude of their superiors denoted interest in the development of our plan.

I hope that at the next convention your association will be able to report a membership at least equal to that of our allied Engineering Association, which now has 2000 members.

A second matter that should have your undivided support is the *Aera*. It is not necessary for me to direct attention to the great improvement wrought in the association's magazine during the past year. Harlow C. Clark, an editor of long experience and great capabilities, has performed exceptional work in carrying on this publication. The plan recently instituted of sending clipping sheets to some 1200 to 1300 newspapers throughout the country containing material from the *Aera* and touching upon matters which reflect electric railway conditions and are of real news value has brought about excellent results. One little evidence of this is the advance notices of our convention, a small portion of which are shown in the frame in this room. *Aera* is now recognized, but to maintain its status requires your interest and participation in the development of material for its columns. It is to be hoped and expected that you will assist in maintaining the magazine, the publication of which your membership makes possible. Therefore, when the *Aera* advisory committee makes a request of you, won't you endeavor to find the time to grant it, despite the fact that you, like other electric railway men, are busy? As a matter of fact, it is usually the busy man that finds the time to do things.

A third matter that it seems to me is important is the need for a periodical study as to the desirability of changes in your standing committees. I do not mean in the per-

sonnel of these committees but in the nature of their work. It will not do for this association to be content to let itself run along from year to year without close study of whether the work allotted is the most important that can be done. Changes in conditions of operation, the closer scrutiny of those that result from public service regulation, changes in the relations with employees, developments in new designs of cars, necessitating new operating methods, are only a few things which occur to me as showing the necessity for our association being "on the job" so as to be at the head and not trail the procession. In this regard, after considerable thought, it has seemed to me that it would be a wise plan to institute again a committee on subjects, giving to this committee a rather broad scope, not alone as to proper subjects to be taken up but as to the committees to consider them, this committee to report to the executive committee. A somewhat similar plan is now in force in the Engineering Association and has worked out to very good advantage.

Another matter to which your attention should be directed is the danger that your committees may resolve themselves into investigating committees only. While it is true that whatever work the committees perform will require work of an investigatory character, it should be borne in mind that such studies should, as much as possible, be of a nature that would lead to definite recommendations, and these recommendations should be made. I do not state this in a spirit of criticism, but simply as one of the things that should be avoided, and it appears also that such avoidance might come from having the subjects committee, which would carefully consider topics before the executive committee meets to decide upon the work for the year.

Let me again call attention to the value of our annual proceedings. How many of you read these books after they are received? If the work of your committeemen and the recommendations that they make are simply to be placed in a nicely bound book and stored away on a shelf, then the functions of this association fail. Our organization is not a five-day affair, but one that is at work throughout the whole year. Such activities cannot be justified, however, unless the results of your committee's work are in some way applied to the operations of your companies. This year the Engineering Association has reprinted every one of its standards and recommended practices in the form of a manual, which will be revised from year to year. It makes an impressive book and should do much to bring about a full realization of what that association has done and lead to the general application of its recommendations. It would be wise for the Transportation & Traffic Association to follow a similar plan, the ultimate result probably being that the American Association and its affiliated bodies would reprint yearly their various conclusions.

Before concluding, there is another subject which I trust you will pardon me for bringing up—that is the matter of my resignation as secretary-treasurer of the American Association, which carries with it severance of my official connection with your body. After the close of this convention, Mr. Burritt will be your secretary, and I want to ask for him the same co-operation and assistance that you have always given me. You will find Mr. Burritt anxious to please you and to do those things which will work to the benefit of the organization, but while his spirit may be willing, it will be a hard job to get results without the aid that you can give. I sincerely hope that such assistance will not be denied him.

In conclusion allow me to express my deep obligation to all the members of the association and to the officers with whom I have worked for all that they have done for the association and for me, to which effort is alone to be credited whatever success may have been gained during the years when I have been your secretary. It has been a great privilege to meet and to work with you all, and I think I need not say to you that it was most difficult to make the decision to leave.

*Abstract of a report read before the American Electric Railway Transportation & Traffic Association, at Atlantic City, N. J., Oct. 13-17, 1913.

MONDAY SESSION OF THE TRANSPORTATION & TRAFFIC ASSOCIATION

President Dana Stevens called the annual meeting of the American Electric Railway Transportation & Traffic Association to order in the Greek Temple at 2:45 o'clock yesterday afternoon.

The annual address of the president was then read by Mr. Stevens. An abstract of this is published elsewhere in this issue.

E. B. Burritt presented the report of the executive committee. This report consisted of the minutes of the meeting of the executive committee during the early part of the year, at which the committee settled upon the work of the association and the various committees of the association during the coming year.

H. C. Donecker read the annual report of the secretary and treasurer, which is published elsewhere in this issue.

J. N. Shannahan said, in connection with the report of Mr. Donecker, that he thought that a great deal of the credit for the work done by the association in past years arose from the efficient efforts of the retiring secretary. He moved the appointment of a committee to express the appreciation of the services rendered by Mr. Donecker for the association.

President Stevens appointed as the committee Mr. Shannahan, C. Loomis Allen and C. D. Emmons.

The chairman also appointed the following committee on resolutions: Charles L. Henry, J. L. Adams and N. W. Bolen.

In the absence of L. C. Bradley, chairman of the committee on individual membership, his report was read by the secretary. This report is published elsewhere in this issue.

As Matthew C. Brush, chairman of the committee to develop uniform definitions, is not expected to be present until Wednesday, the presentation of this report was postponed.

F. A. Boutelle, chairman of the committee on rules, then presented the report of that committee. An abstract of the report is published elsewhere.

D. A. Hegarty, New Orleans Railway & Light Company, in opening the discussion, said he believed that a suggestion had been made to take the vote by mail concerning the adoption of the rules rather than during the meeting of the association.

President Stevens said that such a suggestion was made, but he thought that the committee decided that it would be better to try to have a general discussion and reach some conclusions at the meeting.

C. D. Emmons, Chicago, South Bend & Northern Indiana Railway, said he appreciated the work of the committee on rules, as he had been on previous committees. He felt that if the association was to try to change the language of the rules from time to time it meant that whenever a new chairman was appointed a new set of rules would be presented. It seemed to him when he looked over the rules in the short time he had to do that work that a great many changes were presented which might be debated. Usually it was a question of wording due to the use of different terms for the same purpose in different places.

Under rule No. 113, which had been changed, Mr. Emmons would agree with the committee if the amendment was made to have the new rule applied to double track only while the old rule was retained for single track. Mr. Emmons was opposed to the recommended change in rules of the motormen's signal bell. The committee had previously changed this rule so as to make the back-up signal different from the stop-at-once signal. Under the circum-

stances, he thought it would be very unwise to change again to the previous rule.

Mr. Boutelle said that the committee was entirely satisfied with the safety of the original rule No. 113. Mr. Boutelle, however, believed that a yellow flag should be used as a caution flag and a green one should be used to indicate safety. The committee thought that it would be advisable to avoid any misunderstanding of signals. In regard to the criticism of the bell signal the committee was instructed by the executive committee to harmonize the rule. The use of three whistles for a back-up signal had been of such long standing and general use that it would be impossible to get the American Railway Association to change.

Mr. Emmons said his understanding was that the question of harmonizing the rules was brought up because the American Railway Association had been unwilling to meet the rules committee of the American Electric Railway Association. Therefore, as he understood the instructions of the executive committee, it was a question of harmonizing the city and interurban rules of the American Electric Railway Association. The use of four bells for the back-up signal was in harmony with the city rules, which had long provided for this signal.

Mr. Donecker said that the intention of the executive committee was not to harmonize with the American Railway Association, because that body had not shown any interest in the efforts made by the American Electric Railway Association to bring the two sets of rules together.

J. L. Adams said he had used the American Railway Association rules. He found that they worked satisfactorily and he would not be willing to adopt the suggestion of the Electric Railway Association.

Mr. Adams added that he was in favor of adopting the American Railway Association standards for everything that the association could.

Mr. Morrison said that he thought conditions were different between the two classes of lines and that the limitations should be taken into account in the adoption of the rules.

J. H. Hanna, Capital Traction Company, Washington, D. C., said that the operation of electric railways differed in so many ways from that of the steam lines that it would be pretty hard for the association to find its way clear to adopt all of the American Railway Association rules. It did not follow because some electric railways adopted the rules that all would do well to adopt them. As a general practice he thought that the interurban lines were nearer city lines than steam lines in operating practices.

Continuing, Mr. Hanna said that the questions which had been discussed illustrated the differences. The steam roads did not pick up passengers as the interurban roads were required to do. He thought that different signals ought to be adopted for backing up and immediate stops. He did not know of any better practice than that provided by present rule No. 113. He did not want to use both a yellow and a green signal.

Mr. Adams said that he was not advocating the use of the same signal for immediate stops and for backing up. He gave two signals for the immediate stop and three to back up.

President Stevens said it was his understanding that the work of the committee was to attempt to harmonize as far as possible the city and the interurban rules and further to harmonize where possible with the American Railway Association rules. Effort had been made for the last several years to get a conference with the American Railway Association on that subject but it had been unsuccessful, though perhaps the association came nearer to the accomplishment of something in the way of results this year in

getting that association to agree to consider recommendations from this association. If it were possible or feasible to have one set of rules governing both city and interurban operation, it would be a wonderful accomplishment.

J. W. Brown, Police Service Railway, Newark, N. J., said that the affiliation of the interurban lines seemed to be more nearly with city lines than with steam roads for the reason that the men were drawn from city service. He questioned the advisability of the recommendation of the committee "that divergent practice for the stop signal for the next station or street as between city and interurban railways be allowed." He thought that no attempt should be made to follow the American Railway Association code in that particular. He also believed that the right of direction was too serious a matter to leave in the hands of trainmen.

Edward Dana, Boston Elevated Railway, said it seemed to him that it would be better to let the rule governing bell signals stand as it was in the old code.

Mr. Donecker suggested that the rules be taken up as they appeared in the code and that discussion be devoted to those in which changes were recommended.

On motion of Mr. Emmons, the suggested change in rule No. 113 was rejected.

Mr. Hegarty renewed the suggestion that a vote be taken by mail.

Charles L. Henry thought that definite action should be taken on the code and that if any postponement took place it would make any adoption of the rules difficult to accomplish. After asking a question of a member of the committee in regard to the treatment of the code Mr. Henry said that the rules did not change methods of operation. However, he did not like the use of the word "must" in place of "shall" by the committee. He would rather use "will" or "shall."

J. E. Duffy thought it was manifestly unfair for the committee to postpone action for another year.

President Stevens thought that definite action ought to be taken at this meeting.

L. H. Palmer, New York, said that the investigations of the committee showed that the word "must" was used by most roads.

Mr. Dana read the rules and they were discussed separately by the association where changes had been made. Among those who took part in the discussion were Simon Bamberger, Salt Lake City, L. H. Palmer, New York, Cyrus Ching, Boston, C. E. Learned, Boston, H. A. Nicholl, Anderson, Ind., and J. V. Sullivan, Chicago.

The meeting was then adjourned.

MEETING OF THE CLAIMS ASSOCIATION

Following its regular program, the Monday afternoon session of the Claims Association was called to order by President Avant at 3 o'clock. After the reading of the presidential address, the next order of business was the report of the executive committee and also the report of the secretary and treasurer, the ways and means committee and the employment committee. The first paper read was that by John J. Reynolds and M. P. Spillane, of the claim department of the Boston Elevated Railway, entitled "Mechanical Devices for Preventing Accidents." The second paper was that by W. P. Christiansen of the Chicago Railways Company, on "The Investigation of Street Railway Accident Cases." Both papers were actively discussed. The final business was the appointment of H. R. Goshorn, H. V. Brown, E. C. Carpenter, H. K. Bennett, and Peter C. Nickel as a nominating committee, which will report on Wednesday morning. President Avant urgently requested the members present to take part in all meetings of the American Association, commencing Tuesday afternoon. The meeting was one of the largest first-day sessions ever held by the Claims Association.

YESTERDAY'S SESSION OF THE ENGINEERING ASSOCIATION

The American Electric Railway Engineering Association held its opening session yesterday afternoon in Engineers' Hall, on the pier. President Schreiber called the meeting to order at 2:30 p. m. and presented his annual address. This is published elsewhere in this issue. He then announced the appointment of the following committees:

Committee on nominations—H. H. Adams (chairman), W. J. Harvie, A. O. Ackerman, R. C. Cram and H. C. Donecker.

Committee on resolutions—Prof. A. S. Richey and W. G. Gove.

He then called for the report of the committee on standards. This was presented by H. H. Adams in the absence of Paul Winsor, chairman. This report is published in abstract elsewhere in this issue.

STANDARDS

President Schreiber first suggested that it would be desirable to vote upon whether the association approved the Engineering Manual. This motion was put and unanimously carried. He then explained the plan of submitting the recommendations of the committee on standards after the report of each standing committee. He then called for the report of the executive committee.

REPORT OF EXECUTIVE COMMITTEE

This report consisted of the minutes of the meeting of the executive committee during the early part of the year, at which the committee settled upon the work of the association and the various committees of the association during the coming year.

The report of the secretary and treasurer was then read. It is published elsewhere in this issue.

POWER DISTRIBUTION

G. W. Palmer, Jr., chairman of the committee on power distribution, then presented the report of that committee. It is published elsewhere in this issue. President Schreiber first asked for a discussion on the specifications for rubber and insulated wire and cables.

William A. Del Mar, New York Central Railroad, criticised several clauses in these specifications, as contained in Appendix A. One criticism was in regard to the thickness of insulation specified. Thus, in the clause specifying the number of braids he thought there should be a reference to the service for which the cable was intended. He also criticised the formula for the analysis of rubber grade B, which he thought empirical. He also criticised the specific gravity specified for rubber, the wording of the specification for the steel in the armor covering and other points.

W. B. Jackson, consulting engineer, Boston, asked whether there were any portions of the report which were not in accordance with the practice recommended by the other associations. He thought that if there were it would be well to make every effort to secure unanimity with the other associations.

H. G. Stott, Interborough Rapid Transit Company, New York, suggested the adding of a short paragraph reading somewhat as follows: "In awarding contracts based on these specifications, due regard to the reputation of the manufacturer should be given as an element to be considered."

C. F. Woods, A. D. Little Company, Boston, a member of the sub-committee on cable specifications, replied for that sub-committee. In regard to rubber insulation, he thought it very desirable to have a definite statement as to the ingredients of the insulation. At present when 20 per cent of Para rubber is specified it may mean a variety of ingredients for the rest of the insulation. The procedure of the Board of Fire Underwriters in analyzing the so-called code wire did not go into details of rubber, but it enabled one to find out within relatively accurate quantities the amount of rubber in the compound.

Mr. Del Mar had said it would be unfortunate to have two

distinctly different kinds of analyses attached to the same specifications; but if one simply abandoned the specification until the association could get the method of analysis the members would be unprotected in this matter in the interim. It was therefore found desirable to draw some kind of a specification which would, within certain limits, assure the consumers that they were getting something near the same kind of rubber. These specifications would be strengthened by severe electrical and physical tests. Eventually the requirements could be elaborated. As to the method of figuring the thickness of insulation, the committee had simply endeavored to put in a minimum factor of safety, but one which could be increased at the discretion of the engineer.

Mr. Woods also said that the point made in regard to specific gravity was well taken. But this could be corrected by the insertion of the words "specific gravity," where mention is made of the compound, and that it should conform in chemical limits with the requirements prescribed. He hoped that eventually it would be possible to arrive at the ideal condition where the manufacturer would be allowed to make his rubber compound out of any substance he pleased and in any way he pleased, provided the cable would give the life and service desired. The purpose of all-chemical and physical tests of cable insulation was merely to determine the probable life of the compound. The committee had hoped in its specifications, particularly in that relating to the second grade compound, that the companies would not only buy under them but would keep track of the life of the wire and also would save samples of purchases to test the rubber physically and sometimes electrically at certain definite periods of time, say six months, noting the depreciation. But it seemed advisable to stick to a definite compound that was known about rather than to throw down the bars in the hope of allowing some manufacturer to develop a little better compound.

Mr. Palmer, Bay State Street Railway, Boston, pointed out that the power distribution committee was a continuous standing committee and was concerned not only with new subjects but also with the revision of previous specifications which had been adopted. Hence adoption of any specifications at this time would not prevent the committee from later reviewing and changing such specifications. Continuing, he believed that the thickness of insulation required by the specifications was adequate and equal to those required by the fire underwriters. The braids specified were minimum braids. No attempt was made to specify the number or kind for any special purpose. Upon motion by Mr. Kimball the report was referred back to the committee.

Upon motion of Professor A. S. Richey, the recommendation for a standard design of cap and cone insulator, as approved by the committee on standards, was adopted. The meeting also adopted the amended definition for "strand" and the new definition for "rope lay cable" as moved by C. S. Kimball.

Upon the recommendation of the committee, further consideration of lattice poles was dropped. The specification for tubular steel poles, however, as approved by the committee on standards, was adopted as moved by C. S. Kimball. Upon motion of J. H. Hanna the recommendation on specifications for wood poles, as approved by the committee on standards was adopted; also the specifications on reinforced concrete poles.

GENERAL DISCUSSION

J. H. Hanna, representing the committee on standards, said that the recommendations on trolley guards had not been approved as matured, although the pioneer work of the committee on power distribution was fully appreciated.

G. W. Palmer, Jr., said that he did not expect that the specifications would be satisfactory to every individual member in their entirety but that they would at least afford a basis for discussion.

E. J. Dunne called attention to the provision that trolley wires on interurban lines should be at a height of 19 ft. above the top of the rails unless local conditions prevented. This would impose a hardship on roads that could not put up a wire higher than 18 ft. and it would be unnecessary to do so in most cases. Personally he thought that 17.5 ft. or not more than 18 ft. would be desirable. As to placing strain insulators 5 ft. from the pole, the practice of the Public Service Railway was to place them right at the pole or sometimes 2 ft. or 3 ft. from the trolley wire. Hence if a strain wire broke at the hanger it would be close to the pole and there would be no danger to life. He did not understand the objection to not grounding the lightning arresters on the track. It was his company's practice to ground on to the track in about 75 per cent of its installations.

After a general discussion on the subject Mr. Sproul, representing the National Electric Light Association, said that the position of that body was that whenever this report is used as a standard this rider should be included: "Upon the whole, however, we consider the report as a body the best that has been adopted, with the qualification that it should not be regarded as a standard that cannot be modified in particular cases in whole or in part."

Mr. Palmer said that inasmuch as the resolution of the N. E. L. A. referred to by Mr. Sproule was incorporated in the minutes of the Engineering Association last year and inasmuch as the article "J" in question has been considered as recommended practice for the past year, there could be no doubt as to the advisability of adopting the section as revised with the improvements which experience had taught for the current year.

After animated discussion the matter was put to a standing vote of the convention and carried by 30 to 7. The meeting was then adjourned.

WHERE TO FIND THE CONVENTION MANAGERS

The association offices for registration and the transaction of other association business are located at the right and left of the entrance to the Convention Pier. The representatives on hand are the following: E. B. Burrill, present, and H. C. Donecker, past secretary-treasurer American Electric Railway Association, Traffic & Transportation Association and Engineering Association; M. R. Boylan, secretary-treasurer Accountants' Association; B. B. Davis, secretary-treasurer Claims Association; H. G. McConnaughy, secretary-treasurer and director of exhibits American Electric Railway Manufacturers' Association. The committee offices are at the left of the Convention Pier entrance.

Meetings of the executive committee of the American Electric Railway Manufacturers' Association will be held daily at 12 o'clock at the left of the entrance to the Convention Pier for the report and adjustment of complaints of any nature.

CHANGE IN ACCOUNTANTS' PROGRAM

On account of the death of a member of his family Mr. W. H. Forse, Jr., secretary-treasurer Union Traction Company of Indiana, Anderson, Ind., will not be able to reach the convention before Wednesday. Mr. Forse was to have read a paper on "Sinking Funds" at the Tuesday morning meeting of the Accountants' Association, but by action of the executive committee of the association he will present it at the Friday morning meeting of the Accountants' Association instead. The paper of Mr. G. W. Kalweit, auditor the Milwaukee (Wis.) Electric Railway & Light Company, on the subject of "A Unit Cost Work Order System," scheduled for Friday morning, has been brought forward to the Tuesday morning session to take the place left vacant by the postponement of Mr. Forse's paper.

EN ROUTE TO THE CONVENTION BY TROLLEY

Traveling to conventions by trolley is by no means a novelty in the electric railway field, but the adoption of this method of transportation by representative delegates from New England over a portion of the route to Atlantic City marks a new departure in trips from that particular section of the country and deserves comment on account of the local conditions prevailing. As early as Wednesday of last week about 100 delegates had registered for the trip from Massachusetts points to New London, Conn., under the auspices of the New England Street Railway Club's "personally conducted tour," and the publicity attending the affair gave the electric railways taking part in this service some excellent advertising. In view of the fact that the street railway systems of New England are by no means homogeneous in equipment and operating methods, and considering the extent to which this territory is broken up into unrelated groups of lines, the possibilities of through trolley travel by large parties in special cars equipped for really comfortable journeying have in the past been little realized. If the trip to New London showed nothing else, it demonstrated to the

boarded each car to give such instructions as were necessary to the motorman. In spite of the fact that there was some delay on account of reconstruction work in Boston, the schedule was carried out almost exactly upon time, the cars by way of Worcester reaching New London exactly at 5 o'clock and the cars by way of Providence being but fifteen minutes late. A timetable and map were furnished to each passenger. The map is reproduced herewith.

A feature of the trip was the luncheon which was served en route. By the use of electric stoves and plate warmers on the cars the party enjoyed the pleasures of an excellent luncheon, the mince pie being an especially popular feature. A number of short scheduled stops greatly reduced the fatigue incidental to many hours' travel upon connecting lines.

More than one hundred members of the New England Street Railway Club and the ladies of their families made the trip. The cars were especially fitted and made comfortable in every way, each company vying in providing something novel in the way of interior fitting.

Some of the cars were returned to their respective companies that night, while others went back in the morning. Fifty-seven of the party boarded the Norwich line boat *City of Lowell*, which was at the dock upon their arrival in New London and continued on to New York, arriving there at 7 o'clock Sunday morning. The party was immediately transferred to the Pennsylvania Railroad station, and the 8:12 express took them to Atlantic City, where they arrived at 11:15 a. m. The smoothness with which the entire trip was made, there being no hitch in any particular, was a cause of very general favorable comment.

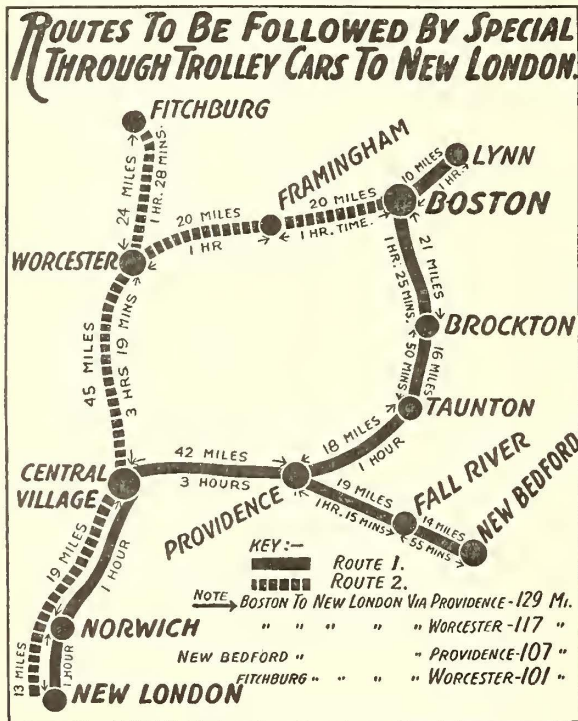
The trip shows that a highly desirable class of business might be developed with proper publicity and close operating agreements in this field, on account of the large mileage available and the number of excellent hotels and inns in the country districts. For parties of limited size there is no question that comfortable and enjoyable trips by the score could be arranged. Even the question of baggage is not a serious one, considering the efficient manner in which trunks and grips were handled on the recent New England trip by the express cars of the Bay State company.

FOR FRIENDS OF THE NIBLICK

The annual golf tournament of the American Electric Railway Manufacturers' Association will be held at the Country Club of Atlantic City at Northfield, N. J., under the auspices of a committee composed of N. M. Garland, chairman, H. A. Hegeman, H. G. Barbee and R. W. Read. All day Thursday, Oct. 16, will be open to members and guests of the several associations. Entrants may be handicapped on the basis of their home club handicap, or may turn in to any member of the golf committee not less than two attested eighteen-hole cards, made on the Country Club course either Sunday, Monday or Tuesday of convention week, upon which cards their handicap will be based. If a player has made more than two rounds, the cards he turns in shall represent his average score.

Players may select their own partners, and the first round played on Thursday shall count as their tournament round. Cards must be attested. For the blind handicap, players select their own handicap, based on a number to be drawn between eighty and eighty-five, inclusive, but the handicap must be declared to a member of the Golf Committee or to the attendant at the club before starting. The handicap tournament round only is to count for this prize. The prizes will comprise two each for classes A, B and C in addition to a blind handicap prize. American Golf Association rules are to govern, except when modified by local ground rules.

At a meeting of the golf committee held Sunday evening it was decided that the seven prizes to be given in the men's tournament at the Country Club would be appropriate cups. A ladies' tournament is told of elsewhere.



Map Showing Routes of Special Cars from Boston to New London

public at large that here is a new resource for those who wish to travel in private cars over considerable distances on the New England network and at moderate cost in comparison with the expense of automobile touring.

The trip was made in six special passenger cars and an electric express car for the baggage, the cars leaving Park Square, Boston, about 8.45 o'clock Saturday morning. The cars furnished by the Nahant & Lynn and Boston & Worcester street railway companies, with the express car, went by way of Worcester and thence by Central Falls and Danielson to New London. The two Bay State Street Railway Company cars, one from the Union Street Railway Company of New Bedford and one from the Rhode Island Company of Providence, went from Park Square through Brockton, Taunton, Providence and Danielson, joining the route of the former cars at Elmville. The crews were furnished by the various companies which provided the cars and, after leaving the Boston line, operated their cars through to New London. As the cars entered upon the line of a different company a pilot

REPORT OF THE COMMITTEE ON RULES *

F. A. BOUTELLE, CHAIRMAN; W. R. W. GRIFFIN, GEORGE KUEMERLEIN, JR., B. J. JONES, L. H. PALMER, EDWARD DANA, W. H. COLLINS

Attention is directed at this time to the action of the executive committee in authorizing the consolidation of the committee on city rules and the committee on interurban rules to form a standing committee on rules which will be composed of three members selected from among operators of city systems, three members selected from among operators of interurban systems and one member appointed from among those whose operations cover both city and interurban lines.

While some consolidations and eliminations might be made in the present city and interurban codes, there appears to be no actual conflict apart from the matter of bell signals, which it is recommended shall be made uniform as indicated later. In addition, the committee recommends that rule No. 113, interurban code, be amended to read as follows:

"Rule 113. A yellow flag by day and in addition a yellow light by night placed beside the track on the right-hand side indicates that the track feet in advance is in condition for speed not to exceed m.p.h., and the speed of the train must be controlled accordingly. A green flag by day and in addition a green light by night placed on the same side of the track at a point beyond the slow track indicates that normal speed may be resumed."

Investigation conducted by the committee indicates that 75 per cent of the 260 member companies responding have adopted the standard codes of rules as a whole or in large part, with necessary modifications to fit local conditions.

The sub-committee in charge of rules governing operation of prepayment cars and train operation found in its investigations that it was not feasible to comply literally with its instructions in this regard, and as a result determined to recommend that the city code be rewritten for several reasons. It must be understood, however, that the changes do not involve any radical departures from the old code. These changes have eliminated thirteen rules by consolidation.

As further comment, the sub-committee calls attention to a rearrangement of the bell signal and starting and backing rules in what the committee considers to be a more logical and consistent order, the endeavor being to make these rules clear and in sequence. Also, in rule No. 12, "Habits," the sub-committee has recommended the use of the similar rule in the interurban code, except that the several interurban rules which covered "Habits" have been consolidated into one.

The development of a set of rules to cover block signal operation was considered by a sub-committee representing the joint committee on block signals for electric railways and the committee on rules. Briefly, the joint sub-committee has developed only rules for automatic block and interlocking signals, not taking up at this time rules for manual and controlled manual block signals, as these types of signals are not as far as known in use on electric railways.

The sub-committee of the special committee appointed to confer with the American Railway Association found, after a careful examination of the standard code of each association, but little to recommend changing.

The American Railway Association uses three whistle cord signals to back train, whereas the present American Electric Railway Association codes call for four signals, although some interurban roads are using three and thus agree with the steam road practice.

The signal to stop at the next station or street given while the train is running is one for the city companies, two for interurban companies and three for steam railroads, although some interurban roads use three and thus agree with

the steam road practice. The signal to stop at once for city and interurban roads is three. On steam roads it is two.

After considerable discussion, it was tentatively agreed to recommend to the American Electric Railway Association that for both city and interurban practice the signal to back be made three bells or whistle cord signals, thus conforming to the American Railway Association practice and that divergent practice for the stop signal for the next station or street as between city and interurban railways be allowed. In other words, the city rule will stand as at present, one bell or whistle cord signal being the recognized signal to stop, while two bells or whistle cord signals will be the indication to the motorman on interurban trains to stop at the next station or street. The practice of the American Railway Association is three bells at the present time and it is recommended that the committee appointed by President Harries take this up with the American Railway Association and ask it to change to two signals. This would necessitate the steam railroads changing their emergency stop signal, while the train is running, from two to three; also it is desirable that the acknowledgment of the audible signal calling attention to signals displayed for a following section should be different from the answer to other signals, and it is recommended that the above mentioned committee ask the American Railway Association to adopt the signal designated in A.E.R.A. code rule No. 95 k.

PROPOSED REARRANGEMENT OF SIGNALS BETWEEN CONDUCTOR AND MOTORMAN.	Present Code			Proposed Code		
	City Rules	Interurban Rules	American Railway Association	City Rules	Interurban Rules	American Railway Association
Conductor to Motormen						
For standing train:						
To start	2	2	2	2	2	2
To back	4	4	4	4	4	4
Release air brakes .....	..	4	4	..	4	4
Call flagman .....	..	4	4	..	4	4
For running train:						
Stop at next station or street	1	1	3	1	2	2
Stop at once	3	3	3	3	3	3
Reduce speed	4	4	4	4	4	4
Increase speed	5	5	5	5	5	5
Motorman to conductor:						
Come forward	1	1	..	2	2	..
Pull down trolley	2	2	..	3	3	..
Back car	3	3	..	3	3	..
Set rear brake	4	4	..	4	4	..

*Changes proposed.

The question of displaying markers on the rear of trains of but a single car is one which has caused some discussion, since on a double-end car which might be displaying signals for a following section and which might be standing on a siding to meet an opposing train there would be some uncertainty as to the direction in which such train was bound. While some electric roads have substituted red in place of green markers, the committee suggests that this question of markers be discussed with the A.R.A. committee.

The American Railway Association's practice of giving trains right by direction is one of long standing and firmly entrenched, and because some electric railways have adopted this practice and others may do so, the committee does not believe that it is advisable to suggest the elimination of the practice. The changes in signals as recommended appear to be reasonable and logical and it is recommended that the American Electric Railway Association continue its negotiations with the American Railway Association, with a view to obtaining approval and adoption of the suggested changes.

APPENDICES

The report was accompanied by two appendices, of which the first, Appendix A, consisted of a comparison of existing and proposed standard rules for city service. Appendix B consisted of a proposed code of standard block signal rules governing train operation by automatic block and interlocking signals.

*Abstract of a paper read before the American Electric Railway Transportation & Traffic Association at Atlantic City, N. J., Oct. 13-17, 1913.

REPORT OF THE COMMITTEE ON POWER DISTRIBUTION*

G. W. PALMER, JR., CHAIRMAN; A. S. RICHEY, C. R. HARTE, R. H. RICE, GAYLORD THOMPSON, W. E. SALBER, C. L. CADLE, EDWARD HEYDON, J. Q. BROWN

The committee on power distribution in presenting specifications for rubber-insulated wire and cable states that there is not only a demand for wire and cable insulated with a

with relation to tensile strength, elongation and torsion, covering sizes of 00, 000 and 0000 round trolley wire. However, pending the formulation of an agreement which will be acceptable to both parties, the committee recommends that no revision be made in the present A. E. R. A. standard specifications.

TROLLEY POLES

Specifications for steel tubular and wooden poles are also submitted, including a discussion upon the matter of selecting poles to suit varying conditions. This is not an extremely accurate treatment of the subject but is well adapted to general use for estimating purposes and to enable a pole of closely approximate weight to be selected. A final choice may be limited by local conditions.

Table I shows the sag resulting in spans of various lengths when subjected to the tensions given, a standard span weight of 100 lb. being assumed. This is a convenient standard weight for a 3/8-in. steel-strand span which supports a length of 100 ft. of two 00 trolley wires, insulators and ears.

For other sizes of wire strand or trolley wire the weight of the span will be different. Table II shows the "loading factor" or ratio of weight of various spans to the weight of the assumed standard span of 100 lb. The sag given in Table I when multiplied by the proper factor from Table II will give the sag in any desired span. For single-track lines a separate computation has been made as shown in Table III.

In the first columns of Tables I and III will be found the horizontal pull exerted on each pole of the span, under the given conditions of span length and loading. The pole of the desired length must be selected to withstand the pull as determined in the sag. If the pole selected has a deflection of say 3 in. for the required pull, then the pole must be given a 3-in. rake if it is desired to pull it up vertically when the span is completed. In case a different pole is desired, say one giving 4-in. deflection, then this pole must be given a rake of 4 in.

In the tables no provision is made for the change in length of wire due to stretch or change in temperature and the horizontal pull on the pole is computed instead of the actual tension in the span wire. However, both of these causes produce less than 1 per cent difference in the final results, and the increased accuracy does not justify the in-

TABLE I—SAG IN SPAN WIRES—DOUBLE-TRACK LINE.

Pull on Span (P) in Pounds	Maximum Sag in Inches for Various Lengths of Span										
	30	35	40	45	50	55	60	65	70	75	80
500	12.0	15.0	18.0	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0
600	10.0	12.5	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0
700	8.6	10.7	12.9	15.0	17.1	19.3	21.4	23.6	25.7	27.9	30.0
800	7.5	9.4	11.3	13.1	15.0	16.9	18.8	20.6	22.5	24.4	26.3
900	6.7	8.3	10.0	11.7	13.3	15.0	16.7	18.3	20.0	21.7	23.3
1,000	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0
1,100	5.5	6.8	8.2	9.6	10.9	12.3	13.6	15.0	16.3	17.7	19.1
1,200	5.0	6.3	7.5	8.8	10.0	11.3	12.5	13.8	15.0	16.3	17.5
1,300	4.6	5.8	6.9	8.1	9.3	10.4	11.5	12.7	13.8	15.0	16.2
1,400	4.3	5.4	6.4	7.4	8.6	9.6	10.7	11.8	12.9	13.9	15.0
1,500	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
1,600	3.8	4.7	5.6	6.6	7.5	8.4	9.4	10.3	11.3	12.2	13.1
1,700	3.5	4.4	5.3	6.2	7.1	7.9	8.8	9.7	10.6	11.5	12.4
1,800	3.3	4.2	5.0	5.8	6.7	7.5	8.3	9.2	10.0	10.8	11.7
1,900	3.2	4.0	4.7	5.5	6.3	7.1	7.9	8.7	9.5	10.3	11.1
2,000	3.0	3.8	4.5	5.3	6.0	6.8	7.5	8.3	9.0	9.8	10.5
2,100	2.9	3.6	4.3	5.0	5.7	6.4	7.1	7.9	8.6	9.3	10.0
2,200	2.7	3.4	4.1	4.8	5.5	6.1	6.8	7.5	8.2	8.9	9.5
2,300	2.6	3.3	3.9	4.6	5.2	5.9	6.5	7.2	7.8	8.5	9.1
2,400	2.5	3.1	3.8	4.4	5.0	5.6	6.3	6.9	7.5	8.1	8.8
2,500	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2	7.8	8.4

All sags are computed from the formula $c = \frac{3W(S-a)}{P}$

- c = maximum sag of the span in inches.
- W = weight of span and supported wires in pounds.
- S = length of span in feet.
- a = distance between trolley wires in feet.
- P = horizontal pull on poles at points of attachment of span, in pounds.

In the table W=100 and a=10 for double track. The points of attachment of wires are at the same level. For any other value of W, determined from Table II, multiply the above value of c by the "loading factor" shown in Table II.

grade of rubber compound equivalent to 30 per cent Para but also for a wire and cable, for line and equipment purposes, insulated with a lower grade of compound which would be perhaps equivalent to what has been designated in the past as "20 per cent Para compound." The committee has confined itself to a study of specifications for wire and cable of not more than 2500 volts working pressure,

TABLE II—LOADING FACTORS FOR CALCULATING SAGS IN DOUBLE-TROLLEY SPAN WIRES. FACTORS TO BE USED AS MULTIPLIERS OF THE SAGS FOR STANDARD LOADING AS GIVEN IN TABLE I TO DETERMINE THE SAG FOR ANY OTHER LOADING.

Span Wire	1/4-in.				5/16-in.				3/8-in.				7/16-in.			
	Safe Working Stress in Pounds															
Trolley Wire	1,150				1,900				2,500				3,250			
	0	00	000	0000	0	00	000	0000	0	00	000	0000	0	00	000	0000
30 ft.	.85	1.01	1.22	1.49	.87	1.04	1.25	1.51	.90	1.06	1.25	1.54	.93	1.10	1.31	1.60
35 ft.	.85	1.02	1.23	1.49	.88	1.05	1.26	1.52	.91	1.08	1.27	1.55	.96	1.12	1.33	1.62
40 ft.	.86	1.03	1.24	1.50	.89	1.06	1.27	1.53	.93	1.09	1.28	1.57	.98	1.14	1.35	1.64
45 ft.	.87	1.03	1.24	1.51	.90	1.07	1.27	1.55	.94	1.11	1.30	1.58	1.00	1.16	1.37	1.66
50 ft.	.87	1.04	1.25	1.51	.91	1.08	1.28	1.56	.96	1.12	1.31	1.60	1.02	1.18	1.39	1.68
55 ft.	.88	1.04	1.25	1.52	.93	1.09	1.29	1.57	.97	1.14	1.33	1.61	1.04	1.20	1.41	1.70
60 ft.	.89	1.05	1.26	1.52	.94	1.10	1.30	1.58	.99	1.15	1.34	1.63	1.06	1.23	1.43	1.72
65 ft.	.89	1.06	1.27	1.53	.95	1.11	1.31	1.59	1.00	1.17	1.36	1.64	1.08	1.25	1.46	1.74
70 ft.	.90	1.06	1.27	1.54	.96	1.12	1.32	1.60	1.02	1.18	1.37	1.66	1.10	1.27	1.48	1.76
75 ft.	.90	1.07	1.28	1.54	.97	1.13	1.33	1.61	1.03	1.20	1.39	1.67	1.12	1.29	1.50	1.78
80 ft.	.91	1.08	1.29	1.55	.98	1.14	1.33	1.62	1.06	1.21	1.40	1.69	1.14	1.31	1.52	1.80

In determining the safe working stress, a factor of safety of 2 was used. The factors multiplied by 100 give the approximate total weight of the span and two trolley wires.

and two grades of compound have been designated. The specifications are published in part on a following page under the sub-caption "Appendix A."

The matter of specifications for trolley wire is considered in connection with certain changes in the American Society for Testing Materials hard-drawn-copper wire specification

increased complexity of the computation. Ice and wind loads have not been considered as the length of wire between adjacent spans has been taken as 100 ft. only. If desired, allowance for it may be made by increasing the term W in the formula.

The specification given in Appendix C covers all requirements for tubular steel poles for ordinary electric line construction, and requires no special pipe or construction. The

*Abstract of report read before the American Electric Railway Engineering Association, at Atlantic City, N. J., Oct. 13-17, 1913.

variation of lengths of the sections of a pole within commercial limits have but little effect upon its strength, stiffness or weight, and the section lengths given conform closely to those usually employed.

Table IV gives the description of steel poles, in lengths varying from 28 ft. to 35 ft., and shows the probable deflection in inches produced by applying the loads specified. The necessary pull on the pole, calculated from the allowable sag as explained above, will fix the load to be applied to the pole. In general, a number of poles will satisfy the requirements, and choice must be made from those of the proper length. Usually the lightest weight pole would be selected unless the deflection was considered too great, in which case the choice would be determined finally by the deflection.

TABLE III—SAG IN SPAN WIRE—SINGLE-TRACK LINE.

Full on Span (P) in Pounds	Maximum Sag in Inches for Various Lengths of Span										
	30	35	40	45	50	55	60	65	70	75	80
500	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0
600	7.5	8.8	10.0	11.3	12.5	13.8	15.0	16.3	17.5	18.8	20.0
700	6.4	7.5	8.6	9.6	10.7	11.8	12.9	13.9	15.0	16.1	17.1
800	5.6	6.6	7.5	8.4	9.4	10.3	11.3	12.2	13.1	14.1	15.0
900	5.0	5.8	6.7	7.5	8.3	9.2	10.0	10.8	11.7	12.5	13.3
1,000	4.5	5.3	6.0	6.8	7.5	8.3	9.0	9.8	10.5	11.3	12.0
1,100	4.1	4.8	5.5	6.1	6.8	7.5	8.2	8.9	9.5	10.2	10.9
1,200	3.8	4.4	5.0	5.7	6.3	6.9	7.5	8.2	8.8	9.4	10.0
1,300	3.5	4.0	4.6	5.2	5.8	6.3	6.9	7.5	8.1	8.7	9.2
1,400	3.2	3.8	4.3	4.8	5.4	5.9	6.4	7.0	7.5	8.1	8.6
1,500	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
1,600	2.8	3.3	3.8	4.2	4.7	5.2	5.7	6.1	6.6	7.0	7.5
1,700	2.6	3.1	3.5	4.0	4.4	4.9	5.3	5.7	6.2	6.6	7.1
1,800	2.5	2.9	3.3	3.7	4.2	4.6	5.0	5.4	5.8	6.2	6.7
1,900	2.4	2.8	3.2	3.6	4.0	4.3	4.7	5.1	5.5	5.9	6.3
2,000	2.3	2.6	3.0	3.4	3.8	4.1	4.5	4.9	5.3	5.6	6.0
2,100	2.1	2.5	2.9	3.2	3.6	3.9	4.3	4.7	5.0	5.4	5.7
2,200	2.2	2.4	2.7	3.1	3.4	3.8	4.1	4.4	4.8	5.1	5.5
2,300	2.0	2.3	2.6	2.9	3.3	3.6	3.9	4.2	4.6	4.9	5.2
2,400	1.9	2.2	2.5	2.8	3.1	3.4	3.8	4.1	4.4	4.7	5.0
2,500	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8

All sags are computed from the formula $c_1 = \frac{3 WS}{P}$ in which $W = 50$ for single track lines.

The standard tubular steel pole is to be made up as shown in Table IV. The calculation of deflections has been made from the formula:

$$x = \frac{Pl^3}{3EI}$$

in which x = deflection in inches, 18 in. from top of pole.
 P = horizontal pull, 18 in. from top of pole.
 l = length of pole from point of application of P to ground line (6 ft. from base end) in inches.
 E = modulus of elasticity of steel (26,000,000).
 I = moment of inertia of base section.

The committee felt that the study of the question of poles would not be complete without the consideration of wood poles, and, as the specifications of the American Telephone & Telegraph Company and of the National Electric Light Association represent the best modern standards, specifications were submitted which conformed closely to these established standards.

The committee also submits a reinforced concrete pole design which is intended as a suggestion for trial, as concrete poles for electric line construction are not in extensive use and the committee had but few data upon which to base any opinions.

The committee reports that for some time it has had under consideration the subject of material and methods of construction of 600-volt direct-current overhead trolley line, but that no specification for line construction could be prepared which would be followed in its entirety by the membership of the association. Specifications are presented, however, which may be considered as typical and such as will enable the construction of lines by parties not acquainted with the requirements or desirous for other reasons of following general specifications. These are submitted for comment from the association at the convention.

In the matter of cap and cone insulators the committee reports that it has measured a large series of samples of

different makes, determining the dimensions preventing interchange, and submits as Appendix H a comparison, shown in Table V, giving the important measurements of the series. With one exception (from whom no comment has come in spite of repeated inquiries) the manufacturers have stated that they will conform to these limits if adopted.

OVERHEAD CROSSINGS OF TRANSMISSION LINES

At the 1912 convention the specification for overhead crossings of electric light and power lines, as recommended by the committee on power distribution, was passed for adoption as recommended practice, but with instructions to the committee on power distribution to endeavor to secure further joint action by the different associations concerned in an endeavor to straighten out minor difficulties in the specifications as they had been adopted by various associations. It was found that various members of the joint committee knew of a number of difficulties which had been encountered in the actual trial of the specifications as proposed two years ago, and it was, therefore, decided that the specification should be rewritten in a number of sections to include the suggested changes which met with the approval of the joint committee. In the revised specification the words "or constructed over" have been omitted from the original paragraph on scope as many questions arise in connection with construction requirements where constructed lines do not actually cross but are in close proximity to one another.

This joint committee recommended that a specification should be developed to cover the construction of constant potential lines of over 5000 volts which are necessarily constructed parallel with or in close proximity to lines of telephone or telegraph wires, and that this matter should be referred to some national joint committee for development of such a specification. It is therefore suggested that a national joint committee on overhead line construction should be organized and that the work which is now being done by committees of the National Electric Light Association and of the American Electric Railway Association and other similar committees of other associations might well be loaded on this national joint committee, the special matters pertaining to one association only being handled by sub-committees of the general committee, the sub-committee being composed of the representatives on the joint committee of the association interested.

ELECTRIC WIRE AND CABLE TERMINOLOGY

The committee recommended the following revision of the standard electric wire and cable terminology adopted last year in order to harmonize it with that finally adopted by the United States Bureau of Standards and other bodies:

The definition "No. 5. Strand:—One of the component conductors of a cable; or one of the wires or groups of wires of any stranded conductor," to read: "One of the wires or groups of wires of any stranded conductor." Insert new definition, "No. 10. Rope Lay Cable: A single conductor cable composed of a central core surrounded by one or more layers of helically laid groups of wires." Change existing definition numbers accordingly.

APPENDICES

APPENDIX A—SPECIFICATIONS FOR RUBBER INSULATED WIRE AND CABLE

Rubber compound shall be thoroughly and properly vulcanized. The vulcanized insulation shall be homogeneous in character, tough and elastic. All laps or joints in the insulation shall be as strong mechanically and electrically as the rest of the insulation. The grade of the compound shall be grade A or grade B as may be specified.

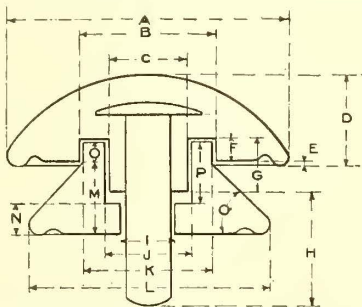
The rubber compound of grade A shall be that generally known as "30 per cent Para rubber insulation" and shall be made exclusively from dry, fine Para rubber of the best quality which has not been previously used in a rubber compound, solid waxy hydrocarbons, suitable mineral matter and sulphur. The compound shall not contain red lead or

If the cable is lead-sheathed, a heavy serving of tarred jute shall be placed over the sheath. Over this jute an armor of galvanized steel wire to conform to the following table shall be applied spirally and closely in such manner as completely to envelop the cable:

Outside Diameter Over Lead Sheath and Jute (In.)	Size of Armor Wire (B.W.G.)
1	10
1 1/4 - 1 1/2	8
1 3/4 - 2 1/4	6
2 1/2 - 3	4

In the case of steel-tape-armored cables two overlapping galvanized steel tapes of proper weight and dimensions shall take the place of the wires. If required, a heavy serving of tarred jute shall be applied over the armor and finished by the application of a coating of lime and sand.

TABLE VI—COMPARISON BETWEEN PRESENT DIMENSIONS AND PROPOSED STANDARD DIMENSIONS FOR CAP AND CONE DESIGN



TYPE	INCHES															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	3 32/64	1 1/64	3 8/64	1 24/64	5 6/64	1 6/64	3 8/64	1 6/64	4 2/64	1 4/64	1 40/64	2 52/64	6 3/64	3 4/64	1 4/64	5 0/64
2	3 33/64	1 42/64	6 6/64	1 8/64	1 6/64	2 22/64	4 6/64	1 22/64	4 2/64	1 2/64	1 40/64	2 56/64	6 0/64	2 2/64	1 2/64	4 30/64
3	3 32/64	1 42/64	6 3/64	1 12/64	4 6/64	1 6/64	4 0/64	1 20/64	4 4/64	1 40/64	2 62/64	5 8/64	2 0/64	1 8/64	4 8/64	
4	3 36/64	1 4/64	6 4/64	1 16/64	5 6/64	2 0/64	4 0/64	1 18/64	4 2/64	1 2/64	1 40/64	3 0/64	5 8/64	2 6/64	1 6/64	4 8/64
5	3 38/64	1 42/64	6 4/64	1 12/64	4 6/64	1 6/64	4 5/64	1 12/64	4 2/64	1 4/64	1 40/64	2 62/64	5 9/64	2 3/64	1 6/64	4 30/64
6	3 37/64	1 42/64	6 2/64	1 10/64	5 6/64	1 6/64	4 0/64	1 18/64	4 2/64	1 2/64	1 36/64	2 60/64	6 2/64	2 4/64	1 0/64	4 8/64
7	3 32/64	1 42/64	6 2/64	1 20/64	4 6/64	2 0/64	4 8/64	1 20/64	4 2/64	1 2/64	1 38/64	3 0/64	3 6/64	1 6/64	4 7/64	
8	3 32/64	1 4/64	6 2/64	1 16/64	4 6/64	1 8/64	4 6/64	1 8/64	4 2/64	1 2/64	1 38/64	2 58/64	5 7/64	2 2/64	1 6/64	4 9/64
9	3 32/64	1 4/64	6 0/64	1 20/64	0 6/64	1 9/64	4 8/64	1 5/64	4 2/64	1 2/64	1 39/64	2 54/64	5 8/64	2 2/64	1 6/64	4 9/64
10	3 32/64	1 4/64	6 0/64	1 20/64	0 6/64	1 9/64	4 8/64	1 5/64	4 2/64	1 2/64	1 39/64	2 54/64	5 8/64	2 2/64	1 6/64	4 9/64
11	3 34/64	1 42/64	6 4/64	1 8/64	4 6/64	1 6/64	4 0/64	1 20/64	4 3/64	1 2/64	1 37/64	2 50/64	5 8/64	2 0/64	1 0/64	4 8/64
12	3 34/64	1 42/64	6 4/64	1 8/64	4 6/64	1 6/64	4 0/64	1 20/64	4 3/64	1 2/64	1 37/64	2 50/64	5 8/64	2 0/64	1 0/64	4 8/64
STANDARD	3 32/64	1 4/64	6 4/64	1 8/64	4 6/64	1 6/64	4 0/64	1 20/64	4 3/64	1 2/64	1 40/64	2 52/64	6 2/64	2 4/64	1 6/64	5 0/64

■ A VARIATION OF NOT OVER 1/8" ALLOWABLE.
 * NOT MORE THAN
 † NOT LESS THAN
 ▲ VARIATION OF NOT OVER 1/16" ALLOWABLE.

If the cable is to be furnished without a lead sheath, the core shall be finished with tape and an outer protective covering then applied. Two servings of tarred jute in reverse layers shall be applied over the taped core, hove on smoothly with even thickness and without gaps between the strands. The thickness of double serve on each side is to be about 1/8 in. Over this jute an armor of galvanized steel wire shall be placed, which shall conform to the requirements of the preceding paragraph.

The cable shall be sufficiently flexible between the temperatures of 18 deg. C. (0 deg. Fahr.) and 38 deg. C. (100 deg. Fahr.), so that it may be bent without injury to an arc of a circle having a radius ten times the outer diameter of the finished cable.

The contractor may be required to test such samples as may be selected at the discretion of the inspector and must furnish to the company certified reports of such tests. These

tests shall consist of resistivity test, voltage test, test for insulation resistance and such other chemical and mechanical tests as will determine the quality of the material. After the installation of the cables, or within a period of time specified, further tests may be made as indicated below.

In general, all tests, except chemical, shall be made at the place of manufacture, with suitable equipment provided by the contractor. All reasonable facilities shall be given to the inspector to determine the accuracy of the equipment furnished, and its suitability for the purpose.

Each length of conductor or cable insulated with the compound shall be tested for dielectric strength and insulation resistance before the application of any outer covering other than tape or braid, after at least twelve consecutive hours' submersion in water and while still immersed. The conditions and conduct of the electrical tests shall conform to the recommendations of the American Institute of Electrical Engineers unless otherwise stated in the contract.

A resistivity test shall also be made upon the wires making up the cable.

An alternating current of not less than twenty-five cycles not more than 100 cycles and approximating as closely as possible to a sine wave shall be applied between each conductor and the water for a period of five minutes. For a thirty-minute test 80 per cent of the specified voltage shall be used. Lead-sheathed cables after being finished shall have the test voltage applied between their conductors and also between all of the conductors and the sheath. The voltage to be applied shall be in accordance with Table VI. The cable must not show any weakening of its insulation or any other injury under this test, which is to be made before the test for insulation resistance.

The insulation resistance shall be measured after the high-potential test and following a one-minute electrification with a battery of not less than 100 nor more than 500 volts and the results corrected to the standard temperature of 15.5 deg. C. All tests for insulation resistance shall be made at a temperature within 10 deg. C. of this standard temperature. The resistance of multiple conductor cables shall be measured between one conductor and the other conductor grounded to

TABLE VI—TEST POTENTIAL FOR DIELECTRIC STRENGTH OF RUBBER-INSULATED CABLES.

Thickness of Insulation in 64ths of an inch....	Test Potential in Volts.							
	3	4	5	6	7	8	10	12
(Cir. mils)								
2,000,000	5,000	10,500	15,500
1,750,000	6,500	11,500	16,500
1,500,000	7,000	12,000	17,000
1,250,000	7,500	12,500	17,500
1,000,000	5,500	8,000	13,000
750,000	6,500	9,000	14,000
500,000	2,500	5,000	7,500	10,000	14,500
250,000	4,000	6,500	9,000	11,000	15,500
B. & S. Gage....								
0000	4,500	7,000	9,000	11,500	15,300
000	5,000	7,500	9,500	11,500	15,500
00	5,000	7,500	9,500	11,500	15,500
0	5,500	8,000	10,000	12,000	15,500
1	4,000	6,000	8,000	10,000	12,000
2	4,000	6,000	8,000	10,000	12,000
4	4,500	6,500	8,500	10,000	11,500
6	5,000	6,500	8,500	10,000	11,500
8	3,000	5,000	7,000	8,000	9,500
10	3,000	5,000	6,500	8,000	8,500
12	2,500	5,000	6,000	7,500	8,500
14	2,500	5,000	6,000	7,000	8,000

Potential given in this table shall be applied for five minutes. For a thirty-minute test use 80 per cent of tabulated voltage. For grade A insulation, use 100 per cent of the above tabulated values for test. For grade B insulation, use 80 per cent of the above values for test.

the sheath. The insulation resistance shall not be less than given in Table VII, and the change of insulation resistance with temperature shall be at a rate not exceeding 4.5 per cent per deg. C. variation from the standard temperature.

For grade A compound, the chemical tests to determine the quality of compound shall be made in accordance with the recommendations of the committee appointed by the rubber conference of Dec. 7, 1911. For grade B compound the following determinations shall be made upon the vulcanized compound: Acetone extract, alcohol potash extract, chloroform extract, ash, total sulphur. The sum of the percentages of these five ingredients subtracted from 100 per cent shall show a residue of rubber gum as above specified. The ash test shall be supplemented by tests to determine the quantity of substances, other than vulcanized rubber, which are combustible but are not soluble in acetone, alcoholic potash or chloroform, and such substances, if any, shall be counted as ash. The method of analysis employed in making the above tests shall be that specified in the Underwriters' Laboratories "Method of Procedure for Chemical Tests of Rubber Compound Used on Wires and Cords."

The specific gravity of the vulcanized compound, in sections as stripped from the conductor, shall be not less than 1.75 as compared with distilled water at 20 deg. C.

TABLE VII—INSULATION RESISTANCE OF RUBBER-INSULATED CABLES.

Thickness of insulation in 64ths of an Inch	Megohms per Mile							
	3	4	5	6	7	8	10	12
(Cir. mils)								
2,000,000	.....	.....	.....	.....	.....	200	275	325
1,750,000	.....	.....	.....	.....	.....	275	300	375
1,500,000	.....	.....	.....	.....	.....	300	325	400
1,250,000	.....	.....	.....	.....	.....	325	375	425
1,000,000	.....	.....	.....	.....	300	325	400	475
750,000	.....	.....	.....	.....	325	400	475	525
500,000	.....	.....	300	375	400	475	575	675
250,000	.....	.....	400	475	575	625	725	875
B. & S. Gage								
0000	.....	.....	450	550	600	650	800	950
000	.....	.....	500	600	650	750	850	1,000
00	.....	.....	550	650	750	850	950	1,050
0	.....	.....	600	700	800	950	1,050	1,200
1	.....	600	650	750	850	1,000	1,150	1,350
2	.....	650	750	850	950	1,050	1,250	1,450
4	.....	750	850	1,000	1,150	1,250	1,450	1,650
6	.....	850	1,050	1,200	1,350	1,450	1,750	1,950
8	850	1,050	1,250	1,450	1,650	1,750	2,050	2,200
10	1,150	1,350	1,600	1,800	2,000	2,150	2,400	2,650
12	1,350	1,600	1,850	2,050	2,250	2,400	2,750	3,000
14	1,550	1,850	2,150	2,350	2,550	2,650	3,050	3,350

Measurements to be made at or corrected to 60 deg. Fahr., 15.5 deg. C, after one minute electrification.
 For grade A insulation, use 100 per cent of the above tabulated values for test.
 For grade B insulation, use 80 per cent of the above values for test.

From any wire on which the wall of insulation does not exceed 1/8 in. a sample of the vulcanized compound not less than 4 in. in length and of uniform cross-section shall be cut from the wire and marks placed on it 2 in. apart. The sample shall be stretched longitudinally at the rate of 12 in. per minute until the marks are 6 in. apart and then immediately released. One minute after such release the marks shall not be over 2 3/8 in. apart. The sample shall then be stretched until the marks are 9 in. apart before breaking.

In case the wall of insulation exceeds 1/8 in. the return required shall be 2 3/8 in., but the stretch before breaking shall be 8 in. instead of 9 in.

The vulcanized compound shall have a tensile strength of not less than 1000 lb. per sq. in. for grade A and 800 lb. for grade B based on the original cross-section of the test piece before stretching. The test shall be made at a temperature not less than 10 deg. C.

Short samples of the finished conductor or cable shall be placed on a piece of clean white paper in an oven and shall be subjected to a temperature of 125 deg. Fahr. (52 deg. C.) for one-half hour. The compound shall not become sufficiently fluid to form a ridge upon the paper perceptible to the fingers, or, in case the compound shall be absorbed by

the paper, to show a greasy or oily spot upon the paper, nor shall the compound show a tendency to flow toward the bottom of the wire, thus exposing the cotton fiber of the braid at the top.

APPENDIX C—SPECIFICATIONS FOR TUBULAR STEEL POLES

Joints shall be 18 in. in length and shall be made hot without reducing the diameter of the smaller pipe more than 1/8 in. and without any reduction in the thickness of either pipe. The completed joint shall caliper the same outside diameter for its entire length, shall be free from cracks or flaws and shall be water-tight. Variations in weight of poles shall not exceed 5 per cent over or 5 per cent under the weights specified in the order.

If required, 5 per cent of the poles of any one size on any order shall be subjected to the tests for deflection, set and the drop test as specified. If any of the poles so tested fail to conform to the requirements, an additional 5 per cent shall be tested at the contractor's expense. A failure in any pole of this second 5 per cent shall be cause for rejection of the lot of that size. The contractor may, at his expense, test all of the poles so rejected and those poles which conform to the requirements will be accepted for shipment if such tests are made immediately.

The deflection shall not exceed the limit specified on the order sheet when subjected to the load given. The load shall be applied at right angles to the axis of the pole 18 in. from the top, with the lower 6 ft. of the pole held rigidly. Any pole when dropped three times from a height of 6 ft. upon a solid wooden block on a rigid base shall not show any telescoping at the joints.

Any poles which fail to meet the above requirements may be rejected.

OTHER APPENDICES

The report also contained, under the caption "Appendix B," derivations for the formula used in working out the results in Table I together with a derivation of the formula for the deflection of steel and concrete poles. Under the caption "Appendix D" specifications for wood poles were submitted and specifications for reinforced concrete poles were submitted under "Appendix E." Specifications for 600-volt d. c. overhead trolley construction with complete drawings were submitted under "Appendix F," and revised specifications for overhead crossings of electric light and power lines were given under "Appendix G."

RECOMMENDATIONS OF THE COMMITTEE

The committee on power distribution made the following recommendations for adoption as standard by the association:

- Specification for rubber-insulated wire and cable.
- Design of cap and cone insulators.
- Revision of deflections in standard terminology.
- Specification for tubular steel poles.
- Specification for wood poles.

All of these recommendations were approved by the committee on standards for adoption as standard by the association.

The committee on power distribution recommended for adoption as recommended practice the following:

- Specification for 600-volt overhead trolley construction.
- Revised specifications for overhead crossings of electric light and power transmission lines.

The standards committee approved the latter recommendation but recommended that action on the specifications for 600-volt overhead trolley construction be deferred until it should be discussed and acted upon by the convention.

The committee on power distribution requested more time for investigation of the subject of reinforced concrete poles and suggested that further consideration of the subjects of lattice poles and of trolley guards as a subject by itself was not warranted. This action for all three matters was approved by the committee on standards.

REPORT OF COMMITTEE ON STANDARDS*

PAUL WINSOR, CHAIRMAN; H. H. ADAMS, J. M. LARNED, J. H. HANNA, B. J. WOOD, E. B. KATTÉ, F. R. PHILLIPS, GEORGE H. PEGRAM, E. R. HILL, F. B. H. PAINE, R. H. PINKLEY, CHARLES H. CLARK, G. W. PALMER, JR.

The findings of this committee in regard to the various matters placed before it for approval are published in abstract as a part of the report of that committee to the work of which the findings apply. In addition to its regular work, however, the committee on standards took up the new matter of procedure and of the compilation of existing engineering practices of the association.

At the meeting of the committee held during the mid-year conference the procedure for adoption of standards and recommended practices was discussed at considerable length, it being the unanimous opinion of the members of the committee that the present plan was in many respects unsatisfactory and did not produce the best results, particularly in the matter of the letter ballot.

The matters of standard forms for specifications and the publication of standards and recommended practices were also considered and all three subjects were turned over to a sub-committee. The primary object of the appointment of this sub-committee was the development of a possible revision of procedure for adoption of standards and the study of various recommendations of standards and recommended practices or other methods or practice adopted by this association since organization, together with the compilation of the material in book form, this book to be revised and brought up to date annually.

The committee decided upon the inclusion of such material as could be classified under the following three divisions:

(a) "Standards," to include such recommendations of the association as bear its formal approval as a standard.

(b) "Recommended practices," to include such recommendations of the association as bear its formal approval as a recommended practice.

(c) "Miscellaneous approved methods and practices," to include all other definitely approved recommendations.

The sub-committee recommended that the new publication should be called the "A.E.R.A. Engineering Manual," and should have a binder of loose-leaf form with all sheets properly numbered and a complete index, which shall be revised each year, one binder complete with all printed matter to be furnished to each member company, and printed matter only to be furnished to individual members of the Engineering Association.

The matter of definitions was then taken up and the following suggestions are herewith submitted:

"Standard": Standard articles, designs, specifications, units, terminology, measurements or methods adopted shall be those which are applicable to general use and represent the best practice.

"Recommendation": Recommended articles, designs, specifications, units, terminology, measurements or methods adopted shall be those which represent good present practice or progress of the art but which because of the formative state of the art and the likelihood of changes, or for other reasons, do not admit of adoption as "standard" at the time of consideration.

Proposals are requested for the construction of an electric tramway in Madrid, Spain, to run from El Paseo de las Delicias to the bridge of the Princesa. If successful in bidding against La Sociedad Tranvia del Este de Madrid (petitioner for the line and owner of the approved project), the concessionaire must pay \$452 for the project with interest of 5 per cent from the date the project was filed.

*Abstract of report read before the American Electric Railway Engineering Association, at Atlantic City, N. J., Oct. 13-17, 1913.

BABBITT TESTING MACHINE ONE OF WESTINGHOUSE ATTRACTIONS

It is natural that control systems and motors should form the biggest and ever-interesting part of the Westinghouse exhibit at space 21, but this year presents some departure from orthodox standards. Thus the Westinghouse Electric & Manufacturing Company is showing a babbitt-testing machine from its laboratory to demonstrate the care which it takes to insure perfection in this part of its equipment. The same company has also prepared a model of a portable substation and of a typical outdoor transformer substation. The portable substation is a reproduction to scale of a 300-kw, sixty-cycle rotary converter outfit with 3300-volt incoming lines, and the accessibility of parts and simplicity of arrangement are admirably illustrated. The transformer substation shows the construction for 33,000-volt work. In connection with these models, the full-size outdoor substation of the Transmission Engineering Company equipped with Westinghouse oil-insulated, self-cooled transformers will be found instructive. Among the control equipments, the light-weight HL control is deservedly prominent in view of the growing demand for remote control for city cars. The sturdy character of this control is demonstrated by the exhibition of details such as the line switch, overload trip relay, blowout coil, cylinder and magnet valve, etc. An operating equipment of the new type PK control is on view for the first time. This control has been developed for street railway conditions where it is very important to have heavy currents removed from the platform and also to reduce the control failures. It is even more compact than HL control and largely for that reason was chosen for the 175 stepless cars of the New York Railways. Commutating-pole motors are well represented by the No. 306, 307-C-4 field control, 323-A, 328 and 332-B-2 motors; also a complete working rack of the No. 328 and 307-C-4 motors, the former operating with HL and the latter with PK control.

The relation of parts in a 5000-kw, 3600-r.p.m. turbine, as arranged on a platform, is the striking exhibit of the Westinghouse Machine Company. The complete spindle with its blading is mounted in screens upon which the sectional view of the casing has been laid off.

The Westinghouse Traction Brake Company displays an important line of air-brake devices and appliances such as motor-driven air compressors, automatic car and air couplers, motorman's brake valves, electric compressor governors, air reservoirs, complete car equipments, etc.

A complete assortment of insulating and repair materials completes the showing of the Westinghouse interests.

ELECTRIC SERVICE DISPLAYS—CARHOUSE TOOLS

The exhibit of the Electric Service Supplies Company at space No. 414 comprises many of its standard manufactures, together with articles shown this year for the first time. Among the exhibits are Garton-Daniels lightning arresters, the automotoneer, "Protected" rail bonds, Keystone trolley catchers, Keystone steel gear cases, Keystone portable and stationary lamp guards, Keystone overhead material, Peerless heavy-duty banding lathes, Peerless portable commutator slotters, Peerless portable tension machines and winding stands, Keystone pneumatic gong ringers, vacuum sanders and leakless valves, Keystone motorman's seats, Keystone car destination signs, Keystone truss pins, Locke insulators and the Automatic trolley guard. The new lines of Peerless carhouse tools will be especially interesting to the representatives of the mechanical departments. The representatives present are the following: W. A. Armstrong, G. W. Cox, A. H. Englund, T. H. Henckle, H. G. Lewis, J. R. McFarlin, T. F. McKenna, F. C. Peck, L. H. Pipe, J. W. Porter, C. J. Mayer and J. V. E. Titus.

JOHNS-MANVILLE COMPANY AT THE CONVENTION

The exhibit of the H. W. Johns-Manville Company is one of exceptional interest. The booth, comprising an area of 722 sq. ft., contains an attractive display of overhead line material, rail bonds and special insulating materials of all kinds, arranged on wall boards, while third-rail insulation and J-M fiber conduit is shown on a pyramid in the center of the booth. The "Noark" line of fuses, protective device boxes and meter equipment form an interesting part of this exhibit, together with fireproof cable insulation, Niagrite and friction and rubber tapes.

J-M transite asbestos wood, a fireproof wood made of asbestos fiber and binding cements, and extensively used for fireproofing electric cars, is naturally attracting much favorable attention. Somewhat similar to this product is ebony asbestos wood, a hard, durable, highly resistant material with asbestos as its base, used for switchboards, panelboards, switch and fuse boxes, car floor lining, electric heater insulation, etc.

For the first time the company is showing the J-M metallic sand spout. This spout is made of remarkably strong metal ribbon wound spirally. During the winding the edges are turned in to form a continuous interlocking metal spout that can be bent to the desired curve without fear of kinking or fracture. The J-M spout is made in stiff or flexible form and is furnished with plain couplings or couplings for De Witt or Ridlon sand boxes.

Other products of railway interest are J-M transite asbestos shingles, the fireproof shingles made of asbestos and cement; J-M asbestos roofing, the all-mineral roofing that never requires coating and affords perfect fire protection, and the well-known line of J-M pipe coverings for insulating low and high-pressure steam systems; packings for all purposes, etc.

Those in attendance are J. W. Perry, general manager electrical department; S. G. Meek, assistant general manager electrical department; George A. Saylor, manager electrical department Milwaukee branch; H. L. Steiner, manager Cincinnati office; H. H. McManus, New York office; H. M. Voorhies, manager electrical department Philadelphia branch; C. E. Fairbanks, manager electrical department Baltimore branch; H. I. Morse, Boston branch; A. J. Finlay, Cuban representative; E. B. Hatch, president Johns-Pratt Company, Hartford, Conn.; R. C. Buell, secretary, and R. B. Lattin, electrical engineer of the same company.

WESTERN ELECTRIC VACUUM-TYPE CAR CLEANERS

The Western Electric Company occupies spaces 341 and 335, where it is displaying telephone apparatus, vacuum-type car cleaners and a great variety of miscellaneous supplies. The first layout consists of a complete line of telephones for use in car operation, such as stationary iron-clad telephones for the right-of-way, portable car telephones and standard inside equipment; also telephone selector apparatus for car dispatching, equipment for protection of telephone lines, exposed high-potential power circuits, etc. The vacuum cleaners are of the Western Electric-Sturtevant portable type for car cleaning. The miscellaneous supplies include Electrose high-tension insulators, Thomas porcelain insulators, Pyrene fire extinguishers, sleet cutters, Western Electric insulating tapes and compounds, Kalamazoo trolley wheels and harps, General Electric rail bonds and line construction material, Faraday 500-volt car buzzers and signal bells, trolley retrievers and catchers, trolley bases, Samson trolley cord and bell rope, Shelby trolley poles, C-H arc and incandescent car headlights, Gold electric car heaters and Benjamin specialties. The company's representatives are as follows: M. A. Oberlander, assistant supply sales manager; R. H. Harper, railway department; F. D. Killion, G. K. Heyer, G.

Brown, A. G. Kingman, general department, New York; Messrs. Enders, Maxon and Spamer, New York; Messrs. Hallstrom, Coller and Greenfield, Philadelphia; Mr. Phillips, Pittsburgh; Messrs. Davis and Guest, Chicago; Mr. Bertke, Cincinnati; Mr. Crouch, St. Louis; Mr. Cathright, Atlanta; Mr. Marchmont, Richmond; Mr. Collins, Boston, and Mr. Shiveley, Kansas City.

POWER PLANT SIGNALS A GENERAL ELECTRIC NOVELTY

Perhaps the most striking feature of the General Electric Company's display in space 20 is the remote signaling device for transmitting signals between switchboard and distant generating rooms. This equipment resembles that in the Mississippi River Power Company's station, Keokuk, Ia., where the distance from the switchboard room to the farthest generator is more than 800 ft. This system will also be employed on the Panama Canal to indicate the position of the lock machinery. Signals are transmitted by "position" indicators, which are similar to small induction motors. Transmitters and receivers with dials for indicating the desired signals are located both at the switchboard and in the generator room. The transmitter is actuated by a handle, and like positions are indicated electrically on its dial and on the dial of the corresponding receiver in the generator room. In conjunction with the simultaneous operation of the transmitters and receivers, push-button switches may be employed to operate signal lamps, whistles or bells as desired.

Of course, railway motors have the usual extensive showing in complete, exploded and detail form. Maintenance worth is demonstrated by the GE-205 110-hp motor from one of the cars of the Washington, Baltimore & Annapolis Railway. This motor, as shown, has run with the original brushes and linings 225,000 miles in every-day service and is representative of the average condition of all the equipments. The Sprague-General Electric Type MK all-electric control on exhibit has armature type contactors and is designed for operating four 50-hp motors on city cars. The company's combined straight and automatic air brake equipment is shown with the CP-27-B type air compressor, which has been provided with a special glass cover and lamps in order to illuminate the interior and show the flow of oil. The new CP-25-C air compressor is shown exploded to exhibit construction details. A number of separate valves entering into the equipment, including a new rotary straight-air motorman's valve, form part of this exhibit. K-51 and K-35 types of controllers are also shown, the K-35 controller being provided with a set of four field tappers in the box with the relay. The 40-ton electric switching locomotive on view is provided with Sprague-General Electric Type M control, geared for slow speed and equipped with four GE-207 165-hp 600 volt commutating-pole motors.

A complete assortment of line material is grouped on a large frame. All line parts subject to corrosion are protected by sherardizing. Headlamps for electric railway service include luminous arc lamp with semaphore lens for high-speed interurban service, a 2-amp luminous arc lamp with semaphore lens for suburban service, a stationary incandescent headlamp with semaphore lens for city service, a portable incandescent lamp with plain glass floor for high-speed interurban service and a 4-amp luminous arc lamp with plain glass door and parabolic reflector for slow-speed interurban service. Three types of air, water and steam flow meters—the indicating-recording with integrating device, the recording with integrating device, and the indicating—are shown either in service or in section to show the working parts.

During the entire week a lantern slide exhibit will be given illustrating the "spirit of progress" throughout the electric railway field the past year. More than seventy-five pictures, which have been made from actual photographs taken in various parts of the country, will be shown.

TRUCK DEVELOPMENTS PROMINENT AT BRILL EXHIBIT

Prominently located in spaces 4, 6, 8 and 10, the exhibit of The J. G. Brill Company is a center of more than passing interest. Much of the attention is devoted to the four different types of trucks on view. One of these is the No. 39-E type, of which, according to the company's records, nearly 10,000 have been sold. After exhaustive experiments, the builders have recently improved this noted truck still further by adopting a combination plate and coil spring in place of the heavy plate spring formerly used to support the bolster. The new spring combination thoroughly cushions the shock and the differing action of the plate and coil springs gives particularly desirable service under light cars, especially in large cities. As the recently adopted arrangement works out, the motor is supported on the frame, the frame on the journal springs and the car weight on the bolster and the truck frame. By this system the deadening effect of the motor is communicated only to the journal springs.

Another noteworthy truck is the "Radiax," the J. G. Brill Company's standard radial axle type. The brake rigging of this truck has been simplified without detracting in any way from its efficiency. The truck is shown with a motor case on one end to demonstrate the part that the motor plays in the brake connection. The wheels, with brake shoes and hangers, motors and axles at each end, form a unit all radiating together. This produces no strain on the motor case that it is not fully capable of bearing and, of course, there is no undue wear upon the motor bearings and pinions as the thrust is in the opposite direction to the force exerted by its tractive effort. Careful investigation has shown that where such wear occurs it is negligible. The truck is exhibited with the end bearing the motor shell turned so as to show it in the extreme position. The solid forged side frames are peculiarly appropriate on account of the length of the wheelbase and the width of the yokes. A recently issued pamphlet shows that this truck is in use on large and small systems throughout the world.

The nameboard upon the No. 27-MCB2 truck offers the interesting information that four orders totaling 386 trucks of this type were received from the Boston Elevated Railway. The new Brill truck catalog, which is having its initial distribution at the convention, shows the three most largely used types of this truck and shows also the variations which give it seven distinct classifications. Like the other types of Brill trucks this has a one-piece cast-steel bolster which is of a form that will greatly interest mechanical experts. The half-ball brake hangers, also characteristic of all Brill trucks, are very well worth examining in connection with this huge truck, which weighs 11,100 lb. and measures 9 ft. 8 in. from end to end of the solid forged side frame.

Among this brilliant assemblage of trucks is the oldest member of the truck family in the exhibition—the No. 27-G. Wherever the use of a four-motor equipment is desirable, this is usually found. Up to comparatively recent years when city development had not reached a point where it was as generally suited to the single-motor truck as at present, the No. 27-G was the most prominent pivotal type in the world. On this truck, as on the other pivotal types exhibited, the Brill oil-retaining center bearing is a feature which is receiving deserved attention.

A very interesting part of the exhibit is a solid forged side frame of the No. 21-E truck. This is fitted up with other side members and is used to show the Brill wide-wing journal box. It is asserted by the builders that this does for the single truck what a long wheelbase and long spring centers do for a high-speed truck, as it brings all vertical strains in the side frames into straight lines, because the

coil springs which bear the weight are directly underneath each other instead of off center.

Besides the trucks, the company is showing an extensive line of specialties. Among these are three motorman's seats mounted on a platform, as they would be in use. One of these is of the stationary saddle type while the others show movable seats of the saddle and circular types.

SCHUTTE & KOERTING EXHIBIT INCLUDES CONDENSER IN OPERATION

The striking display of the Schutte & Koerting Company, Philadelphia, Pa., at space 154, includes its engine stop systems, oil-burning system, various forms of valves, injectors and a condenser of the eductor type. This condenser is in operation under a head of only 8.5 lb. water pressure. Among the valves shown is the throttle valve used almost exclusively by the General Electric Company for its turbines.

The special feature of the Schutte automatic engine stop systems is the "falling weight" principle. In the butterfly valve, a falling weight which may be fitted on either side of the valve is used for holding the disk shut after being tripped by another falling weight arranged on top of the valve. These valves are arranged with solenoid for operation with 110 volts or 220 volts d.c. open-circuit system; also with magnet for open or closed circuit, with storage battery for emergency service or with open-circuit system dry batteries. A complete outfit includes valve, speed limit governor, switchboard, storage battery, hand-push switches and sheave on engine shaft.

The Schutte combined balanced throttle trip valve is the one used most frequently for engine stop systems as it combines the throttle valve required for engines with the engine stop feature. The advantages of the gate valves shown are summarized as follows: no scraping on the valve seats, no tendency to deform the shape of the body and easy operation as friction is reduced to a minimum. The "Quietite" reducing valve, said to be entirely frictionless, is fully described by a special blueprint. The mechanical oil-burning system, including burner and register, is of the type which has been adopted for the most modern battleships as well as for stationary plants. Steam jet siphons, water-jet eductors, exhausters, blowers and blast nozzles and spray or atomizing nozzles complete this valuable exhibit.

LIVE EXHIBIT OF OHIO BRASS COMPANY

The Ohio Brass Company, occupying spaces 614 and 618, has a strictly testing operating exhibit of its new devices. It is showing a continuous test of O-B Hi-Tension insulators, and a Riehle testing machine is used for mechanical breakdown tests of line materials. It is also giving electrical breakdown tests. The operating exhibit includes the company's electric car signal system, trolley bases, trolley catchers, trolley retriever, M. C. B. automatic coupler, automatic electric and air-connecting coupler, air sanders, etc. Further, the company gives practical demonstrations of the installation of its Type J and all-wire rail bonds. New catenary devices, third-rail insulators and the National railroad trolley guard are also on display. The following members of the home-office organization are present: C. K. King, vice-president; A. L. Wilkinson, secretary; E. F. Wickwire, general sales agent; C. T. Anderson, A. B. Edes, A. L. Price, E. B. Snyder, M. P. Wolcott, C. E. Young, W. C. Starkey, R. G. Averill, C. C. Beck, G. H. Bolus, C. E. Gierding. Also the following traveling salesmen: N. M. Garland, Nathan Shute, G. W. Cooper, J. E. Slimp, G. A. Kroener, F. E. Johnson, R. J. Deneen, E. C. Brown, F. V. Cook, W. H. Bloss, C. P. Leibold, C. H. Tomlinson, F. A. Strail, P. A. Hinds, G. E. Willis; also A. O. Austin, electrical and ceramic engineer of the O-B insulator plant, and R. D. Holabird, California sales agent.

Among the Exhibits

Cornell S. Hawley, president of the Laconia Car Company, Boston, Mass., is at the convention meeting his many customers and friends.

* * *

W. R. Kerschner, New York, is representing his own interests at the convention as well as those of the Columbia Machine Works & Malleable Iron Company, Brooklyn, N. Y.

* * *

Mica Insulator Company, New York, has on display in space 383 samples of its Empire oiled paper and cloth, ground mica, Micanite rings and shapes, India plate and Amber plate. Samples of insulating varnishes, cements and compounds are also shown, as well as a line of Micanite rheostat tubes.

* * *

After a year's absence as an exhibitor E. G. Chamberlain, representing the Southern Exchange Company, New York, is back again. His booth at space 612 has a certain Southern flavor about it. Instead of showing poles and cross-arms, the booth is decorated with sprigs of long-leaf pine, green and fresh from Southern forests. In the background are also displayed green branches of persimmons and the cotton plant.

* * *

Watson-Stillman Company, New York, is utilizing space 501 for some interesting hydraulic machinery. It shows a portable rail bender weighing 1150 lb. with pressure capacity of 75 tons; one hydraulic pit jack with a stroke of 37 in. and 3000 lb. capacity; a small car jack weighing 45 lb. of 10 tons capacity; a Universal hydraulic beam punch, for punching 1-in. holes in beams up to 7/8-in. thickness; a sectional view of a 30-ton base jack for car lifting; one hydraulic press for plugged rail bonds of 30 tons capacity.

* * *

The Standard Underground Cable Company, space 388, has a large staff on hand to demonstrate its well-standardized output of junction boxes, pot-heads and cables. Chief interest centers in the 50,000-volt varnished cloth, single-conductor cable which has just been made. It has a 1-in. insulation. The Winnipeg Electric Railway is putting in a three-conductor, 25,000-volt, paper-insulated cable of standard manufacture. Samples of this can be seen at the exhibit, which is cozily housed in a large alcove.

* * *

Charles S. Crowell, representing the Under Feed Stoker Company of America, space 375, states that the new self-cleaning stoker is making excellent progress. It is being used at the Ingersoll-Rand plant at Phillipsburg, N. J., by the Milwaukee Electric Company, by the American Diamalt Company, the Louisville Water Works and others. The features of the new stoker are the operation of the dumping device from outside, a clinker breaker which prevents choking of the ash outlet and the automatic closure of this outlet to prevent the admission of an excess of air during dumping.

* * *

In the Ohmer Fare Register Company's spaces, 301 to 305, is shown for the first time the new recorder upon which experiments have been in progress for several years. Tools are now being made for the manufacture of the recorder and deliveries will be made in six months. The records made include division number, time, direction, day, month, conductor's number, number of 5-cent and 3-cent fares, total cash, number of transfers and serial number of run. Operating exhibits of the well-known standard types are set up for convenient inspection. The exhibit was set up by C. W. Kettelman and will be demonstrated by J. F. Ohmer, J. F. Ohmer, Jr., and several other members of the staff.

Prepayment Car Sales Company, New York, has an attractively decorated booth and reception room at space 414. Photographs and floor plans of the prepayment cars for the following roads are shown: Washington Railway & Electric Company, center entrance; Chicago Railways Company, standard prepayment; Capital Traction Company, Washington, D. C., standard prepayment; Lehigh Valley Traction Company, Allentown, Pa., full convertible standard prepayment; Central Pennsylvania Traction Company, Harrisburg, Pa., short platform reconverted car; Third Avenue Railway, New York, standard full convertible prepayment car, and New York Railways Company, center-entrance, double-deck center-entrance and center-entrance battery car.

* * *

Hunter Illuminated Car Sign Company, Flushing, N. Y., is showing at space 36 a new twin-operating deck sign, both side signs of which can be operated simultaneously with one handle. A new interior sign for use in subway cars is also shown. This sign is suspended in the center of the car, both front and rear faces bearing the indications. A combination route and destination sign is shown, having two faces at right angles for side and end roof indication. New features in a dash sign on display are a dust-proof compartment for the curtain and a compartment for the lamps opening on the inside of the vestibule. Regular hood signs with interior indicators, a Philadelphia combination sign and a train order sign are also exhibited. The steel boxes containing these signs make them waterproof and dustproof.

* * *

The "Watch the Heat Pour" device shown by the Consolidated Car Heating Company, space 22, is creating much interest, and all visitors wonder where the water comes from. Among other interesting devices exhibited, this company is featuring its new thermostatic control, which is emblematic of simplicity in the design of devices for this service. It has no contactors, magnets in the operating switch, resistance relays or trip switches to complicate its operation. This thermostat has been tested up to 500,000 operations without fatigue. Another prominent feature in this exhibit is a new type of door-operating mechanism with electro-pneumatic control and pneumatic trip. This is applied to car doors of the sliding type, to demonstrate it in operation. One door-operating device is undergoing a test without lubrication during the period of the exhibition, and at the time this article was prepared it had performed 152,000 movements without any detrimental effects.

* * *

Among the new features being introduced by the Dayton Fare Recorder Company, Dayton, Ohio, in spaces 386 and 387, is the Dayton registering fare box. This fare box is designed to meet the most severe operating demands and at the same time to embody all the characteristics necessary to produce simplicity and durability in construction as well as accuracy in recording. Mutilated coins and slugs are readily detected in the inspection chamber, run through the machine and removed from the cash box. Coins are dropped from the inspection chamber into a sealed coin compartment by pressing a lever. By turning an operating handle the coins, including dimes, nickels and pennies, are counted automatically and the total amount in dollars and cents is shown on the face of the register. All counted coins are available to the conductor for change. If desired by the purchasers, the registering element on this box may be arranged to record money in dollars and cents and the total number and kind of fares collected. With this addition the result of the registrations is fully computed in detail and total. The details and totals are printed on records which embrace distribution to 5-cent fares, transfers, 3-cent fares, tickets and passengers under the former, and money, transfers and total fare registrations under the latter.

Poole Brothers, Chicago, Ill., are exhibiting in spaces 510 and 512 a line of their illustrated and colored railway booklets, timetables, folders, tickets and maps.

* * *

E. P. Sharp is representing the interests of the Lumen Bearing Company, Buffalo, N. Y., at the convention. The Ideal trolley wheel is exhibited by the R. D. Nuttall Company, spaces 142-144.

* * *

M. Welte & Sons, Inc., New York, N. Y., have on exhibit in Aquarium Court a large-size Welte automatic full brass band of the type supplied for band stands or dance pavilions in parks. The instrument is operated by a G. E. motor. A C. Terwilliger is the representative in charge.

* * *

Although Le Carbone Company, Paris, France, has an elaborate exhibit of seven cases of carbon brushes of every kind, shape, size and use, W. T. Jeandron, its United States agent, says, "I am only exhibiting a brush of uniform quality and universal use." Space 12 is the home of this exhibit.

* * *

Flood & Conklin Company, Newark, N. J., are showing at space 18 their four-coat Simplex system of car painting. Three car sections, one in green, one in yellow and an inter-urban car section in red, show each coat separately. These sections have been exhibited at four consecutive annual conventions without refinishing or touching up.

* * *

Among the new features of the exhibit of the American Mason Safety Tread Company this year at space 541 are the Stanwood non-slipping, self-cleaning car steps and the Mason non-slipping safety ladder shoes. The Mason company finds the use of safety treads is increasing rapidly. Its business up to date for this year shows an increase of 50 per cent over that done during the same period last year.

* * *

Railway Improvement Company, New York, has spaces 586-588, where it is displaying two types of coasting time recorders, the elapsed time and the standard recorders; two types of Ferranti car watt-hour meters, German current clocks and Hedley anti-climbers. A number of types of sanitary car straps are also displayed. More than 100,000 of these straps have been sold within the past two years, and they are now standard on a number of roads.

* * *

Edgar Allen American Manganese Steel Company, Chicago, Ill., is showing a complete line of "electric special ground manganese steel" gears and pinions in space 500. In order to demonstrate the strength, toughness and peculiar hardness of its manganese steel products, several gears and pinions on exhibit have been subjected to pressure tests. Other special products included in this exhibit are a number of manganese steel samples required by industries outside the electric railway field.

* * *

Joseph Dixon Crucible Company, Jersey City, N. J., is showing at space 16 a full line of its products, including flake graphite for general use, graphite grease especially prepared for various parts of electric railway mechanisms as well as for general manufacturing purposes, Dixon's silica-graphite paint, one quality, four colors; graphite crucibles for the foundry, boiler graphite, foundry facings, belt dressing, generator brushes, resistance rods and a full line of Dixon pencils, crayons, erasers, etc.

* * *

The Acme Indicator Company, space 514, believes it has the most striking device at the convention, namely, a working exhibit of a street announcer and changing advertisement sign. The device is operated by small contactors located over the track which controls the supply of current of a solenoid and plunger device. The announcer is just being

put on the market after having been tried out experimentally for ten years or more. A unique feature of this device is that the machine is controlled by the movement of a cloth belt.

* * *

The National Malleable Castings Company, Cleveland, Ohio, is exhibiting in spaces 505, 507 and 509 its automatic radial coupler and draft gear for electric cars, which will meet all M. C. B. requirements. The radial feature of this coupler allows it to spring freely on curves. Coupling or uncoupling is operated with perfect safety by means of levers placed on both sides of the car. The company is also exhibiting a combination anti-rail creeper, tie plate and rail brace. The brace is effectually held against movement from vibration by a key driven through the slot and brace into engagement with a curved slot in the tie plate.

* * *

At space 522 the Armstrong Cork Company makes its first public exhibition of a new brick, which is a non-conductor of heat. This is made of pulverized cork and diatomaceous earth or chalk. The cork is burned out, leaving a very porous brick, the heat-resisting qualities of which are about eight times as good as firebrick. It is so light that it floats in water. The company has control of a German patent for a pipe covering, using the above-mentioned chalk and asbestos. This is used without chemical treatment, preserving the natural air cells. To show what can be done in the way of covering large pipe a section of 36-in. pipe covering has been made for exhibit. Pipe covering of this kind is being used by the Pennsylvania Railroad, New Haven railway and others.

* * *

As general sales agent Charles N. Wood Company, Boston Mass., is using space 129 to present the Chapman automatic signal for electric railway service. The salient features of the demonstrations given are as follows: that the signal is entirely automatic, that it is strictly a semaphore signal, that the contactors are positive in their action and cannot give a false indication, that grounding of the line wires gives a stop signal, that it is impossible to get a clear signal at either end with a car in the block, that the maintenance of the signal is low because its construction is right, and that its parts are interchangeable and easy of access. Charles N. Wood will be glad to see visitors, while W. N. Chapman, O. E. Chapman and George H. MacGilroy will explain how the signals operate and why so many railways are buying them.

* * *

The Gold Car Heating & Lighting Company, New York, is up to the minute with its automatic temperature control exhibited in spaces 316 and 318, together with a full line of electric heaters and ventilators. This temperature control shuts off the heaters the moment the car reaches a certain set temperature and can be adjusted to any degree desired. It is composed of two principal parts a thermostat and an automatic switch. The thermostat has a temperature sensitive diaphragm containing a volatile liquid which expands with rise in temperature and contracts with fall in temperature. This diaphragm actuates a lever which flies back and forth according to the expansion and contraction of the diaphragm, making a wide quick break in either direction. The automatic switch has a solenoid-operated mechanism which operates the main switch and is so arranged that the current is on the operating mechanism for a brief period only when cutting in or out. The distinctive features are a quick and wide break with no sparking or arcing at contact points at the thermostat; the current is on the operating mechanism of the switch only momentarily during the period of change from on or off, and no resistance coils are necessary. The apparatus is on exhibition in operation on a 550-volt circuit. An electric thermostat for steam-heated cars is another feature of the exhibit.

The Bonney-Vehslage Tool Company, Newark, N. J., is displaying in space 386 a neat case of all types of B-V ticket punches, some of which are standard on many electric railways in this country and abroad.

* * *

L. O. Duclos, A. E. Duclos and R. F. Norvelle are attending to the Massachusetts Chemical Company's interests at the convention. An attractive reception room has been made of the booth at space 335, where customers and friends are cordially welcome.

* * *

The cordial smile and familiar figure of Walter Chur prevails at space 526 of the American Railway Supply Company, New York. Mr. Chur's showing is a neat and attractive exhibit of ticket punches, badges and buttons in all varieties of finish and colors. Walter Chur is one of our oldest exhibitors. May he still be with us for many years to come.

* * *

A feature of the exhibit of the Lord Manufacturing Company, New York, at space 537, is a full-size air compressor demonstrating the operation of the company's screenless air cleaner for air brakes. Demonstrations of lightning arresters for railway service are also given. Grounding devices, Earll trolley retrievers and catchers, controller regulators and rail bands are some of the other specialties exhibited.

* * *

American General Engineering Company, New York, is represented at the convention by George E. Austin and Fred La Chance. This company has recently taken over the New York office and warehouses of the Walpole Tire & Rubber Company and the Massachusetts Chemical Company. In conjunction with Charles D. Anthony it will represent these interests in New York and for export business.

* * *

A railing of neat Samson cordage forms an appropriate decoration for the booth of the Samson Cordage Company, Boston, Mass., at space 502. A large variety of trolley cord, bell and register cord, waterproof cord and wire center bell and register cord compose the exhibit. To match the interior decoration of cars, this company is prepared to furnish various colors of cord, blue, red, drab and white. The famous Samson trade mark in a plaster cast is conspicuous on a table in the center of the booth.

* * *

A feature of the exhibit of the Automatic Ventilator Company, New York, in space 317 is the Royal Worcester renewable metal hand broom for track and general purposes. The head of the broom is made of pressed steel, which is practically indestructible. The wire fillers are renewable and can be changed cheaply, quickly and easily. The company is also showing its standard automatic car ventilators and with a working model of a car shows the various movements of air currents which take place when the car is in motion.

* * *

The Waclark Wire Company, New York, has an interesting exhibit in spaces 380-381. A remarkable example of drawn copper wire is shown, consisting of a "whip" of wire drawn in one piece from $\frac{7}{8}$ in. to 0.001 in., the size of a hair. The following items are also in the exhibit: a solid bar of copper weighing 25 lb., from which wire is drawn; all sizes of weatherproof wire; trolley wire, figure 8 and American standard grooved; lightning rod cable, underwriters' insulated wires and cables; square and flat magnet wire; large reels of bare and insulated wires and cables.

* * *

A feature of the exhibit of Albert & J. M. Anderson Manufacturing Company, Boston, Mass., in space 319, is a new locking device for disconnecting switches. It locks the switch so that it cannot blow open under short-circuits. Another feature is a 20,000-amp. remote-control switch and a malle-

ble-iron insulated overhead crossing. There is also exhibited a renewable frog for overhead construction. The frog can be replaced without disturbing the guy wires by simply removing three bolts and substituting the new for the old frog. Besides these specialties there are exhibited the standard and Aetna insulated overhead line material, line specialties and the Sprague rotary sander.

* * *

At the entrance to Machinery Hall, space 107, the United States Wood Preserving Company, New York, has an attractive booth in which it is exhibiting samples of treated and untreated wood paving blocks. To illustrate the durability of this product a block is on exhibition taken from a piece of pavement laid eleven years ago in Boston, Mass., and still in service. This block is splendidly preserved and is worn less than $\frac{1}{8}$ in. The popularity of wood block as a pavement is shown by the fact that the city of Detroit has now nearly 30,000 sq. yds. of wood pavement. Chicago has nearly 30 miles of wood block paved streets, and is now planning to pave the entire loop district with wood blocks. Philadelphia has 80,000 sq. yds. of wood block pavement.

* * *

As usual, the Goldschmidt Thermit Company's exhibit is attracting the attention of railway delegates to space 211. The features of this exhibit include Thermit rail welding and rail grinding. This company's standard rail-grinding machine, embodying all the latest developments, is shown in actual operation on a track section. The recent improvements in the rail grinder include a power derailing attachment, increased speed in cutting and automatic return for use in the grinding process. Among the samples of "Thermit standard rail welding" this company is showing its new type of insert joint installed in a short track section. Samples of all the other types of Thermit rail welds, compromise joints and special metals manufactured by the "Alumino-Thermit" process are included in the exhibit.

* * *

At spaces 587-588 the Consolidated Car Fender Company, Providence, R. I., shows working models of type C Providence fender and H-B life guard and type A Providence fender and Providence wheel guard. The H-B life guards, of which there are now in daily service more than 60,000 equipments, have been considerably improved since this company took over the business about eighteen months ago. The knees of the basket are now made of malleable iron separately, and the frame of the basket is bolted to knees, which in turn are bolted to the support attached to the car. This construction has greatly lowered the maintenance cost, as any broken part can be quickly replaced. Formerly, the whole basket was made in one piece, so that when damaged the whole equipment had to be discarded. The lowering and raising of the apron is now accomplished quickly by means of a set screw, instead of unscrewing four bolts and nuts and changing to required height as was formerly customary. The platform pin which raises the guard after it has been dropped has also been simplified in a like manner. Improvements made in the fenders also tend to lower maintenance cost. The old rubber bumpers have been replaced by light malleable-iron bumpers. Instead of a spiral spring at each end of the basket, the last finger of the basket has been slightly straightened and raised, thus keeping objects caught by the fender from rolling off. To obviate mistakes in ordering fenders or wheel guards the company requires blueprints from the railroads. From these blueprints and measurements the company's draftsmen design an equipment which is sure to fit the car perfectly. There are also on exhibition two types of Narragansett steel lockers. A. J. Thornley, A. E. Thornley and G. H. Hollingsworth, as well as the staff of Wendell & MacDuffie, the general sales agents, are representing the company at the convention.

E. G. Long Company, New York, is using space 374, where E. H. Mays and Frank Van Anden are meeting their customers and friends. Spiral and elliptic springs, brake pins, and long-wear bushings are exhibited.

* * *

W. Meeteer, of the Wallace Supply Company, New York, calls attention to some extra fine bronze car trimmings similar to those furnished to the Jewett Car Company for the 100 cars it recently built for the Boston Elevated Railroad.

* * *

Sterling Fare Register Company, Newark, N. J., holds forth at space 386 with its standard types of fare registers, Sterling double No. 16; two types of Sterling single Nos. 5 and 15, and two types, F and G, of recording registers. Various types of register fittings are also shown.

* * *

Worn-out brake pins, a small but very important part of car equipment, are most instructive exhibits of the Bennis Car Truck Company, Springfield, Mass. Brake pins that last and never wear out or break are also shown. These are made of case-hardened forged manganese steel. Flint stone steel brake heads and brake levers and bronze motor and journal bearings are also exhibited. Warren L. Boyer and T. S. Adams are attending the convention.

* * *

The Chillingsworth seamless sheet-steel gear cases, so extensively used in Europe, are exhibited at space 511 at the convention for the first time under the auspices of Thayer & Company, Inc., New York. A Westinghouse 101 two-point and suspension, seamless, rivetless gear case merits special attention. The smoothness of the solid-drawn sheet-steel gear case is shown by two halves of a gear case before the lugs are put on. The company is represented at the convention by George K. Wannamaker.

* * *

The familiar face and figure of J. G. Buehler, the president of the Columbia Machine Works & Malleable Iron Company, Brooklyn, N. Y., is missed by his friends at space 622. Mr. Buehler is out in the Far West and will not be able to attend the convention. The interests of the company are, however, well taken care of by James Brady, W. R. Kerschner and M. F. Zigler. On exhibition are some fine samples of sheet-steel gear cases. A Westinghouse 56 welded gear case is particularly noticeable by its neat and substantial appearance. Columbia car replacers and a new coil taping machine are also on exhibition.

* * *

Barnes & Kobert Manufacturing Company, New Haven, Conn., is a newcomer at the national conventions. It is showing a new method of manufacturing wood strain insulators, with cold-drawn steel fittings and a one-piece cap that is uniform and practically indestructible. Cable hooks of an original design are also shown. The cable rack for manhole service is strongly constructed. It is claimed that a rack 10 in. long will sustain a weight of 200 lb. at the extreme end. A new mushroom guy anchor that "stays put" when in the ground is also exhibited. A new type of malleable iron insulator pins, designed to fit present types of wood cross-arms, is also shown. The company is represented at the convention by Frank Kobert, Fred Nason, E. R. Bryant and Charles Schmitt.

* * *

A sample truck of a set of 500 built for the Boston Elevated Railway by the Taylor Electric Truck Company, Troy, N. Y., is the subject of much favorable comment among the railway men who have visited the Taylor exhibit in Machinery Hall. This truck, although weighing only 7500 lb., has the strength and stability of trucks of much greater weight. It is built on the Taylor swing motion principle, with approved three-point motor suspension and inside-hung brakes. There are also exhibited three other types of

trucks—the improved short-wheelbase truck with outside-hung motors and inside-hung brakes, the M. C. B. triple spring truck, and the extra heavy single truck. Truck and car spiral and elliptic springs of the company's own manufacture are also exhibited.

* * *

The central feature in the exhibit of the Independent Lamp & Wire Company, space 517, is a demonstration of the effects of heat on cotton wire coverings. A transformer core is arranged so that loops made of half cotton and half asbestos-covered wire, No. 21, can be linked with it. When current is applied to the primary, the loops are heated up to incandescence and the effects of the two coverings are clearly shown. The apparatus is arranged for a secondary submerged in water and connected to a 220-volt lamp to show the water-proof qualities of the insulation. The company also has exhibits of tungsten lighting of cars and automobiles and a large frame showing the entire development of an asbestos-covered wire.

* * *

Ackley Brake & Supply Company, New York, in spaces 117-119, is a feature of the exhibit of the Acme Limit-Stop brake staff. To illustrate the application of this device a working model is shown. This brake staff is designed for light cars which are usually operated with the old plain brake staff. The device regulates the number of turns of the brake handle after the pawl is released from the floor ratchet. It can be regulated according to the number of turns to which it is desired to limit the staff. By a simple adjustment of the limit-stop rings any desired travel of the handle can be obtained. It is equipped with roller bearings, and as the operating shaft is solid, the exact pressure exerted at the handle is delivered to the eccentric chain drum. It is extensively used in England and on the Continent.

* * *

In space 309 the Drew Electric & Manufacturing Company, Indianapolis, Ind., is showing its new "Samson" pipe insulator. This device consists of a dense porcelain tube 8 in. to 18 in. in length, depending on service requirements, which is capped at each end with bronze castings. The porcelain is heavily glazed inside and out. Circular and longitudinal grooves at the ends, into which lead is poured after the caps are applied, furnish a bond between them. The dimensions of the tube and end caps provide a liberal factor of safety against pressure and mechanical strains. This insulator is installed in gas and water service pipes which have been subject to electrolysis and serves as an insulating medium between it and the main pipe system. The caps at each end of the insulator provide an easy means of installing it in pipe service lines.

* * *

A demonstration of the comparative heat-resisting qualities of Salamander asbestos-covered wire and cotton-covered wire is a feature at space 517 of the Independent Lamp & Wire Company, New York. This is shown by a coil made up of asbestos-insulated wire and cotton-insulated wire attached to the secondary of a transformer. The cotton insulation is quickly disintegrated while the asbestos insulation remains intact. To show the damp-resisting and water-proof qualities of asbestos-covered wire, a coil immersed in water is attached to the pole of a transformer and a 250-volt lamp is connected between the ends of the coil. There are also exhibited forty-five different sizes of incandescent tungsten lamps from 6 watts to 500 watts in capacity. To illustrate the most advantageous way to illuminate the interior of a street car, a model of the inside of a car is shown lighted with miniature lamps. Asbestos tape from ½ in. to 4½ in. width is displayed, as well as reels of Salamander wire of various sizes and a neat case in which are shown all sizes of wire from No. 36 to No. 000. Those present at the convention are R. K. Dana and F. A. Duff.

The Cooper Heater Company, Carlisle, Pa., is represented at the convention by W. F. Pascoe, managing director, and C. S. Brinton, secretary.

* * *

The American Engineering Company of Philadelphia, Pa., at space 148 is exhibiting a quarter-size model of the Taylor stoker and drawings illustrating typical applications.

* * *

Sidney H. Wiecehouse, sales manager, Buckeye Engine Company, Salem, Ohio, and anywhere else a Buckeye-mobile can be sold, spent most of yesterday looking for a room. He got a good one at the Dennis.

* * *

The National Insulator Company of Pittsburgh, located at Ford City, Pa., manufacturer of high-potential porcelain insulators, is represented at the convention by Messrs. Davis and Patterson.

* * *

The Standard Motor Truck Company, Pittsburgh, Pa., has space 536, where it is prepared to show aluminum models of the various types of trucks manufactured; also framed photographs of the various types of trucks.

* * *

The Duff Manufacturing Company, Pittsburgh, Pa., space 637, is exhibiting its genuine Barrett jacks, Duff ball-bearing screw jacks, Duff improved high-speed ball-bearing screw jacks, Duff-Bethlehem forged steel hydraulic jacks, and Barrett motor lifts.

* * *

The Bayonet Trolley Harp Company in space 545 is showing the Bayonet Everlasting trolley base with detachable pole clamp. Some features of this base are shown for the first time. In addition, this company exhibits a complete line of its trolley wheels and sleet cutters.

* * *

An attractive reception room with numerous hosts composed of its representatives largely makes up the exhibit of the Rail Joint Company in spaces 350-355. A complete line of sample rail joints of the various types manufactured by this company to meet the requirement of electric railway service is arranged conspicuously about the booth.

* * *

Edwin S. Woods & Company, Chicago, Ill., are making their first appearance with an exhibit in space 543. They are featuring a new type of anti-friction center-bearing of original design and maximum carrying capacity. They are also showing two new developments in side bearings in addition to the well known "Woods" roller side bearing.

* * *

The Nickel-Chrome Chilled Car Wheel Company, space 529, is represented by Robert C. Totten. He is demonstrating his one-wear, tired, chilled 33-in., and 36-in. N. C. one-wear tire. Broken pieces of nickel-chrome 33-in. wheels which have made 80,000 miles are also in the exhibit as well as specimens of nickel-chrome alloy and nickel-chrome chilled iron.

* * *

The exhibit of the Atlas Railway Supply Company in spaces 118-120 includes, among its standard line of tie plates, braces and special and standard rail joints, the Fancher portable track grinder, a new device for grinding down rail joints. It is easily fastened to the track and is operated by one man. Its simplicity seems to be a pretty strong recommendation for low maintenance cost.

* * *

The Trigger Lock Reversible Controller Finger Company has on display in space 149 a controller obtained from F. J. Doyle, master mechanic of the Schenectady (N. Y.) Railway. This controller contains a set of fingers that have been in actual use over a year. There may also be seen

in the booth numerous samples of fingers, especially K-34-35 main and reversible fingers.

* * *

Transportation Utilities Company, New York, N. Y., in space 611 is exhibiting a stand representing a car platform fitted with a National steel trap doors and lifting devices and Flexolith composition flooring. Samples of National standard roofing, Chanarch flooring, "Tuco" friction curtain rollers and fixtures, are shown as well as an Acme pressed steel door.

* * *

The Chicago Pneumatic Tool Company, spaces 101-3-5, is showing a new pneumatic chain-driven reversible corner drill for reaming and drilling steel, said to be the only drill of this kind. Its two 150 ft. gasoline-driven air compressors furnish the air for all the exhibitors using compressed air. In addition the company has its standard line of pneumatic and electric-driven drills on exhibition.

* * *

The new Van Dorn automatic car and air coupler of the pivot tight-lock type is attracting unusual attention at the W. T. Van Dorn Company booth, space 533. This new coupler is shown in two types, one conforming to M. C. B. standards and another of the old type to meet more flexible service requirements. The features included in this new coupler are arrangements for through-train line connections by way of the coupler head and provision for wide vertical and horizontal variations without affecting its operation.

* * *

In space 519 the O. M. Edwards Company is exhibiting padlocks, window locks and catches, a full line of window fixtures with both raised and dropped sashes, and also trap doors permitting the loading and the unloading of passengers at high station platforms. The most striking feature of the exhibit is a window model showing fixtures particularly adapted to steel cars. Steel posts, steel stop-casings and steel curtain grooves are used, and instead of a plain piece of rubber at the top of the sash for a weather strip a piece reinforced by a strip of spring brass is employed in order to add strength and to avoid a permanent set to the rubber.

* * *

The DuPont Fabrikoid Company, Wilmington, Del., is displaying at space 323 something entirely new in railway curtain material. This company offers material that should be of interest to all mechanical departments for the following reasons: it can be washed cleaned and reglazed; more uniformity of color; prominent embossing; not affected by heat or cold; wide variety of patterns, harmonizing both with any interior or exterior; fully guaranteed for one year against peeling, cracking or blistering. The company asks: "Are you, and have you been entirely satisfied with the present products?" It believes that the use of this material will lower the cost of curtains through giving longer service.

* * *

The Nachod highway crossing signal shown at the Nachod Signal Company's space, No. 147, has an interesting feature whereby the motorman is assured that he has started the bell ringing at the crossing even though he cannot hear it. This is a flashing light run from the bell to the starting contactor, the flashes being caused by the movement of the bell clapper itself. The operation is shown on a miniature track plan, and trolley cars moved over this easily demonstrate the universal control of the system. The company is also exhibiting by means of miniature track plans two types of its single-track and double-track signals, the latter having the signals overlapped, together with relays, signal parts, high-speed, standard and short trolley contactors for operating various devices. The exhibit is in personal charge of C. P. Nachod.

The Standard Roller Bearing Company, of Philadelphia, Pa., has no exhibit at the convention this year, but is represented by J. G. Cooley, manager railway department, and C. H. Machen, sales manager.

* * *

Pittsburgh Insulating Company, Pittsburgh, Pa., is presenting in space 524 a full line of insulating cloth, paper and tape. P. F. Norvell and Clifton F. Schmidt, Jr., are representing the company.

* * *

John A. Roebing's Sons Company, Trenton, N. J., are showing in spaces 325 and 327 a complete line of wire products, including bare iron, steel and copper wire, wire rope and wire-rope fittings, wire cloth and netting, alligator wrenches and insulated wires and cables of every kind.

* * *

The Electric Traction Supply Company, space 151, is showing a new coupler known as the Bonney automatic car coupler, which has the exclusive feature of a double grip, is self-centering and has a gravity hold. They are also exhibiting the Berg folding fender and the Security wheel guard.

* * *

The Flexible Compound Company, Inc., Philadelphia, Pa., is represented at space 313 by T. H. Downward. It is showing samples of a flexible compound, which is an oil product and not a paint or varnish. The claim is made for this product that it is acid-proof and waterproof, and that it makes a perfect paint binder and thinner.

* * *

The Hess-Bright Manufacturing Company, of Philadelphia, Pa., is showing in spaces 143, 145 a general line of ball bearings of all sizes suitable for railway work. They are also exhibiting various types of journal boxes, and housings for motors to which ball bearings have been applied, a large pair of typical interurban wheels and axles running on ball bearings, and a 75-hp motor similarly mounted.

* * *

The Coin Controlled Lock Company, in space 532, is showing for the first time a new all-steel parcel checking locker for waiting rooms and terminal stations. It is automatic in action and guarantees perfect safety of parcels because the owner carries the key with him till he returns. It is made in three sizes containing eight, twelve and sixteen compartments to meet the requirements of different services.

* * *

The National Lock Washer Company's exhibit in spaces 525 and 527 includes the new "National" wedge lock and other devices of this company's manufacture. All sash locks are equipped with safety features to prevent opening under severe vibration, and each is arranged to lock in the lowered position. This company is also showing its complete line of "National" lock washer for general use on electric railways.

* * *

At space 23, the Pennsylvania Steel Company has a characteristically varied assortment of switch pieces for street railways in addition to several types of switch stands, spring boxes and miscellaneous material. Among the most important items are the hook heel tongue switch, the pinless tongue switch, the rapid renewable hard-center frog, T-rail frogs for interurban and steam road traffic, and samples of Mayari steel which is adapted for many uses from light, strong forgings to Mayari bessemer rails.

* * *

The Yarnall-Waring Company, Chestnut Hill, Philadelphia, space 139, shows a full-sized 25,000-lb. per hour "Lea" V-notch recording meter in continuous service operated by means of a direct-connected motor-driven centrifugal pump. In addition to this working exhibit, there are sectioned Simplex seatless blow-off valves showing the internal con-

struction of an actual valve; also sections of Simplex pipe joint clamps and the clamps complete as installed on pipes; also the Simplex Caskey hydraulic valve, which is largely in use in big steel and rubber mills.

* * *

American Safety Signal System, Louisville, Ky., is exhibiting at space 152 a movable street car signal device which is carried at the front and rear of each car to warn passengers alighting from one car and stepping immediately in front of an approaching car on the opposite track. As the fronts of the cars pass each other, the automatic contactors on the roof of each car set an electric relay, which in turn sets an electrically operated bell. This bell is continuously rung until the rear contactors pass each other, which in turn energizes a circuit breaker, opens the bell circuit and resets the mechanism for the following car.

* * *

The Allis-Chalmers Manufacturing Company, Milwaukee, Wis., at space 134, is exhibiting a complete straight-air equipment. The chief feature is the new type AC-3 gearless air compressor, which weighs only 390 lb., and which is only 14 in. high. The elimination of gears and pinions prevents the breakage of armature and crank shafts. Type AA-7 geared compressor contains gears cut in one piece. Clamp bearings reduce the trouble of strained armatures. This company is also exhibiting its type "C" engineer's valve, of poppet valve construction, and without ground joints. A. J. Cooper, who has been recently transferred as sales representative of the Boston office of the company, is in charge of the exhibit.

* * *

The National Brake Company, Inc., is using an instructive device for testing the tension in the brake chain produced by various types of brakes. Several of these are mounted on a platform beneath which provision is made for connecting a dynamometer in the brake chain. The tension can thus be read as different pressures are applied to the brake handle. The special feature of the exhibit is the new Peacock brake, which differs from the older form in several important particulars. In the first place, it is 5 lb. lighter, gain in weight being secured by cutting out a part of the lower bearing support which is still ample for its purpose. The pinion is also carried in a cup bearing at the bottom of the socket by means of an extended hub. The pinion carries a stop which engages with a corresponding stop on the gear and insures the return of the gear to its proper place when the brakes are released. This insures a saving of time in applying the brakes and thus obviates danger of accident. To insure uniform wear on the gear teeth, the gear ratio is made odd so that the same teeth do not mesh.

* * *

The combined exhibit of the United States Metal & Manufacturing Company, the Tool Steel Gear & Pinion Company and the Pollak Steel Company is situated in spaces 620, 621 and 623. The exhibits are displayed in an attractively arranged and furnished booth, a portion of which is covered by a Japanese pergola. Among the most interesting products exhibited by these companies are samples of gears and pinions loaned by different electric railway companies which have made an average of 200,000 miles each in city service where untreated gears and pinions made about 10,000 miles. Another feature included in this exhibit is a number of samples of heat-treated and oil-tempered axles for street and interurban railway cars. These axles are treated by a special process which gives maximum tensile strength, greater elastic limit and consequent reduction in the metal area required for given conditions. One axle, after being in service one year, has been bent flat without heating to demonstrate the elasticity resulting from the special treatment. Another axle is shown in the form of a billet finished at one end and forged at the other.

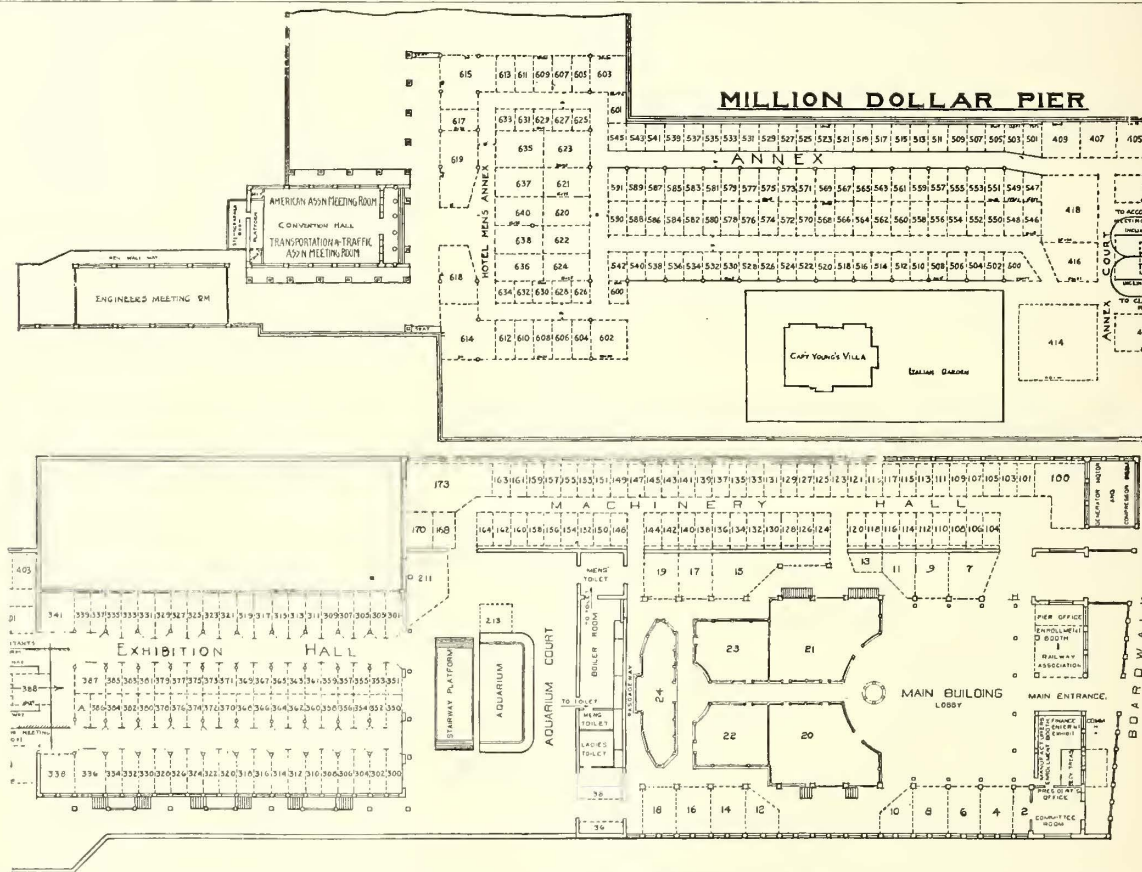
List of Exhibits

The exhibits at the American Electric Railway Association convention on Young's Pier are so arranged that a systematic trip can easily be made to see them all. The best route for a delegate to take is that leading to the right into Machinery Hall directly upon entrance from the Boardwalk. Here, ranged on the left and right sides respectively, will be found booths 104-164 and 100-163. Turning the corner then, past the aquarium on the left and booths 173-211 on the right, the delegate will find his way into the right-hand aisle of Exhibition Hall, past booths 301-341 and 351-387. An incline at the end of this aisle leads into the Annex Court, from which another incline, leading backward, opens

Ackley Companies, New York, spaces 117, 119. Anger improved automatic brake adjuster, "Tool Steel" gears and pinions, "Limit Stop" brake staff, "Automatic" trolley guard, Monarch refillable fuse, Sjoberg car vestibules. Represented by Griffin S. Ackley, E. E. Daglish, George Herman Anger, James Arthur Noble, L. W. Horne, Jerome J. Jacoby.

Acme Indicator Company, Cleveland, Ohio, space 514. Street indicator and advertising machine. Represented by S. W. Small, M. D. Wells, Moses C. Davis, N. T. Porter, C. C. Johnson.

Allen, Edgar, American Manganese Steel Company, Chicago, Ill, space 500. Gears and pinions of electric special ground manganese steel for electric railway motors of various types and sizes; manganese steel castings of



into the Claim Hall and the Accountants' Hall. Going ahead from the first incline, however, the delegate will see exhibits 405-545 on his right and 547-591 on his left on the right-hand aisle of the Annex. Around the corner to the right from booth 545, in the Hotel Men's Annex, in booth 603, will be found a gentlemen's smoking and rest room. In the rear right-hand corner, in booth 615, is the ladies' reception and rest room. Turning to the left at this point, the delegate comes to the entrance on his right, which he may take in getting out to the Greek Temple, the home of the American Association and the Transportation & Traffic Association, or farther out to the Engineering Hall. The exhibits, however, lead straight ahead, and with the first turn to the left the trip back on the other side of the pier is begun—past booths 612-602 and 634-626 in the Hotel Men's Annex, booths 542-500 and 500-546 in the Annex, and booths 338-300 and 386-350 in Exhibition Hall. At this point the aquarium is passed on the other side and the delegate may wander down the side aisle of the Main Building, past booths 18-2, or else first visit booths 24-20 in the center and 19-15 on the opposite side, or vice versa, and thus find himself back at his starting point, the main entrance from the Boardwalk.

various character. Represented by Walter S. McKee, Walter H. Evans.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., space 134. Operating exhibit rack of air brake apparatus including gearless air compressor type AC-3; type AA-7 geared compressor; new engineer's valve, improved type of governor and other equipment. Represented by A. J. Cooper, J. T. Cunningham, H. W. Cheney, W. W. Power.

American Brake Shoe & Foundry Company, Mahwah, N. J., space 416. A. E. R. A. standard brake shoes and brake heads, types of brake shoes. Represented by F. W. Sargent, E. L. Janes, E. B. Smith.

American Car and Foundry Company, New York, N. Y., space 619. Vendor of freight and passenger cars, cast iron chilled wheels, forgings, valves and castings. Represented by Scott H. Blewett, Clark Dickerson, C. D. Eaton, B. Wilson, John McE. Ames, A. E. Ostrander, William C. Dickerman, John L. McDowell.

American Engineering Company, Philadelphia, Pa., space 148. Model "Taylor" stoker. Represented by M. Alpern, Robert O'Shea, E. G. Marble, R. W. E. Leach, A. H. C. Dalley, W. G. Stephen, S. J. Lenher, H. N. Scofield, William M. Chatard, J. H. DeVisser, G. J. Zanke, H. J. Malochee, H. D. Turing.

American Mason Safety Tread Company, Boston, Mass., space 541. Mason safety tread, Empire safety tread, Karbolith composition car flooring, Stanwood-Mason non-slipping structural car steps, Stanwood self-clean-

- ing, non-slipping car steps and treads, Mason non-slipping safety ladder shoes. Represented by Henry C. King, L. H. Myrick, Ralph C. Davison.
- American Railway Guide Company, Chicago, Ill., space 13. Bureau of Railway Information, Inquiries answered gratuitously and parlor car reservations made for the homeward trip. Represented by George E. Armstrong, E. Bjerregaard.
- American Railway Supply Company, New York, space 526. Metal cap and coat badges and buttons for employees of electric railway companies, also convention badges. Represented by Walter Chur.
- American Safety Signal System Company, Louisville, Ky., space 152. Full size model of signaling device to be attached to cars in actual operation. Represented by George C. Murphy.
- American Steel & Wire Company, Chicago, Ill., spaces 558, 559, 560, 561. Rail bonds, installing machinery for rail bonds, vibrating machine, signal and trolley wires. Represented by Thomas H. Taylor, George A. Craig, C. S. Knight, F. A. Keyes, C. A. Vaill, R. C. Moeller, Benjamin H. Ryder.
- Anderson Brake Adjuster Company, Omaha, Neb., spaces 356, 358.
- Anderson A. & J. M., Manufacturing Company, space 319. Switches, locking device for switches, 20,000-amp switch, rotary sander, overhead frogs, line material, trolley wheels, Aetna insulation, malleable-iron insulated overhead crossing. Represented by Ernst Woltmann, Alfred Anderson, A. H. Burns.
- Armstrong Cork Company, Pittsburgh, Pa., space 522. Nonpareil high-pressure coverings for steam lines, boilers, breechings and other heated surfaces, insulation for underground steam lines and Nonpareil cork covering for refrigerated drinking water lines. Represented by George R. Herrick, John R. Livezey, H. W. Prentiss, Jr.
- Atlas Railway Supply Company, Chicago, Ill., spaces 118, 120. Atlas rail joints, compromise joints, double or twin joints, insulated joints, special joints, Atlas braces and tie plates, Fancher track grinder, Vixen rail planer. Represented by J. G. McMichael, D. Thomson, M. T. Kilroy.
- Automatic Register Company, Chicago, Ill., space 378.
- Automatic Signal & Appliance Company, space 153. Spacing signal, controller, street intersection crossing signal. Represented by James B. Hoge, Charles W. Ward, G. Henry Nierman.
- Baldwin Locomotive Works, Philadelphia, Pa., spaces 540, 542, 600. City truck class "M," suburban truck class "K." Represented by S. A. Bullock, C. F. Dodson, M. T. Kirschke, Jr., W. B. Keys.
- Barnes & Kobert Manufacturing Company, New Haven, Conn., space 379. Wood strain insulators, guy clamps, cable hook racks, guy anchors, insulator pins. Represented by Frank Kobert, F. W. Nason, E. R. Bryant, Charles T. Schmitt.
- Bayonet Trolley Harp Company, Springfield, Ohio, space 545. Trolley bases with detachable pole clamps (anti-friction), trolley harps (detachable), trolley wheels and self-lubricating trolley axles, sleet cutters (reversible, detachable). Represented by R. A. Garlough, J. M. Olinger.
- Bemis Truck Company, Springfield, Mass., space 503. Brake heads, brake levers, forged manganese steel brake pins, case-hardened brake pins, bronze motor and journal bearings, samples of worn brake pins. Represented by Warren L. Boyer, T. S. Adams.
- Brach, L. S., Supply Company, New York, space 150. Crossing signals, hydro grounds, lightning arresters. Represented by L. S. Brach, A. G. Brach.
- Brill, The J. G., Company, Philadelphia, Pa., spaces 4, 6, 8, 10. Trucks No. 27-GE-2, Radiax E-1, No. 39-E-1 and No. 27-MCB-2; seats, cane and wood, 18-in. back "Winner," cherry slat, stationary rattan-covered, one roll lined and one roll unlined rattan, large and small model brake hanger, exhaust ventilator, "Dumpit" sand box, "Dendenda" gong, folding gate, ratchet brake handle, set of springs, track scraper, stand of motormen's seats and side bar of No. 21-E truck, including wide wing journal box. Represented by S. M. Curwen, W. H. Heulings, Jr., J. W. Rawle, S. T. Bole, G. M. Haskell, A. N. Hargrove, J. E. Brill, W. S. Adams, M. J. Oswald, S. M. Wilson, F. L. Markham, J. A. Dawson, T. Finnigan, H. A. Heulings, G. H. Tontrup, R. H. Thompson, E. T. Bronenkamp, F. W. Brill, D. B. Dean, H. E. Smith, A. H. Pease, C. F. Johnson, R. B. Liddell, C. F. Rice.
- Buda Company, Chicago, Ill., space 311. Manganese center switches, mates, frogs, switch-locking devices. Represented by William Prescott Hunt, Jr., H. S. Evans, R. B. Fisher, F. W. Marvel, D. C. Smith.
- Burroughs Adding Machine Company, Detroit, Mich., spaces 582, 583. Burroughs adding, listing and non-listing machines, hand or electrically operated, Burroughs seventeen-column machine, electrically operated, designed to make daily statements covering distribution of car earnings; also machine designed for pay-roll work. Represented by F. A. Willard, David Lesseig.
- Buyers' Index Company, Chicago, Ill., Railway supply index catalog, an index of railway supplies for steam and electric railways. Represented by D. J. Beaton, C. W. Cozzens, N. F. Rehm.
- Cambria Steel Company, Johnstown, Pa., space 518. Represented by J. L. Replogle, C. B. McElhany, M. G. Baker, L. B. Morris, W. S. Ottinger, E. Hoover Bankard.
- Carnegie Steel Company, Pittsburgh, Pa., spaces 546 to 553. Piece of track showing various stages of concrete construction with use of steel cross ties; Duquesne rail joints, rolled steel wheels, rolled gear blanks and finished gears, steel-sheet piling, Vanadium steel specialties, sample of heavy steel tie being manufactured for the Pennsylvania Railroad, automatic stereopticon showing views of steel cross ties and steel sheet piling installations. Represented by N. M. Hench, Robert Coe, John C. Neale, and representatives from district offices at Chicago, Cincinnati, Cleveland, Buffalo, Boston, Philadelphia and New York.
- Champion Recording Machine Company, Chicago, Ill., space 329. Transfer issuing machines. Represented by S. F. Champion, Jr., Robert B. Craig, Theron H. Goodspeed.
- Cheatham Electric Switching Device Company, Louisville, Ky., space 159. Automatic switch point throwing device designed to allow the motorman to throw the switch point electrically from the controller while car is in motion. Represented by Messrs. Stewart, Cheatham, Olmsted, Augustus and Bowman.
- Chicago Pneumatic Tool Company, Chicago, Ill., spaces 101, 103, 105. Dunthy electric track drills and grinders, general line portable electric drills and grinders, pneumatic drills and grinders, riveting and chipping hammers, electric spike drivers, electric wood-boring drills. Represented by Thomas Aldcorn, A. M. Andresen, F. S. Eggleston, Jr., J. B. Corby, George A. Barden, R. D. Haworth.
- Chicago Varnish Company, Chicago, Ill., spaces 584, 585. Ce-Ve process of painting and varnishing cars. Represented by George S. Bigelow, Fred. N. Gundrum, Jr., George G. Porter.
- Cleveland Frog & Crossing Company, Cleveland, Ohio, spaces 562, 563, 564, 565. Special work, Porter derailing switch, splice offsetting machine. Represented by George Stanton, L. G. Parker.
- Coin Controlled Lock Company, Chicago, Ill., space 532. Parcel checking locker. Represented by S. B. Cochrane, L. B. McKenny, Lawrence McGreal.
- Columbia Machine Works and Malleable Iron Company, New York, space 622. Sheet-steel gear cases, coil-winding machine, car repacers. Represented by James Grady, W. R. Kerschner, F. M. Zigler.
- Consolidated Car Fender Company, Providence, R. I., spaces 587, 589. Providence fender, Providence wheel guard, H. B. wheel guard. Represented by Albert E. Thornley, George Hollingsworth, Henry E. Osterreich.
- Consolidated Car-Heating Company, Albany, N. Y., space 22. Electric ventilating units, coal burning ventilating units, special fuse panels, special jumper connectors, high-voltage buzzer signal system, motorman's signal light system, push-button switches, magnetic air valves, pneumatic door operators, thermostatic control of car heaters, car-starting relays, tilting heat deflectors, special resistances. Represented by Thomas Farmer, Jr., W. S. Hammond, Jr., James F. McElroy, C. C. Nuckols, H. L. Hawley, M. C. Carpender, J. H. McElroy, F. Avery, G. E. Oakley.
- Corliss Carbon Company, Bradford, Pa., space 513. Machine for testing carbon brushes and display cases illustrating various types and kinds of carbon brushes. Represented by Otto Koch, A. Mullhaupt, Jr., H. C. Gooding.
- Curtain Supply Company, Chicago, Ill., space 638. Car Curtains, car curtain fixtures, curtain rollers, brackets, cab and vestibule curtains, diaphragms, sash balances. Represented by R. F. Hayes, George E. Fox, S. W. Midgley, F. M. Egolf, W. H. Forsyth.
- D. & W. Fuse Company, Providence, R. I., space 333. In-

- closed fuses and cut-outs (all voltages), fuse boxes, service switches, Deltabeston magnet wire, Deltabeston coils and insulating materials and a new line of magnetic chucks. Represented by Willard S. Sisson, Herman F. MacGuyer.
- Dalton Adding Machine Company, Poplar Bluff, Mo., spaces 572, 573. Dalton adding, listing, and calculating machines. Represented by C. J. Nelis.
- Dayton Fare Recorder Company, Dayton, Ohio, spaces 386, 387. Fare recorders, combination fare recorders and fare boxes, and fare boxes. Represented by F. A. Groves, Victor Courtright, F. B. Kennedy, C. N. Yates.
- Dixon, Joseph, Crucible Company, Jersey City, N. J., space 16. Dixon graphite brushes, silica-graphite paint, lubricating graphite, greases, crucibles, pencils, belt dressing and various graphite products for electric railway use; gear and pinion with more than 225,000 miles service lubricated with the Dixon graphite wood grease. Represented by H. W. Chase, J. A. Condit, J. M. Willitts, L. H. Snyder.
- Drew Electric & Manufacturing Company, Indianapolis, Ind., space 309. Samson pipe insulator (for electrolysis), protective and reclaiming sleeves for iron and steel poles, Drew motormen's mirror, bronze and malleable trolley frogs, Samson trolley splices. Represented by James H. Drew.
- Drouvé G., Company, Bridgeport, Conn., space 607. "Anti-Pluvius" puttyless skylights, "Straight-Push" sash operator. Represented by William V. Dee.
- Duff Manufacturing Company, Pittsburgh, Pa., space 637. Barrett jacks, Duff ball-bearing screw jacks, Duff improved high-speed ball-bearing screw jacks, Duff-Bethlehem forged-steel hydraulic jacks, Barrett motor lifts. Represented by E. A. Johnson, G. E. Watts, C. A. Methfessel.
- Du Pont Fabrikoid Company, Wilmington, Del., space 323. Fabrikoid car curtain material, Fabrikoid upholstery leather. Represented by C. Hallock Silkman, H. W. Wivel.
- Eclipse Railway Supply Company, Cleveland, Ohio, spaces 567, 569. Eclipse life guard, Eclipse wheel guard, Acme fender, Eclipse trolley retriever. Represented by Ross Forward.
- Edwards, O. M., Company, Inc., Syracuse, N. Y., spaces 519, 521. Window fixtures, metal trap doors, sash balances and shade rollers for street and interurban railway equipment. Represented by E. F. Chaffee, C. H. Rockwell, W. C. Bradbury, T. P. O'Brian.
- Electric Railway Improvement Company, Cleveland, Ohio, spaces 566, 568. Electric weld rail bonding car in operation, apparatus for copper-welding feeder cables and bonds of large capacity, sample rail bonds of various types and sizes. Represented by E. E. Schmid, M. T. Stanton, Gerald Howatt, L. J. Rinker, William E. Huber.
- ELECTRIC RAILWAY JOURNAL, New York, spaces 7, 9, 11. Copies of the ELECTRIC RAILWAY JOURNAL, Annual Convention Number, Convention Daily issues, *Electrical World*, *Engineering Record*, *Metallurgical and Chemical Engineering*, McGraw Electric Railway Manual, Electric Railway Dictionary, McGraw Electrical Directories (electric railway and central station editions). Represented by James H. McGraw, Hugh M. Wilson, H. W. Blake, F. Kingsley, W. Jackson, H. H. Norris, E. M. Haas, F. Nicholas, G. J. MacMurray, F. J. Armeit, R. R. Brunster, L. I. Grinnell, A. J. Cleary, L. E. Gould, C. A. Babbiste, G. W. Elliott, W. K. Beard, E. J. Hunt, E. B. Cooke, J. C. Raymond, C. A. Henley, L. W. Seeligsberg, P. T. Coburn, F. C. Wells and the Misses Phelps and Johnson.
- Electric Service Supplies Company, Philadelphia, Pa., space 414. Garton-Daniels lightning arresters, the Automotoneer, "Protected" rail bonds, Keystone trolley catchers, Keystone steel gear cases, a complete line of Keystone lamp guards, both portable and stationary types, Keystone overhead material, Peerless heavy-duty banding lathes, Peerless portable commutator slotters, Peerless portable tension machines and winding stands, Keystone pneumatic gong ringers, vacuum sanders and "leak-less" valves, Keystone motorman's seats, Keystone car destination signs, Keystone truss pins and Locke insulators and the "Automatic" trolley guard. Represented by C. J. Mayer, W. A. Armstrong, G. W. Cox, A. H. Englund, N. P. Hall, T. H. Henckle, H. G. Lewis, J. R. McFarlin, T. F. McKenna, F. C. Peck, L. H. Pike, J. V. E. Titus.
- Electric Traction Supply Company, space 151. Berg folding fender, security wheel guard. Represented by O. W. Uthoff.
- Esterline Company, Indianapolis, Ind., space 104. Golden-Glow headlights. Represented by W. McK. White.
- Flexible Compound Company, Inc., Philadelphia, Pa., space 313. Flexible compound system for car painting and finishing, water, rust and acid test demonstrations, paint and varnish demonstrations, insulating demonstrations, fabric waterproofing. Represented by Thomas H. Downward.
- Flood & Conklin Company, Newark, N. J., space 19. Simplex four-coat seven-day system of finishing street railway equipment. Represented by L. A. Williams, H. J. Kuhn, L. H. Conklin.
- Forged Steel Wheel Company, Pittsburgh, Pa., space 538. Leading types of solid wrought-steel wheels for electric railway service, including wheels which have been withdrawn after long periods of service and new wheels cut and drilled to demonstrate uniformity of material. Represented by J. B. Brady, R. L. Gordon, C. G. Bacon, H. G. Macdonald, W. G. Cory, J. P. Rapp.
- Galena-Signal Oil Company, Franklin, Pa., space 24. Reception room where representatives of the company will receive delegates and guests during the convention. Represented by delegates from various offices throughout the country.
- General Electric Company, Schenectady, N. Y., space 20. GE-200-C, 40-hp split frame motor; GE-203-L, 50-hp motor; GE-201-G, 60-hp motor; GE-233-A, 75-hp motor; GE-240-A, 100-hp motor; GE-205, 110-hp motor removed from a car of the Washington, Baltimore & Annapolis Railway; Sprague General Electric type MK control equipment, combined straight and automatic air-brake equipment, C-P27-B and CP-25-C types of air compressors, motormen's valves, 40-ton electric switching locomotive, sherardized line material, headlamps, flow meters, remote signaling device for signaling between switchboard and distant generating rooms, lantern-slide exhibit entitled "The Spirit of Progress." Represented by J. G. Barry, C. E. Barry, A. K. Baylor, J. C. Calisch, W. G. Carey, F. E. Case, W. J. Clark, S. T. Dodd, C. Dorticos, C. E. Eveleth, F. H. Gale, E. H. Ginn, W. J. Hanley, C. W. Hobson, G. H. Hill, C. A. Ives, H. N. Latey, J. F. Layng, J. R. Lovejoy, H. L. Monroe, R. E. Moore, C. C. Pierce, W. B. Potter, E. D. Priest, L. W. Shugg, C. E. Sprague, S. W. Trawick, O. E. Turner, E. P. Waller, W. A. Woolford, R. E. Wooley.
- General Vehicle Company, Long Island City, N. Y., space 100A. One 2-ton storage battery emergency wagon; one electric industrial truck, depot and warehouse type. Represented by E. W. Curtis, F. H. Wright.
- Globe Ticket Company, Philadelphia, Pa., space 314. City and interurban railway tickets in books, strips and sheets; Pope patent P. M. coupon and other styles of transfers, cash fare receipts, trip passes, one-way and round-trip tickets, mileage books. Represented by W. C. Pope, P. C. Snow, R. C. Osman, Earl Elliott.
- Gold Car Heating & Lighting Company, New York, spaces 316, 318. Gold's thermostatic control for electric heaters, thermostatic control for steam heating, ventilated core electric heaters, magnetic valves, electric switches, cyclone ventilators. Represented by E. B. Wilson, F. H. Smith, F. O. Bailey, F. T. Kitchen.
- Goldschmidt Thermit Company, New York, space 211. Goldschmidt Thermit rail grinder with power derailing device in operation; materials required for welding rails by new insert method, with samples of rail joints and compromise joints welded in this manner; metals free from carbon produced by the thermit process; samples of thermit, manganese thermit and nickel thermit; photographs of repairs to crank shafts, motor cases, etc., and samples of such welds. Represented by William Cuntz, F. W. Cohen, J. H. Deppler, H. S. Mann, J. G. McCarty, W. R. Hulbert.
- Griffin Wheel Company, Chicago, Ill., spaces 155, 157. Chilled-iron car wheels, F. C. S. wheels for city and interurban service. Represented by C. K. Knickerbocker, A. A. Hale, A. W. Brown, C. P. Dennett, H. N. Scott, W. A. Bennett.
- Hale & Kilburn Company, Philadelphia, Pa., spaces 576, 577, 578, 579. Walkover pressed-steel car seats, interurban car seats with and without arm rests, "Head-on" car seats, folding car seats, motormen's car seats, woven twill weave rattan seat covering, steel electric and interurban car framing, pressed-steel interior car finish, dressed-steel "Integral" window frames, steel sash frames, steel car doors. Represented by V. von Schlegell, A. F. Old, C. W. Laskay, H. R. Rochester, F. C. Edson, W. F. Cutler, R. H. Pilson, F. F. Robb, Christopher Eccles, George R. Barker.
- Hartshorn, Stewart, Company, East Newark, N. J., space 515. Car curtain rollers, vestibule rollers, sash balances and shade roller sundries. Represented by B. E. Bushnell.

- Herr Fender Company, New Orleans, La., space 530. Herr car fender. Represented by William Dickenson.
- Hess-Bright Manufacturing Company, Philadelphia, Pa., spaces 143, 145. Ball bearings for railway application, ball-bearing journal boxes, ball-bearing wheels and ball-bearing motors. Represented by W. L. Batt, E. W. Rubencame.
- Heywood Brothers & Wakefield Company, Wakefield, Mass., space 636. Pressed-steel car seats, canvas-lined rattan webbing. Represented by Bertram Berry, Scot Wade, E. C. Lang.
- Holland Trolley Supply Company, Cleveland, Ohio, space 357. Trolley bases, harps, wheels, pin plates, mine bases, wheels, air sander traps, valves, hoppers, overhead splices, fare boxes. Represented by H. W. Cole, J. G. Connally.
- Home Rubber Company, Trenton, N. J., space 359. Black sheet packing, automobile tires. Represented by A. R. Foley.
- Hunter Illuminated Car Sign Company, Flushing, N. Y., space 36. Destination car signs. Represented by Lytle J. Hunter, Fenley Hunter, E. R. Mason, S. I. Wailes, H. F. Keegan, Harry Reisinger.
- Independent Lamp & Wire Company, Inc., New York, space 517. Asbestos insulated magnet wire, asbestos tape sleeving, asbestos insulated armature and field coils, drawn tungsten wire lamps, carbon lamps. Represented by R. K. Dana, F. A. Duff.
- Indianapolis Switch & Frog Company, Springfield, Ohio, space 173. Indianapolis portable electric welders, Indianapolis portable electric grinders, Indianapolis corrugation removers, manganese crossings, general track work, demonstrations of reclaiming by electric welding and grinding; various types of electrically welded joint and bonding plates. Represented by E. C. Price, J. A. Foulks, E. S. Brannaman, W. H. Thomas, Thomas Finigan, F. J. Venning.
- International Register Company, Chicago, Ill., spaces 300, 302, 304. Coin registers and coin counting fare boxes with mountings for same, single and double fare registers, foot ringing devices, brackets, cord pulls, detachable cranks, handles and other car fittings, Heeren enamel cap and coat badges, and International conductors' ticket punches. Represented by Arthur H. Woodward, John Benham.
- International Steel Tie Company, Cleveland, Ohio, spaces 168, 170. International steel and concrete substructure for railroad crossings, International twin steel ties for paved street track, International composite insulated twin steel ties for open track and for subways, International rail joint construction and method of direct and cross bonding for twin steel ties. Represented by William P. Day, J. J. O'Donnell, George Harpham, William C. Mahon, L. C. Shank.
- Jamison Rail Bond & Electrical Supply Company, Pittsburg, Pa., space 365. Rail bonds. Represented by F. S. Haller, John A. Jamison.
- Jeandron, W. J., New York, space 12. "Le Carbone" carbon brushes. Represented by W. J. Jeandron, J. C. Kyle.
- Johns, J. N., Manufacturing Company, New York, space 371. Guaranteed type check plates, pivot journal bearings and wedges, standard journal bearings, general line castings brass and bronze, detachable wrench jaw, replaceable center trolley wheels, Flower brush holders, air and controller handles, steel tube bushings for air and controller handles and stems, Babbitt metal, three grades, Col-R-01 car curtain and hand strap renewer, "Rub-on" varnish, car cane seat finisher. Represented by J. N. Johns, F. W. Roth, D. B. Flower.
- Johns-Manville, H. W., Company, New York, N. Y., spaces 336, 338. Overhead line material, rail bonds, special insulating materials, underground fiber conduit and fittings, third-rail insulation, J-M flexible sand hose, "Noark" line of fuses, protective device boxes and meter equipment, together with fireproof cable insulation. Niagrite, friction and rubber tapes, ebony asbestos wood for switchboards, asbestos transite for fireproofing electric cars, asbestos roofings, pipe coverings, shingles. Represented by J. W. Perry, S. G. Meek, George A. Saylor, H. L. Steiner, J. H. McManus, H. M. Voorhis, C. E. Fairbanks, H. L. Morse, A. J. Finlay, E. B. Hatch, R. C. Buell, R. B. Lattin.
- Johnson Coin Counting Machine Company, New York, N. Y., spaces 320, 322, 324. Registering fare boxes for both coins and tickets; coin-counting machines. Represented by C. H. Birdsall, W. P. Butler, J. M. Johnson.
- Joliet Railway Supply Company, Chicago, Ill., spaces 570, 571. Perry-Hartman anti-friction truck, centering center plates and wide bearings on bolsters, Hartman center plates, Perry and Joliet side hearings, Huntoon brake beam. Represented by C. M. Forline, E. A. Laughlin, C. F. Huntoon.
- Kenfield-Davis Publishing Company, Chicago, Ill., space 2. *Electric Traction*. Represented by H. J. Kenfield, W. J. Field, H. L. Brown, H. E. Smith.
- Keystone Grinder & Manufacturing Company, Pittsburgh, Pa., spaces 331, 333. Keystone hand-power tool grinders. Represented by William L. Munk, Sewall A. Musser.
- Lackawanna Steel Company, Lackawanna, N. Y., spaces 407, 409. Abbott rail joint plates, Lackawanna hook shoulder tie plates, Lackawanna steel sheet piling. Represented by C. R. Robinson, H. H. Barbour, W. Breeden, F. E. Abbott, A. P. Van Schaick, A. H. Weston.
- Long, E. G., Company, New York, space 374. Elliptic and spiral springs, brake pins and bushings. Represented by E. H. Mays, Frank Van Anden.
- Lorain Steel Company, Johnstown, Pa., space 418. Girder and high T-rails, special track work, frogs, crossings, "Tadpole" type tongue switches, electrically welded and Nichols composite rail joints. Represented by P. M. Boyd, J. M. Brown, Carroll Burton, S. J. Cotsworth, E. B. Entwisle, H. C. Evans, H. L. Gleeson, W. B. Gresham, William W. Kingston, H. F. A. Kleinschmidt, A. S. Littlefield, Joseph MacCarroll, Jr.; S. P. McGough, John A. McHugh, John A. Stacey, H. C. Stiff, A. L. Verner.
- Lord Manufacturing Company, Brooklyn, N. Y., space 537. Trolley retrievers and catchers, controller handles, controller regulators, trolley guards, lightning arresters, grounding devices, rail bonds and air cleaners. Represented by W. R. Garton, A. V. Arnold, E. A. Lightner, V. D. Stearns.
- McCabe, J. J., 30 Church Street, New York, N. Y., spaces 124, 126, 128. McCabe's "2-in-1" new design motor-driven double-spindle lathe with wheel-holding attachment and special wheel-turning rest. Represented by H. P. McCabe, Frank Sheeran, George L. Bennett, Frederick Kompass, Wilson Priestley.
- McGraw Publishing Company, Inc., New York, N. Y., spaces 7, 9, 11. Copies of the *ELECTRIC RAILWAY JOURNAL*, Annual Convention Number, Convention Daily issues; *Electrical World*, *Engineering Record*, *Metallurgical and Chemical Engineering*, McGraw Electric Railway Manual, Electric Railway Dictionary, McGraw Directories (electric railway and central station editions). Represented by James H. McGraw, Hugh M. Wilson, H. W. Blake, F. Kingsley, W. Jackson, H. H. Norris, E. M. Haas, F. Nicholas, G. J. MacMurray, F. J. Armeit, R. Bruster, L. I. Grinnell, L. E. Gould, C. A. Babbiste, G. W. Elliott, W. K. Beard, E. J. Hunt, E. B. Cooke, J. C. Raymond, C. A. Henley, L. W. Seeligsberg, P. T. Coburn, F. C. Wells and the Misses Phelps and Johnson.
- McQuay-Norris Manufacturing Company, St. Louis, Mo., space 321. "Leak-Proof" piston rings. Represented by W. K. Norris, E. H. Hill, H. P. Marsh.
- Mica Insulator Company, New York, N. Y., space 383. Insulation for the armature winding and commutator builder, including Micanite commutator insulation, rings, segments, tubes, cones, sheets, plate, paper tape, Micanite cloth, paper, spools, washers, bushings; Empire oil-treated cambric, tapes, canvas, duck, linen papers, silks, etc.; Kablak insulating cambrics, papers, tape; untreated rope papers, fullerboard, fish papers, fiber, linen, cambric, muslin, canvas, linen tape, silk tape, cotton sleeving, friction tape, splicing compound, insulating varnishes, shellac, cement and glues. Represented by Edward C. Wood, Charles E. Coleman, Charles H. Bell, August F. Tinnerholm.
- Midvale Steel Company, Philadelphia, Pa., space 640. Steel-tired wheel (cast-iron spoke center), rolled-steel wheels, rolled-steel wheel (one wear). Represented by H. M. Deemer, G. Aertsen, A. E. Goodhue, A. W. Illingworth, M. D. Hayes, Thomas Price, W. S. Edger.
- Nachod Signal Company, Philadelphia, Pa., space 147. Automatic signals operated by trolley contactors for single and double track; highway crossing bell equipped with flashing lights, trolley contactors, directional relay and signal parts. Represented by C. P. Nachod, F. W. Kulicke, H. C. Knerr.
- National Brake Company, Inc., Buffalo, N. Y., spaces 368, 369. Peacock brakes, Peacock improved brakes, Ackley adjustable brakes. Represented by Frank D. Miller, W. D. Brewster, T. C. Boyce.
- National Brake & Electric Company, Milwaukee, Wis., space 15. Straight-air-brake motor-car equipment with direct suspended type compressor, governors and motorman's valves, 550 ft. 3VD, 300 ft. 3VS and 75 ft. E-3 motor compressors with complete automatic control, other

- types of belt and motor-driven d. c. compressors of smaller capacity. Represented by representatives from all district offices.
- National Carbon Company, Cleveland, Ohio, space 315. Railway motor brushes of Laeade, Columbia and Partridge grades; generator and stationary motor brushes of carbon and graphite grades, Cophite brushes, inclosed arc carbons, flaming carbons, solid homogeneous flame carbons, Columbia batteries, Columbia track batteries, Helios storage batteries. Represented by Messrs. Kathe, Weaver, Martindale.
- National Car Wheel Company, Pittsburgh, Pa., space 528. Two Star Special electric railway wheels. Represented by J. H. Yardley, J. F. Weisbrod, H. E. McClumpha, J. D. Cunningham, E. H. Chapin.
- National Lamps Works of General Electric Company, Cleveland, Ohio, spaces 606, 608. Street railway lamps and reflectors, lamps for general illumination, 110-volt and 220-volt lamps, 750-watt Mazda lamp. Represented by Messrs. C. W. Bender, R. W. Tavey, J. R. Colville and J. A. Hamilton.
- National Lock Washer Company, Newark, N. J., spaces 525, 527. National lock washers, car curtains, curtain fixtures, sash locks, sash balances. Represented by W. C. Dodd, F. B. Archibald, C. P. Williams, D. Hoyt, R. F. Horsey, J. H. Horn.
- National Malleable Castings Company, Cleveland, Ohio, spaces 505, 507, 509. National radial coupler and draft gear, journal boxes and wedges, National anti-rail creeper, tie plate and rail brace, rail braces, bridge castings, automatic couplers. Represented by J. J. Byers, P. J. Howard, Mr. Pray.
- National Tube Company, Pittsburgh, Pa., spaces 556, 557, 558, 559. National tubular street poles, Shelby overhead trolley poles, malleable and brass fittings, Shelby tubing, Kewanee unions, flange unions and regrinding valves, testing machines for Kewanee specialties and Shelby trolley poles, national casing. Represented by L. F. Hamilton, W. S. Billing, J. E. Fleming, W. L. Schaeffer.
- Naugle Pole & Tie Company, Chicago, Ill., space 330. White cedar ties, section of white and red cedar poles. Represented by J. W. Benham, L. E. Morier.
- Near-Side Car Company, New York, N. Y., space 385. Near-side cars. Represented by P. J. Mitten, George A. DuCasse.
- Nelson Valve Company, Philadelphia, Pa., space 137. Iron and bronze gate globe and check valves, steel valve for superheated steam. Represented by Harry C. Baynard, R. G. Ward.
- Newman Clock Company, New York, space 516. Portable watchman's clocks. Represented by Herbert C. Davis.
- Nickel Chrome Chilled Car Wheel Company, Pittsburgh, Pa., space 529. One-wear tire plated wheel, one-wear tire, samples of nickel-chrome alloy. Represented by Robert C. Totten, Jay G. McCarthy.
- Northey-Simmen Signal Company, Ltd., Indianapolis, Ind., spaces 160, 162. Dispatcher's desk, car equipment and a light signal to give indications in paved streets where it is impossible to provide a third-rail. Represented by F. E. Brown, George Broughall, P. J. Simmen, S. L. Gibson, Edward Moore.
- Nuttall, R. D., Company, Pittsburgh, Pa., spaces 142, 144. Gears, pinions, trolleys, couplings. Represented by F. A. Estep, G. E. Watts, L. H. Keim, W. H. Phillips.
- Ohio Brass Company, Mansfield, Ohio, spaces 614, 618. O-B Hi-Tension insulators, electric car signal system, trolley bases, trolley catchers, trolley retrievers, M. C. B. automatic couplers, automatic electric and air connecting coupler, air sanders, catenary devices, third-rail insulators, National railroad trolley guards, type J bonds, all-wire rail bonds. Represented by C. K. King, A. L. Wilkinson, E. F. Wickwire, C. T. Anderson, A. B. Edes, A. L. Price, E. B. Snyder, M. P. Wolcott, C. E. Young, W. C. Starkey, R. G. Averill, C. C. Beck, G. H. Bolus, C. E. Gierdding, N. M. Garland, Nathan Shute, G. W. Cooper, J. E. Slimp, G. A. Kroener, F. E. Johnson, R. J. Deneen, E. C. Brown, F. V. Cook, W. H. Bloss, C. P. Leibold, C. H. Tomlinson, F. A. Strail, P. A. Hinds, G. E. Willis, A. O. Austin, R. D. Holabird.
- Ohmer Fare Register Company, Dayton, Ohio, spaces 301, 303, 305. Totalizing register for city service, recording and printing fare box, rapid transit operating device for prepayment cars, recording and printing registers for recording fares from two to sixty different classifications, Universal fare recording and printing register. Represented by John F. Ohmer, J. H. Stedman, H. B. Ohmer, W. J. Kuhns, C. W. Ketteman, C. V. Funk, J. Q. Chase.
- Okonite Company, New York, N. Y., spaces 332, 334. Insulated wires and cables, including steel taped and steel wire braided insulating tape, Manson friction tape, Candee potheads. Represented by J. D. Underhill, W. G. Hovey, Romaine Mace.
- Pantasote Company, New York, N. Y., space 400. Pantasote curtain and upholstery materials, Agasote headlining, roofing, flooring and interior trim material. Represented by John M. High, William L. Lake, William Anderson.
- Pennsylvania Steel Company, Maryland Steel Company, Philadelphia, Pa., space 23. Switch pieces for street railways, solid Manard switches, mates and frogs, Manard anvil face frogs, switch stands, spring boxes, "Mayari" track and frog bolts, model of "Hook Heel" switch. Represented by John C. Jay, Jr., Robert W. Read, G. S. Vickery, W. M. Henderson, representatives of the various sales offices.
- Philadelphia Holding Company, Philadelphia, Pa., space 520. Halsey radial trucks. Represented by W. H. Stevenson, John R. Dickey.
- Phillips Manufacturing Company, New York, N. Y., spaces 156, 158. Commutator truing devices. Represented by T. E. Chappell, D. Bischoff.
- Pittsburgh Insulating Company, Pittsburgh, Pa., space 524. Insulating cloth, paper, tape. Represented by P. F. Norvell, Clifton F. Schmidt, Jr.
- Pittsburgh Steel Company, Pittsburgh, Pa., space 164. "Pittsburgh Perfect" electrically welded right-of-way fence, galvanized barb wire, galvanized plain wire, galvanized staples, wire nails, galvanized telegraph and telephone wire. Represented by M. E. Johnson, E. Sidney Lewis.
- Pollak Steel Company, Cincinnati, Ohio, space 620. Forgings and axles, Pollak special heat-treated axles, steel standard M. C. B. axles, standard A. E. R. A. axles. Represented by Messrs. Pollak and Buck.
- Poole Brothers, Chicago, Ill., spaces 510, 511, 512. Electric railway tickets, cash fare receipts, commutation and pass books, mileage books, parcel and baggage checks, ticket cases, dating stamps, conductors' punches; complete service, writing, designing, engraving and printing; illustrated folders and booklets, timetable folders, maps. Represented by S. K. Poole, R. W. Hunter.
- Protective Signal Manufacturing Company, Denver, Col., space 133. Highway crossing signals with bells, lights and horns, annunciators, oscillators for signal work, single stroke and vibrating bells, quick-acting relays. Represented by D. B. Turner, W. C. Nehr.
- Rail Joint Company, New York, N. Y., spaces 350, 351, 352, 353, 354, 355. Continuous and Weber type joints for T-rails, high T-rails, girder rails and guard rails, Continuous compromise joints, Continuous frog and switch joints. Represented by L. F. Braine, W. E. Clark, R. R. Seward, J. A. Greer, W. A. Chapman, E. A. Condit, Jr., H. C. Holloway.
- Railway & Industrial Engineering Company, Pittsburgh, Pa., space 609. Switches, fuses, lightning arresters; typical out-door substation at end of pier; portable substation in Westinghouse booth. Represented by Messrs. Kerr, Lemmon, Hart, Burke, Barnes.
- Railway Improvement Company, New York, N. Y., spaces 586, 588. Coasting recorders, anti-climbers, sanitary straps. Represented by Andrew J. Pizzini, W. Ogden Wade, Charles W. Hall, Clark Morrell.
- Railway Materials Company, Chicago, Ill., space 535. Reception booths, brake shoes, Rymco overhead trolley switch. Represented by J. F. Schurts, E. C. Folsom, G. F. Allen, Mr. Lesh.
- Railway Roller Bearing Company, Syracuse, New York, N. Y., space 140. Roller bearing car wheel No. F-400, roller bearing car wheel hubs, different types of roller bearing journal boxes, roller bearing center plates, roller bearing end shields for industrial motors, roller bearing frame heads for railway motors. Represented by Raymond H. Carhart, John W. Hulburt.
- Railway Track-Work Company, Philadelphia, Pa., spaces 161-163. Track-grinding machinery, reciprocating track grinder, sample grinding corrugated rail, sample cupped joint surfaced, sample rail depression built up by a welding process ground with above machine; flexiule shaft track grinder. Represented by Messrs. Gherky, Goodall and Nardini.
- Railway Utility Company, Chicago, Ill., space 617. Utility car ventilating systems, Utility thermometer control for electric car heaters. Represented by William J. Pine, Lee P. Hynes, E. J. Magerstadt, J. H. Denton.
- Recording Register & Fare Box Company, New York, N. Y.,

- spaces 386, 387. Fare boxes. Represented by Charles N. Yates, F. A. Groves, F. B. Kennedy, Victor Courtright.
- Roebbling's Sons, John A., Company, Trenton N. J., spaces 325, 327. Bare wire, wire rope and fittings, wire cloth and netting, alligator wrenches, and insulated wire and cables. Represented by F. J. Newbury, William L. Doyle, G. W. Swan, D. F. Ivens, F. E. Whelan, W. W. Affleck, William H. Slingluff, John E. Nolan, A. V. Erickson.
- Rooke Automatic Register Company, Providence, R. I., space 312. Three types of Rooke fare registers, including hand-held, portable registers. Represented by George F. Rooke, Jilson J. Coleman, Walter A. Williamson.
- Root Spring Scraper Company, Kalamazoo, Mich., space 506. Root spring snow scrapers, Root spring wheel guard. Represented by F. N. Root, Newton Root.
- Samson Cordage Works, Boston, Mass., space 502. Spot trolley cord, signal cord, other braided cords. Represented by F. J. Coakley, W. G. Webb, W. G. Woodworth, R. G. Whiting.
- Sangamo Electric Company, Springfield, Ill., space 610. Wattmeters, switchboard meters and instruments, ampere-hour meters, polyphase meters. Represented by M. B. Chase, Ray D. Lillibridge.
- Schutte & Koerting Company, Philadelphia, Pa., space 154. Schutte trip throttle valve for steam turbine; trip throttle and butterfly valve as engine stops, electrically operated; gate valve, Educator condenser, rotary air pump, "Airex" small valve, Auld reducing valve, mechanical oil burner, air register, Koerting injector, siphon, jet exhauster, blower and spray nozzles, blast nozzles. Represented by J. J. Gessleman.
- Scientific Railway Appliance Company, Chicago, Ill., space 127. Automatic safety devices for electric railway cars. Represented by Oscar Johnson, H. R. Chadwick.
- Shepherd Automatic Switch Company, Montgomery, Ala., space 141. Shepherd pneumatic track switch, non-electrical and operated by motorman from car platform. Represented by M. L. Shepherd, W. L. Shepherd.
- Simmons-Boardman Publishing Company, New York, N. Y., space 10-A. Copies of the *Railway Age Gazette* and the *Signal Engineer*; railway books. Represented by Roy V. Wright, C. R. Mills.
- Smith, Peter, Heater Company, Detroit, Mich., spaces 366, 367. Forced ventilation hot-air car heaters, including new magazine type of coal-burning heater; electric forced ventilation heater with thermostatic control. Represented by Danied W. Smith, Elmer J. Smith, H. S. Williams, E. P. Doyle, W. E. Hinmon, M. J. Phelan, W. M. McKee.
- Southern Exchange Company, New York, space 612. Poles and cross-arms. Represented by E. G. Chamberlain.
- Speer Carbon Company, St. Mary's, Pa., spaces 382, 384. Carbon and graphite brushes; metallic brushes. Represented by J. S. Speer, Charles J. Lion.
- Spotswood, F. D., Accident Preventor, Lexington, Ky., space 138. Overhead car fixtures for showing fourteen accidents in rotation; brass plates for use in open cars; electrotypes showing accidents; blotters showing accidents of a general character; blotters showing accidents to children; brass plates for steam roads. Represented by C. A. Blethen.
- St. Louis Car Company, St. Louis, Mo., spaces 590, 591. Car bodies, trucks and specialties. Represented by John I. Beggs, Edwin B. Meissner, Nic Le Grand, George L. Kippenberger, W. L. Alt, G. Koch.
- St. Louis Steel Foundry Company, St. Louis, Mo., space 14. Solid manganese track work, consisting of 400-ft. switch, 20 ft. long; 100-ft. center radius standard switch and mate, standard branch-off frogs, standard electric over electric and steam over electric crossings. Represented by J. H. Steedman, F. N. Rumbley, D. H. Young.
- Standard Motor Truck Company, Pittsburgh, Pa., space 536. Aluminum models of trucks. Represented by Arthur W. Field, W. G. Cory, P. W. Wendt, R. Hammerstrom.
- Standard Paint Company, New York, N. Y., space 504. P. & B. insulating products, cement floor finishes, paints, roofings and waterproofing materials. Represented by Charles E. Smith, John H. Thomas, Joseph E. Brown.
- Standard Steel Works Company, Philadelphia, Pa., space 635. Space used as reception booth. Represented by Robert Radford, W. H. Pugh, Jr., H. G. Pearce, R. Sanderson, W. B. Keys, C. F. Dodson, C. H. Peterson, A. R. Green.
- Standard Underground Cable Company, Pittsburgh, Pa., space 388. Lead-covered and armored cable, bare and insulated wires, cable accessories, including indoor and outdoor cable terminals, subway junction boxes, jointing material. Represented by representatives from Boston, New York, Philadelphia, Pittsburgh and St. Louis offices.
- Star Brass Works, Kalamazoo, Mich., space 508. Kalamazoo trolley wheels and harps. Represented by O. P. Johnson.
- Sterling Fare Register Company, New York, N. Y., spaces 386, 387. Single and double fare registers, conductors' punches and railway supplies. Represented by F. B. Kennedy, F. A. Groves, Charles N. Yates, Victor Courtright.
- Sterling Varnish Company, Pittsburgh, Pa., space 574. Coils, varnishes, iron enamel, paints for bridges and structural steel work. Represented by Henry C. Todd, W. V. Whitfield, Alvin S. King.
- Symington, T. H., Company, Rochester, N. Y., space 575. Journal boxes, dust guards, ball-bearing center plates. Represented by C. J. Symington, R. W. Gwaltney, T. C. de Rosset, C. R. Naylor, A. H. Weston.
- Taylor Electric Truck Company, Troy, N. Y., space 109, 111, 113, 115. E. H. single truck, S. B. double truck, M. C. B. double truck, H. L. B. double truck. Represented by John Taylor, G. A. Tupper, Walter E. Taylor.
- Templeton, Kenly & Company, Ltd., Chicago, Ill., space 624. Simplex track jacks, ballast jacks, bridge jacks, journal jacks, car jacks, coach jacks. Represented by Alfred E. Barron, Arthur C. Lewis, Harry M. Hood.
- Thayer & Company, Ltd., New York, space 511. Chillingworth sheet-steel gear cases. Represented by George K. Wannemaker.
- Thompson, Ernst H., Waverly, Mass., space 372. Fare-box and money changer combined. Represented by Ernest H. Thompson.
- Tool Steel Gear & Pinion Company, Cincinnati, Ohio., space 621. Steel gears and pinions. Represented by C. E. Sawtelle, E. S. Sawtelle, Leroy Brooks, Jr.
- Transportation Utilities Company, New York, N. Y., space 611. National standard roofing, National steel trap door, Tuco friction curtain, Chanarch metal floor plates, Flexolith composition flooring, special steel door. Represented by W. L. Conwell, H. B. Chamberlain, T. K. Dunbar, Jr., W. S. Humes.
- Trigger Lock Reversible Controller Finger, Niagara Falls, N. Y., and Toronto, Canada, space 149. Trigger lock reversible controller fingers. Represented by R. Russell, E. W. Bennett, F. O. Grayson.
- Trolley Supply Company, Canton, Ohio, spaces 360, 361. Peerless No. 10, Simplex and Star trolley bases, Ideal trolley catcher, Knutson No. 2 and No. 5 trolley retrievers, Peerless check valve, Peerless, Jr., arc headlight, No. 14 and 15 pressed steel headlights, trolley cord, Hollis safety fender. Represented by J. E. McLain, Joseph Hollis, M. A. Wernet.
- Under-Feed Stoker Company of America, Chicago, Ill., space 375. Reception room, with advertising matter. Represented by C. S. Crowell.
- U. S. Metal & Manufacturing Company, New York, N. Y., space 623. Reception booth. Represented by B. A. Hege-man Jr., Charles C. Castle, E. D. Hillman, H. A. Hege-man, H. K. Porter, E. R. Shoenberger, J. W. Creveling.
- United States Electric Signal Company, West Newton, Mass., space 401. Automatic electric block signals, car-counting block signals, spacing signals, counting light block signals, crossing signals, track switches. Represented by Roland F. Gammons, 2d, Roy V. Collins, Robert S. Bowen, Ralph Mosher.
- United States Wood Preserving Company, New York, space 107. Treated and untreated wood paving blocks. Represented by G. O. Strothers, Alexander Reed.
- Universal Lubricating Company, Cleveland, Ohio, space 135. Tule lubricant for different railway purposes. Represented by C. B. Arthur, S. W. Schofield, J. C. Daigen.
- Universal Safety Tread Company, Boston, Mass., space 601. Safety treads. Represented by F. W. Langford.
- United States Wood Preserving Company, space 107.
- Vacuum Car Ventilating Company, Chicago, Ill., space 539. Reception booth. Represented by D. I. Cooke.
- Valentine & Company, New York, N. Y., spaces 580, 581. Railway colors and varnishes, Valspar varnish. Represented by Landgon B. Valentine, McKim Hollins, Irvin H. Munford, Captain Van de Watering.
- Van Dorn, W. T., Company, Chicago, Ill., spaces 531, 533. Standard automatic couplers with draft gears, M. C. B. couplers with draft gears, two sizes automatic air and car couplings with draft gears. Represented by W. T. Van Dorn, H. E. Van Dorn, John Sjoquist.
- Voglesong-McKenzie Company, San Francisco, Cal., space 370.
- Waclark Wire Company, New York, N. Y., spaces 380, 381. Bare and weatherproof copper wire and cable, grooved trolley wire, weatherproof and bare strand, flat square and telephone wire. Represented by E. L. Goldschmidt.
- Wallace Supply Company, New York, space 434. Trolley

bell and register cord, bronze hardware, sweeper rattan, car seat rattan. Represented by W. Meeteer, E. H. Meeteer.

Walpole Tire & Rubber Company, Boston, Mass., space 331. Massachusetts Chemical Company products, including liquids and rubber insulation, Armalac, Enamelac, clear insulating varnishes, friction tapes, splicing compound, molded rubber specialties. Represented by R. F. Norvell, A. E. Duclos, L. O. Duclos.

Watson Stillman Company, Aldine, N. J., space 501. 3000-lb. telescopic motor lift, 35-ton hydraulic bond compressor, universal beam punch, 7-ton swivel claw jack, 15-ton 12-in. claw jack, No. 4 girder rail bender. Represented by E. A. Stillman, R. R. Harrison, Sterling G. Turner.

Welte & Sons, New York, space 219. Welte orchestron. Represented by A. C. Terwilliger.

Western Electric Company, New York, N. Y., spaces 341, 355. Telephones, railway selective train dispatching equipment, vacuum cleaners, Electrose high-tension insulators, Thomas porcelain insulators, Pyrene fire extinguishers, sleet cutters, Western Electric insulating tapes and compounds, Kalamazoo trolley wheels and harps, General Electric rail bonds and miscellaneous equipment, trolley line construction material, Faraday 500-volt car buzzers and signal bells, trolley retrievers and catchers, trolley bases, Samson trolley cord and bell rope, Shelby trolley poles, C-H arc and incandescent car headlights, Gold electric car heaters, Benjamin specialties. Represented by M. A. Oberlander, R. H. Harper, F. D. Killion, G. K. Heyer, G. Brown, A. G. Kingman, and Messrs. Enders, Maxon, Spamer, Hallstrom, Collier, Greenfield, Phillips, Davis, Guest, Bertke, Crouch, Cathright, Marchmont, Collins, Shively.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., space 21. Light-weight HL control rack, HL control line switch, HL control details, type PK control rack, Nos. 306, 307 C-4, 323-A, 328 and 333-B-2 railway motors, No. 306 motor rack, No. 307-C-4 field control motor rack, railway motor commutator, pressed steel gear case, field coils, railway motor bearings, armature coils, brush holders, model portable substation, model outdoor transformer substation spare parts for railway motors, insulating material, railway line material, airbrake devices, motor-driven air compressors, automatic car and air couplers, motorman's brake valves, electric compressor governors, air reservoirs, complete car equipments. Represented by S. L. Nicholson, C. S. Cook, G. B. Griffin, J. Brett, M. B. Lambert, J. W. Busch, J. P. Alexander, G. C. Ewing, F. H. Shepard, G. M. Eaton, E. P. Dillon, N. W. Storer, C. Renshaw, A. W. Lomis, J. G. Miles, H. L. Garbutt, J. McA. Duncan, A. A. Brown, T. A. McDowell, P. H. Smith, W. A. Swift, D. E. Drake, O. T. Smith, H. C. De Camp, H. C. Stier, H. A. Coles, T. R. Langan, J. C. McQuiston, H. W. Beaumont, D. H. Ackerson, A. H. McIntire.

Weston Electrical Instrument Company, Waverly Park, Newark, N. J., spaces 17, 19. Electrical measuring instruments and appliances, including instruments for switchboard, portable and laboratory uses. Represented by Charles P. Frey.

Wharton, William, Jr., & Company, Inc., Philadelphia, Pa., spaces 626, 628, 630, 632, 634. Switches and frogs, spring boxes. Represented by V. Angerer, T. R. Bolgiano, Wm. Hulbert, G. R. Lyman, R. C. McCloy, H. F. McDermott, J. C. Robinson, C. N. Shaffner, W. C. Wilson, W. L. Wright.

Wheel Truing Brake Shoe Company, Detroit, Mich., space 523. Abrasive brake shoes. Represented by J. M. Griffin, F. F. Griffin.

Whitmore Manufacturing Company, Cleveland, Ohio, spaces 121, 123, 125. Gears and pinion. Represented by S. W. Whitmore, William Beaser, Jr., R. R. Hertzog, W. M. Lawyer, Henry Stuckenholz.

Wilson Remover Company, Newark, N. J., space 213. Wilson varnish remover. Represented by J. MacNaull Wilson, J. W. Wilson.

Wood, Charles N., Company, Boston, Mass., space 129. Chapman automatic signals. Represented by Charles N. Wood, George H. MacGilvray, W. M. Chapman, O. E. Chapman.

Woods, Edwin S., & Company, Chicago, Ill., space 543. Anti-friction side bearings, flat-sided ball anti-friction center plates. Represented by Charles D. Jenks, H. M. Perry.

Yarnell-Waring Company, Philadelphia, Pa., space 139. "Lea" V-notch recording meter, blow-off valves, pipe joint clamps, hydraulic valves. Represented by Joseph Esherick, R. G. Ward.

SAFETY FEATURES OF D & W FUSE BOX—OTHER DISPLAYS

D & W Fuse Company, Providence, R. I., in addition to its regular line of standard "D & W" inclosed fuses, fuse blocks and boxes, is showing in space 337 a new "D & W" fused switch box, combining a fuse and switch box for 250-volt circuits. This box may be permanently locked after the fuses are installed, preventing tampering with the connections or increasing capacity of the fuses. One of the protective features of this new box is the automatic opening of the switch when the box is opened, eliminating danger to the workman when renewing fuses.

The box can be used as a switch also, because the circuit can be opened or closed at will by moving a lever at the side of the box. Provisions are made, however, to lock this lever when in open position by means of a disk with holes to receive padlocks, so that the several men working on the same line must be approached for their padlock keys before the switch can be closed, thereby getting a warning. A magnetic chuck for machine shop use is also shown; the flat chuck on exhibit has a horizontal face and is equipped with adjustable end and side stops for fixing the location of the work under heavy duty. Auxiliary plates are furnished to fit the chucks and are adapted for holding special or irregularly shaped pieces, allowing one chuck thereby to cover a wide range of operations. These chucks are oilproof and waterproof and are equipped with demagnetizing switches of special design attached directly to the chuck, which by a simple movement of the hand automatically and positively demagnetize it. This type of switch affords mechanical protection to the switch posts and safety to the operator, rendering it reliable and safe, outwearing the exposed type.

Attention is being called to the heat-resisting insulation material "Deltatape" and "Delta" sheeting—in which asbestos fiber is used as a base impregnated with a special compound. Other "Delta" insulating materials are also shown in addition to the reels and coils of "Deltabeston" magnet wire. Samples of flat "Deltabeston" wire and the new "Deltabeston" standard wire for heater-cord switchboards and fixture wiring are also displayed. W. S. Sissons and H. F. MacGuyer are in charge.

AN ELECTRICALLY OPERATED FARE BOX

A unique feature of the exhibit of the Johnson Fare Box Company is a new box, never before exhibited, by which the conductor is relieved of all mechanical operations after he deposits the coin or ticket in it. In general appearance, the new box resembles the present standard box, but hidden in the lower part is a special electric motor which operates continuously. This motor consumes energy of a value of about 3 cents a day. The motor has two functions—first, it operates the coin-dumping device, ordinarily operated by a hand lever, and it also drives two grooved, rubber-covered rollers, rotating just below a ticket slot at the top of the box. These rollers are inked, and they not only grasp the ticket when the latter is inserted in the slot but cancel it in indelible ink on both sides. The tickets are then deposited in a small receptacle above the coin box. This box is the result of a long series of experiments, including a commercial test at Evansville, Ind. It is intended for use with an overhead register so as to form a double check on fare and ticket collections.

The Eclipse Railway Supply Company utilizes spaces 567 and 569 to show the Eclipse life guard and Acme fender. Its Eclipse trolley retriever, also on exhibit, has a new feature not shown in any other retriever, namely, it is controlled by a push pin which regulates the power spring.