LECTRIC RAILWAY JOURNAL

Publishing Company, Inc.

JULY, 1930

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THE Department of Street Railways of the City of Detroit on June 14, 1930, initiated improved transport service on Plymouth Road from Grand River Boulevard to the beautiful Rouge Municipal Park.

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5. Ample speed in traffic
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1930

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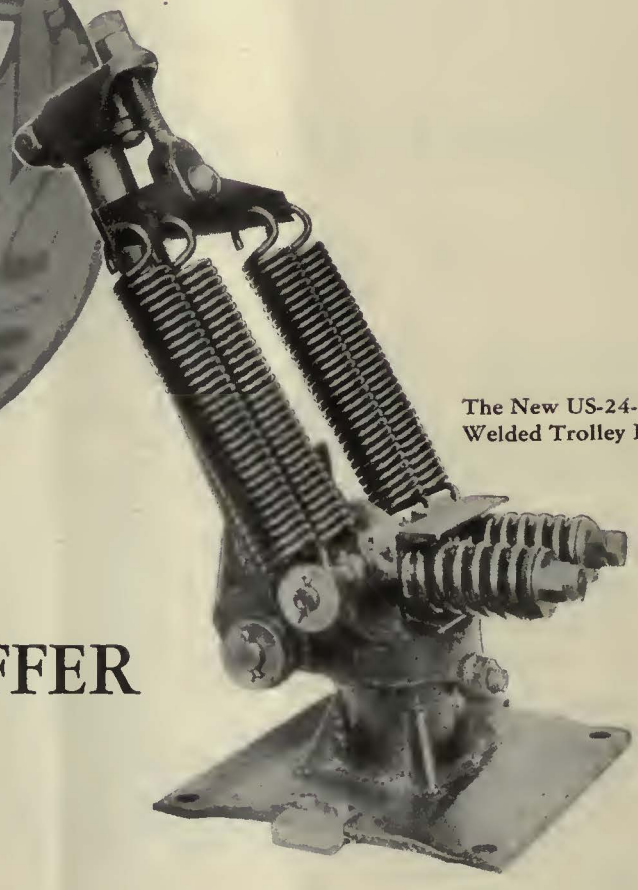

The New US-24-A All-steel Welded Trolley Base

INCLUDING a spring buffer which effectively cushions and dampens the action of a rebounding trolley pole, the new US-24-A trolley base weighs only 77 pounds.

To embody this highly desirable feature and at the same time to hold down the weight, have meant no sacrifice whatever in strength. In fact, the all-steel construction with welded joints provides even greater strength than has been available heretofore in this item of car equipment.

The light-weight reciprocating parts of this base ha quickened trolley pole action and permitted low wheel pressures than were previously possible. Thu there is less possibility of dewirements at ears, frog or other hard spots and quieter operation also is o tained. Wear and tear on overhead and equipment a likewise reduced.

With these direct benefits of light weight, the US-24 trolley base also has the advantages of a simplified a sturdy construction, ease of inspection, and negligi upkeep.

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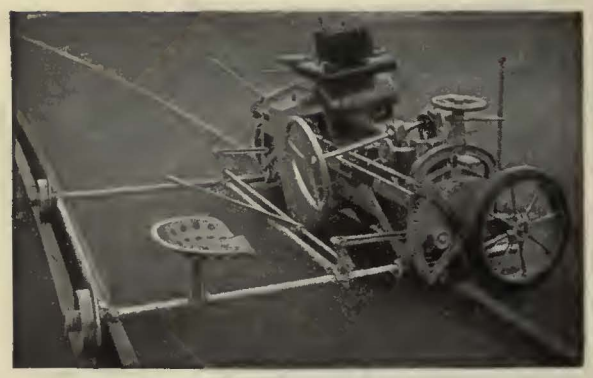
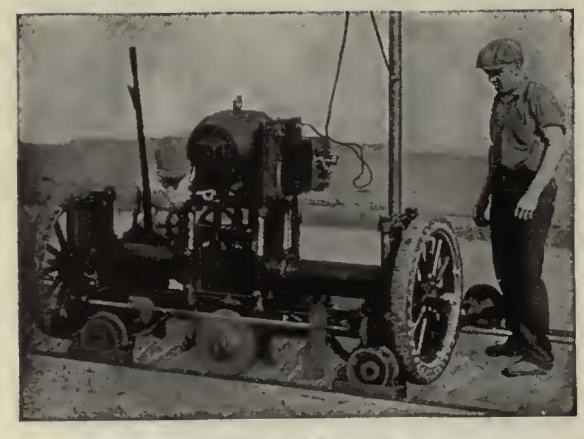
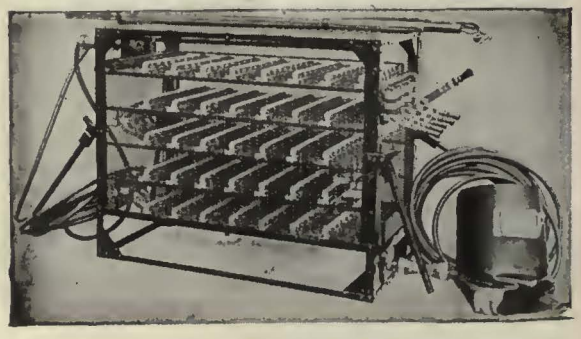


Improved Atlas Rail Grinder

Eureka Radial Rail Grinder



Imperial Track Grinder



Ajax Electric Arc Welder

Waiting is wasting

DETROIT Pick

Overhead Materia

Overhead construction for Trolley Bus service on Plymouth Road, in the northwest portion of Detroit. A combination of O-B Spring Lock Hangers and O-B Type B Hangers, with O-B Marathon Ears, support the overhead.

The method of installing feed-ins to the trolley bus overhead. Connection is made through the boss of an O-B Marathon Ear.

DETROIT has joined the growing list o portant cities which have improved tra tation by the introduction of Trolley Bus se On Saturday, June fourteenth, the first trolley —or electric coaches, as they are called in Det started service on Plymouth Road, over a rou miles long. The route starts at Plymouth Roa Grand River Avenue, and the present terminus new River Rouge Park, with its golf course, courts, swimming pools and other recreations

Six Twin Coach trolley buses will afford first service for the people of Detroit to this new r tion center, as well as adequate service to th idents of the Plymouth Road section. It is ipated that this route is the beginning of a t bus system to serve the entire northwest and east sections of Detroit.

As in Salt Lake City, Chicago, New Orlean Knoxville, O-B trolley bus equipment and ove materials have been used extensively in D Bus equipment includes O-B Dash-Illumi Headlights, O-B Featherweight (6-spring) T Bases, O-B Poles, Swivel Harps and Wheel O-B Retrievers. O-B overhead materials us clude Marathon Ears, Spring Lock Hangers, B Hangers, Type N Single and Double Curve ers, Insulated Approaches, Type E Adjustable overs, and Special Wood Strain Insulators.

Ohio Brass Company, Mansfield, Ohio
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VIA WIRE FROM COAST

SALT LAKE CITY

"WE think the big question of urban transportation is solved with the modern Trolley Bus. It is QUIET and the most popular service we have ever had. Just have some of your local regulating authorities experience a ride. They will sell themselves."

—Judge Corfman, *Chairman*
Utah State Utilities Commission.

Excerpt from address at luncheon given to A.E.R.A. delegates at Salt Lake City.

VIA WIRE FROM COAST

SAN FRANCISCO

IT was a Trolley Bus convention to an astonishing degree. The prediction was made that the industry in this new vehicle had a potential sensation of the sort it has been searching for for ten years.

As one executive seriously remarked "The Trolley Bus has IT." "We are going to build mighty little new track" was a frequent assertion.

VIA WIRE FROM COAST

LOS ANGELES

BEHIND police sirens a complete train of 40 passenger Twin Coaches owned by the Los Angeles Railway carried the conventionists 39 miles through the traffic and over valley grades to a ranch setting at 50 miles an hour.

"Frank Fageol solved the 'big' motor problem with these dual engine jobs" was the impulsive comment of several of the much impressed A.E.R.A. passengers.

Twin Coach
BY F.R. FAGEOL KENT, OHIO

VIA WIRE FROM COAST

YOUNGSTOWN

THE winning brief for the 1930 Coffin Award submitted by the Youngstown Municipal Railway and prepared by R. N. Graham revealed that their largest and most important bus additions of the last year were 20 big forty passenger Twin Coaches.

The 1929 Coffin Award winner also was a large user of Twin Coaches.

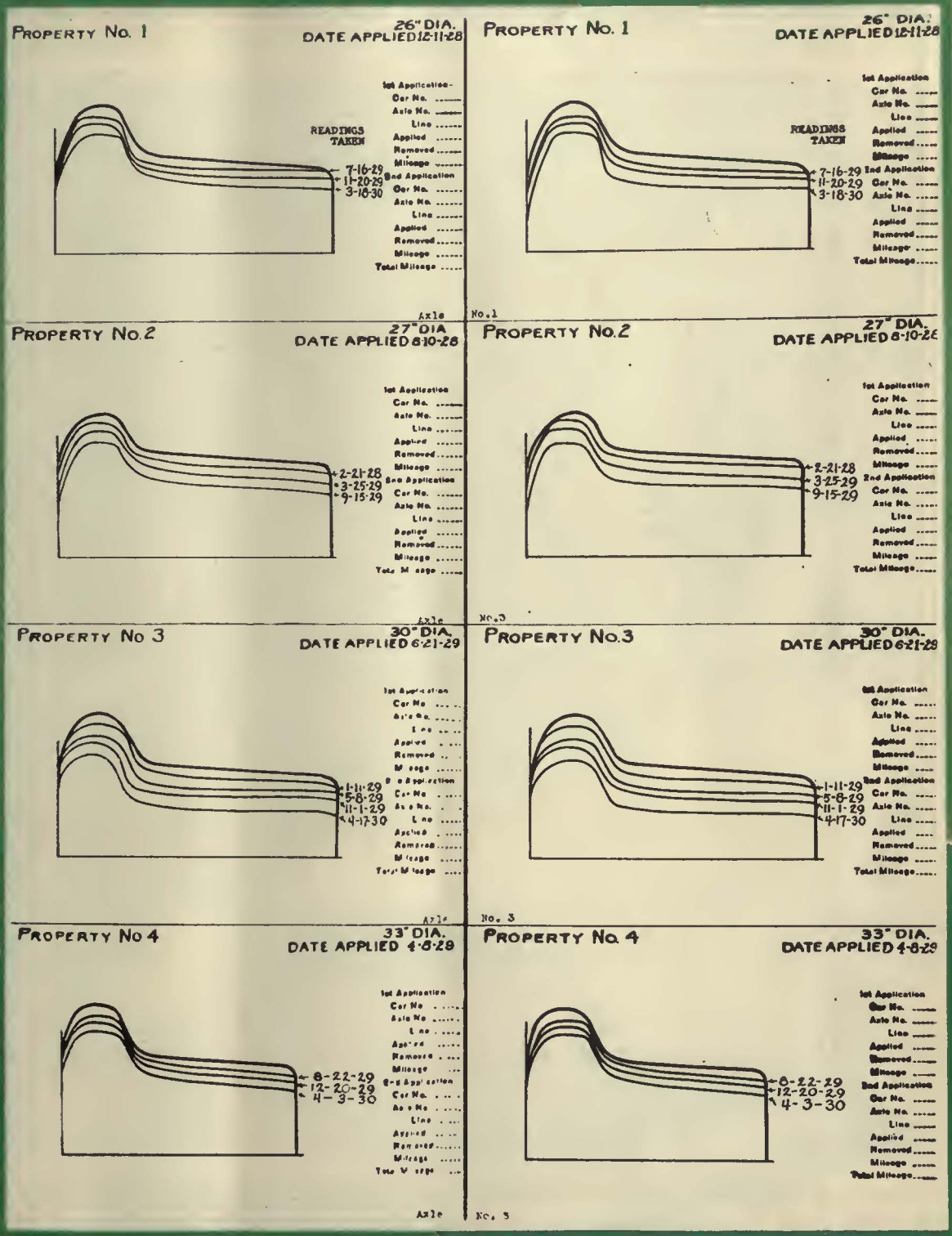
PROGRESS··!

Motor Car—
Pulling Trailer
Single End
Operation
4-40 H.P. Motors
Net Car Weight
38,000 lbs.

Motor Car—
Single End-
Operation
4-40 H.P. Motors
Net Car Weight
45,000 lbs.

Motor Car—
Pulling Trailer
Single End
Operation
4-40 H.P. Motors
Net Weight
52,000 lbs.

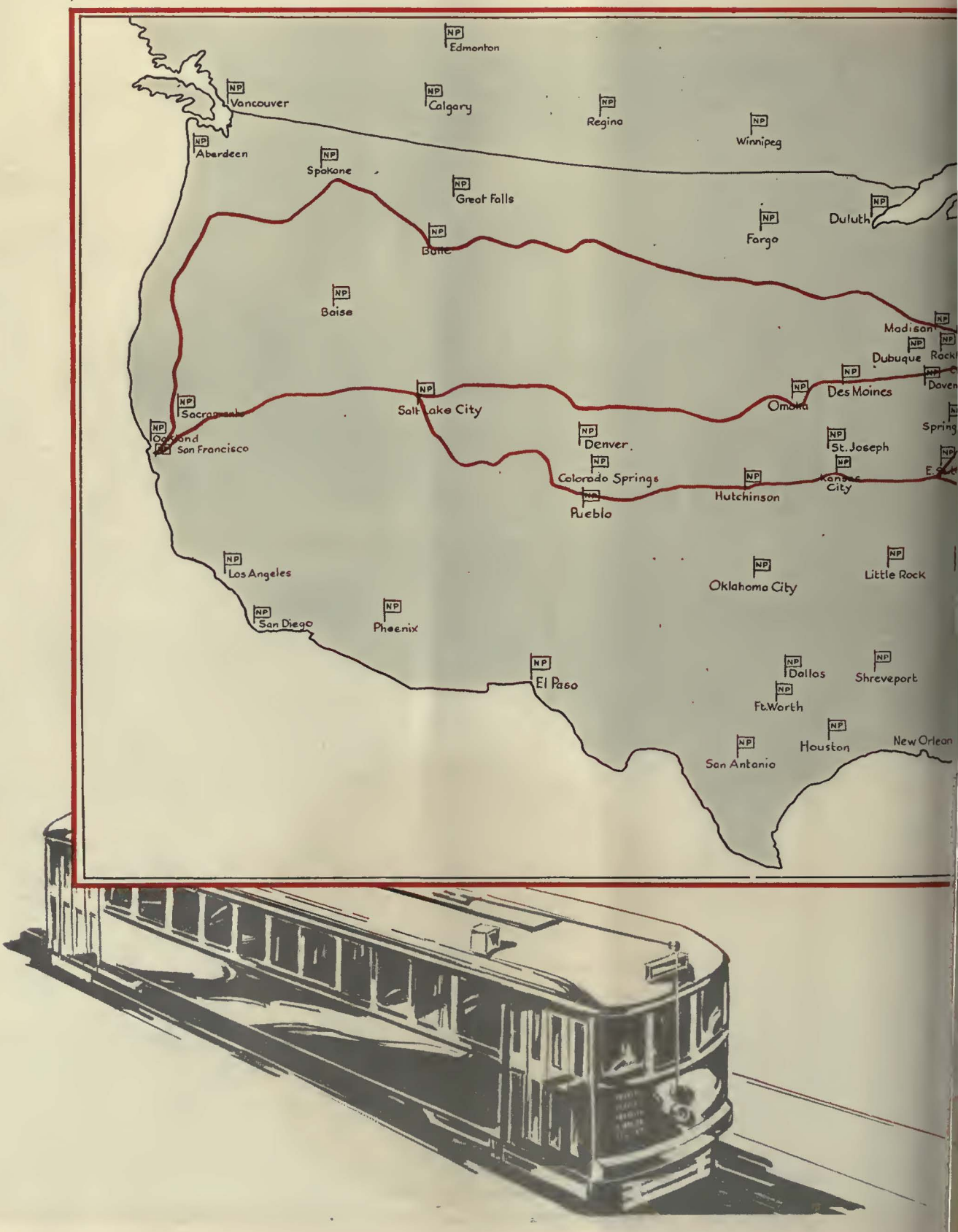
Motor Car—
Double-End
Operation
4-40 H.P. Motors
Net Car Weight
44,000 lbs.



Determining Just What Is Required in a Wheel to Best Meet Local Operating Conditions—An Example of How We Can Be of Assistance in Studying *Your* Individual Wheel Problems Is Demonstrated Herewith by *Actual* Contour Cards *Covering "NACO" Wheels.*

In Each Case They Are for Wheels in Operation on Large City Properties and Are Representative of Balance of "NACO" Wheels in Service.

To the coast and back



THESE LUXURY SEATS

For double-end and interurban cars the most comfortable of all railway chairs is Hale & Kilburn No. 900. It occupies the same space as the standard, reversible back railroad seat, rotates upon its pedestal and is automatically latched in the desired position.

This No. 392-A seat with reversible back is a favorite for city and suburban car service. Its soft, spring-edge cushion is very comfortable—a luxury seat of simple, sturdy construction.

For parlor coach busses, the deep upholstery and strong, light framework of this 900-D double chair make it supremely comfortable and very economical to maintain in bus service.

HAVE EARNING POWER

The Cincinnati and Lake Erie Railroad Company has recently received twenty new cars from the Cincinnati Car Corporation, all of which are equipped with Hale & Kilburn No. 900-D stationary chairs with pillow headrests. This picture shows one of the ten cars used for local interurban service and vividly suggests the comfort of this new equipment.

OF all the improvements to modern trolley car and bus equipment, comfortable seats make the most favorable impression upon the passenger. Mechanical refinements improve the speed and the economy of operation but passengers are usually unconscious of such things—and don't think about them.

On the other hand, Hale & Kilburn seats directly affect earning power. They build good will. They invite people to ride because they actually make passengers realize that railways are catering to their comfort. A general program of replacing old style seats with Hale & Kilburn luxury seating will bring added revenue to your road —and the cost is very reasonable.

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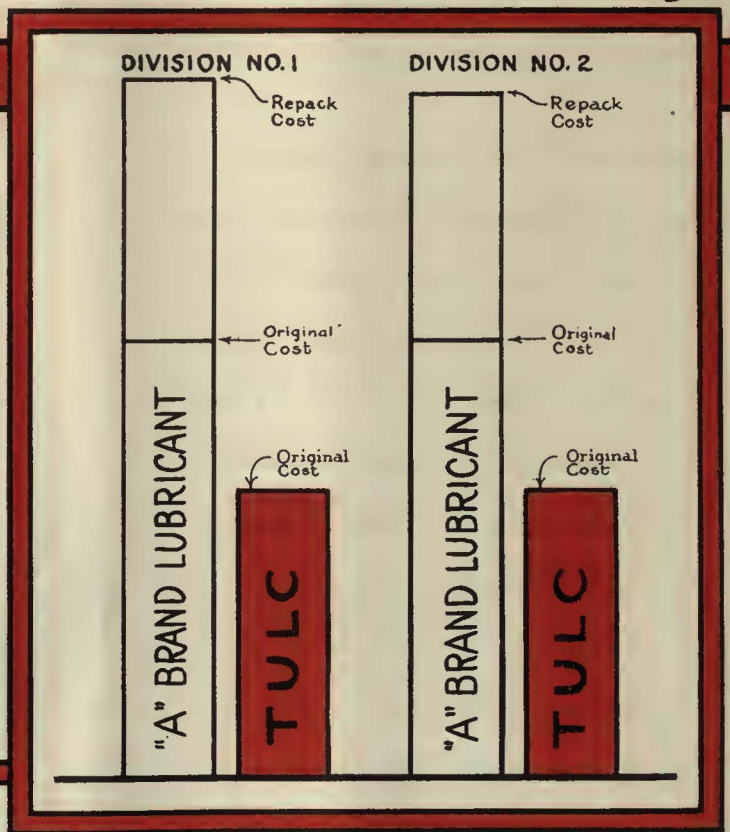
W. L. Jefferies, Jr., Mutual Bldg., Richmond.
W. D. Jenkins, Praetorian Bldg., Dallas, Texas
H. M. Euler, 53 First St., Portland, Oregon

Large City Street Railway makes a comparative test of Tulc... and proves again the superiority of Tulc for journal bearing lubricating

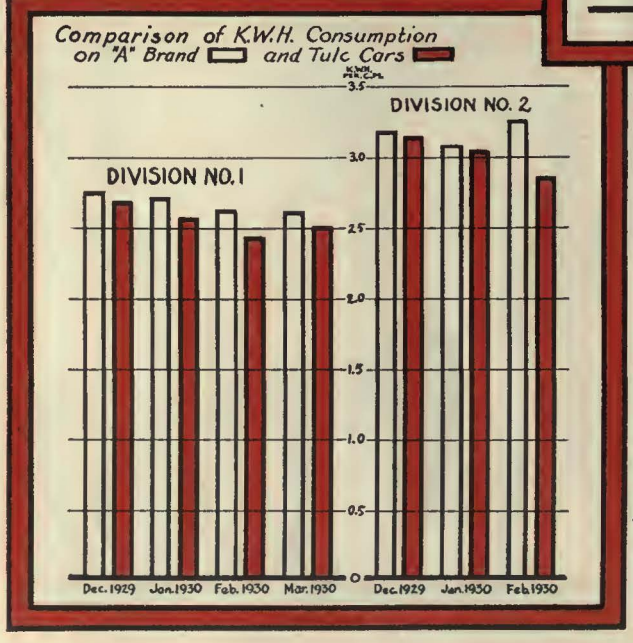
ON November 25th, 1929, two cars started from Division No. 1 and Division No.2, identical as far as equipment and service.

They differed only in the lubrication of their journal bearings. One car from each station was lubricated with Brand "A", a well known lubricant; the remaining two were lubricated with Tulc. The maximum time consumed by the comparative test was 116 days.



The Chart above tells the Lower Cost of Lubrication per miles . . . . . .

The chart below tells the Power Saving Story . . .



The charts tell the complete story; briefly Tulc showed these important, advantages to an outstanding extent:

1. Tulc breaks in bearings at 5° to 20° lower temperature occasioning no "break-in" difficulties.
2. Tulc cost less per car on original packing.
3. Tulc required no "repack" or renewal against a large repacking expense for Brand "A" lubricant.
4. Tulc ran 4,105 and 7,516 miles more without requiring additional oil—and was good for another month and more.
5. Tulc lubricated cars required less K. W. H. power per car mile.

The UNIVERSAL LUBRICATING CO.
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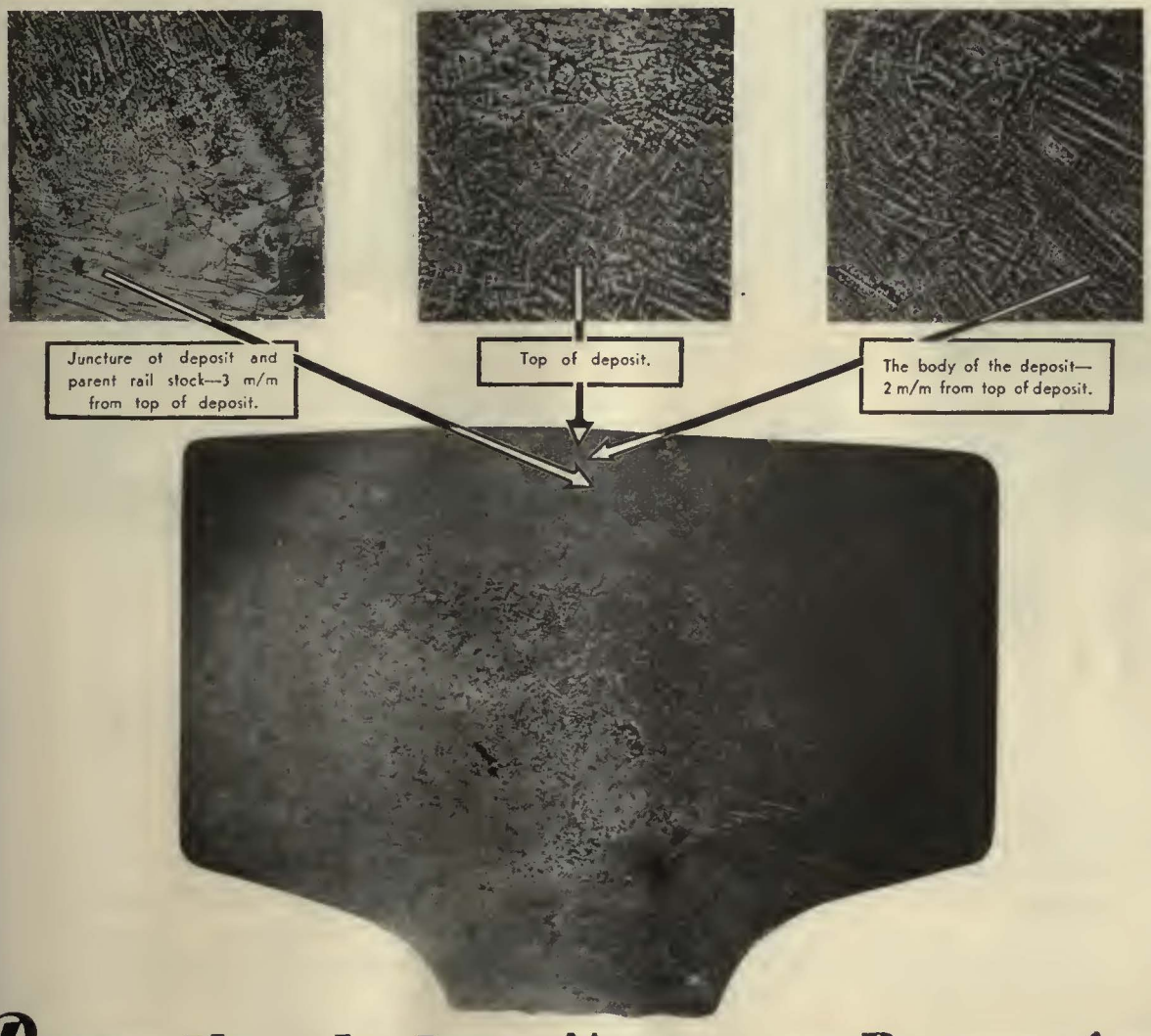
Welding Rod Deposit
MAGNIFIED 100 TIMES



Proves that Just any Manganese Rod *won't do*

When this manganese rail section, which had been built up with STOODY MANGANESE WELDING ROD, was examined under the microscope, it proved, as other examinations have, that the deposit from STOODY MANGANESE WELDING ROD is actually better than the manganese steel to which it is applied.

IF YOU HAVEN'T USED STOODY MANGANESE WELDING ROD WRITE US AND A SAMPLE WILL BE YOURS FOR THE ASKING. ALL YOU NEED DO IS MENTION THE APPLICATION AND THE METHOD OF APPLYING.

STOODY COMPANY

Manufacturers of

Welding Rod ◆ Alloy Steels ◆ Equipment

WHITTIER, CALIFORNIA

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GENERAL ELECTRIC

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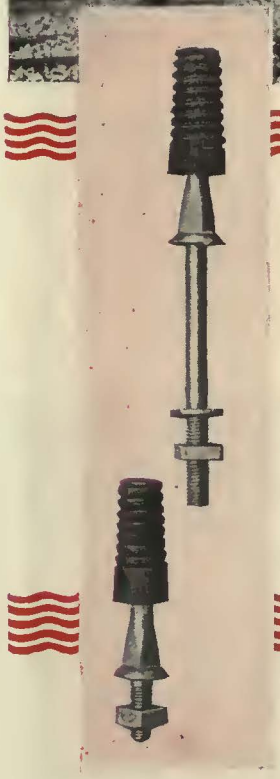
IN railroad service "double-dipped hot galvanized" is a phrase that means something—especially when applied to such hardware as Western Union Pins. It means *longer life* for them.

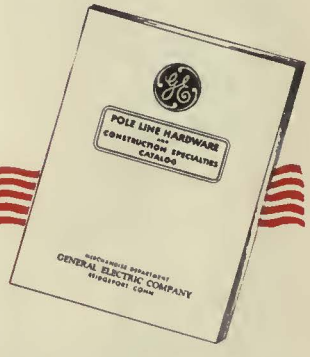
That's why you can count on longer service and less trouble from lines equipped with General Electric Pole Line Hardware and Construction Specialties.

Every metal part is *double*-dipped hot galvanized . . . on carefully cleaned surfaces. No impurities are left to flake off the zinc.

General Electric's reputation is behind every item of the complete line—braces, pole steps, washers, wood cob pins, anchor rods; all the pole line hardware and construction specialties you need.



WESTERN UNION PINS
DOUBLE-DIPPED
HOT-GALVANIZED



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MERCHANDISE DEPARTMENT · GENERAL ELECTRIC COMPANY · BRIDGEPORT, CONNECTICUT

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Aside from the ultimate economy of gas-electric drive, there are the simplicity and smoothness of control that save the driver's energy and create good will. Gas-electric drive enables the operator to exercise every possible precaution for the safety of passengers and traffic. We invite you to inquire further into the advantages of General Electric equipment.

...lic Service Coördinated Transport, of Newark, N. J., ...tes 1150 buses equipped with G-E gas-electric drive. ...a recent purchase of 180 additional equipments, ...ompany, which operates America's largest bus system, ...oon have in service a total of 1330 G-E equipped gas-...ic buses.

Under Mitten Management are 417 G-E equipped gas-electric buses in Philadelphia. Of this total, more than 200 have beeo in operation since 1925 and, although each of these older buses has traveled more than 150,000 miles, they are all operating just as economically to-day as the day they were placed in service. From all indications, these buses will last much longer than the 10-year life estimated at the time of their purchase.

390-65

ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Electric Railway Journal

Consolidation of
Street Railway Journal and Electric Railway Review
A McGraw-Hill Publication—Established 1884

JOHN A. MILLER, JR., *Managing Editor*

olume 74 New York, July, 1930 *Number 8*

The Industry Prepares to Carry Through

OUT of the 49th Annual Convention of the American Electric Railway Association recently held in San ancisco there emerged a very definite feeling that the th of progress for the local transportation industry lies the direction of scientific study of its problems. At evious conventions there has been an enthusiastic eptance of the idea of modernization. But progress s been comparatively slow in putting this idea into ctice. Though the need for modernization was rec- nized, uncertainty existed concerning the best way to about it. No quick and easy solution of the problem s evolved at this year's meeting. Indeed, it was gen- lly recognized that there can be no quick and easy ution. Advances must be made step by step, and a et determination to knuckle down and study the situ- n until satisfactory solutions are found was evident every hand.

Had the 49th Annual Convention accomplished nothing e than the crystallization of this sentiment, it would g down in history as having been a real success. But it id more. It brought together more closely than ever th electric railway men of the East and the West and the gr at central area of this country. Though the number delegates attending the meeting at San Francisco was ewhat smaller than in other recent years, their geo- phical distribution was more even. A surprisingly e delgation was on hand from the East and also n the Central West. For many it required the expen- re of considerable time and effort to attend the San ncisco meeting, but all felt amply repaid. The at- lance of Pacific Coast electric railway men was rally much larger than when conventions have been in the East. It is noteworthy, indeed that the total stration was substantially larger this year than at the previous convention when there were no exhibits. t the 1930 convention should have been so well at- ed in a year of business uncertainty is an indication he sincere appreciation which electric railway men of the value of these annual gatherings.

Path of Progress Outlined by Executives

SELDOM has such a wealth of valuable material been assembled in a convention program as was presented before the American Association at San Francisco. The addresses were well delivered and gave evidence of careful preparation. Beginning with statements of the difficulties confronting the industry by President Shoup and Managing Director Gordon, the speakers discussed ably the various phases of the theme.

Of particular interest were those speakers who saw possibilities of immediate improvement in conditions without sitting idly by and waiting for someone to present a completed program. There is plenty that can be done at once, so that both public relations and physical plant can be improved without the expenditure of large sums of money. The remarks of J. E. Curtis, chairman of the Nebraska Railroad Commission, indicate that regulating bodies in general are willing to go more than half way in working out a program of co-operative effort involving the companies, their employees, and the communities they serve.

Naturally much interest centered in the plan proposed by the President's Conference Committee, which was explained in some detail by Dr. Conway. Undoubtedly this is one of the most important steps ever taken by the association, and its presentation was one of the high spots of the convention.

Good opportunity was afforded at the general luncheon conference held on Thursday, for a summation of the three sessions of the American association. Without a set program, it was possible to obtain a number of viewpoints on the effectiveness of the sessions. It was apparent that executives are prepared to carry through the program outlined by the association. Particularly significant were the confidence shown in the proposed car improvement plan and the general indorsement of it.

Optimism Is in Order

EACH year the electric railway industry is presented with records of accomplishments which challenge the most pronounced skeptics. These records are indicative of progress. Noteworthy improvements in operating conditions and better financial returns are being obtained on small as well as on large properties, and under conditions common to many sections of the country. An active incentive for the presentation of these accomplishments has been the Charles A. Coffin Foundation Award. For the past eight years this award has recognized and rewarded that electric railway which, in the eyes of the judges, has most definitely solved its own problems and contributed valuable guidance for other companies.

This year the award was made to the Youngstown Municipal Railway for its noteworthy achievement in modernizing its service, increasing its earnings and gaining the good will of the public. The record of this company is the more creditable in that it represents continued progress. Only four years ago the Coffin Award was won by the Pennsylvania-Ohio Electric Company, of which organization the Youngstown Municipal Railway is a part.

Among the outstanding accomplishments recorded in this year's presentations are the securing of new and satisfactory franchises which have relieved the companies of

many burdens and which will permit operation at a profit; modernization of equipment and plant; efficient co-ordination of street cars and buses; improving standards of construction, operation and maintenance; extension of chartered service and analytical accident prevention activity. These are not temporary measures applied to save or make money in an emergency. They are permanent and of such a nature as to assure further results.

To ignore the fact that the electric railways have traveled a hard and rough road during the past two decades would be futile. Cost of operation has increased materially while fares are practically the same. Many companies are burdened with obsolete franchises, with obligations never contemplated at the time of their making. New capital is hard to find because of an ignorance on the part of the public as to the efficiency and usefulness of the street car. But these obstacles are not insurmountable. Each year the Coffin Award contest shows conclusively that those companies which bend their efforts to the education of the public through careful merchandising and co-operation with local officials are solving these problems successfully.

Car Improvement Receives New Impetus

FOR several years past it has been realized that the key to the problem of the electric railways lies in the design of the car. While there has been general agreement concerning the need for rolling stock modernization, the progress actually made has been comparatively slow. Experiments with various innovations have been made by numerous companies but there has been little co-ordination of effort. Individual railways have insisted on the inclusion of special features in the design of their cars and have refused to incorporate ideas that have been developed on other properties. This insistence upon special design has resulted in keeping up the cost of rolling stock. Improvements in design have not been widely adopted. In fact, the electric car has practically stood still while its chief competitor, the automobile, has become better and cheaper.

To correct these conditions, a definite program has now been undertaken under the auspices of the Presidents' Conference Committee. Investigation convinced the members of this committee that sufficient authoritative information was not available as to the essential features which should be included in the design of the modern electric rail car. As the first step in its program, therefore, the committee has selected C. F. Hirshfeld, research engineer of the Detroit Edison Company, to make a thorough analysis of the needs of the situation and to develop plans for improving design.

It is not the intention of the committee to develop a standard car. Rather it is the intention to try out every worthy idea that is suggested in such a way that duplication of effort among the various electric railways will be minimized, impractical features of design will be eliminated and the best ideas will be promulgated for the benefit of the industry. In this work the committee will have the backing of railways representing more than 60 per cent of the potential car-buying power of the industry and will have also the co-operation of the car builders.

Undoubtedly this is one of the most promising proposals put forward in many years. As a result of this scientific research, it may confidently be expected that design of the electric rail car will be greatly improved. Such an undertaking, however, will require several years for its execution. Meanwhile the industry cannot afford to sit back and wait for the evolution of a perfect car. Already the railways have suffered heavily through the continued operation of obsolete rolling stock. Every effort must be made to replace this obsolete equipment as quickly as possible. Treatment of a critical ailment cannot be deferred in hopes of a more effective remedy being discovered at a future date. The fruits of research will be enjoyed in due time. For the present we must endeavor to take full advantage of the best designs now available.

The Engineer's Responsibility Is Paramount

ORGANIZED research along several lines, which is projected or already under way by the American Electric Railway Association and its affiliated bodies, has placed a large responsibility on the engineer in the transportation field. Plans for the improvement and standardization of cars, making market surveys in all branches of the industry and obtaining greater economy and efficiency of operation, all call for the highest skill the engineer can furnish.

As to the meetings of the Engineering Association, they showed a remarkable grasp of the problems that have attracted the attention of operating men for a number of years. The various committees made reports that showed a close attention to the subjects and skill in arriving at the proper solution. New equipment and new designs were studied. Latest developments in cars, buses and trolley buses were discussed and their particular advantages and disadvantages analyzed from the engineering viewpoint. Examination of the reports of the sessions and the papers which were presented discloses the breadth of scope coming within the purview of the engineer.

Looking ahead and planning the activities of the engineer for the immediate future, the general convention, as well as that of the Engineering Association, recognized the necessity for progress in five major directions. These were the absolute need for specialized merchandising of the service rendered, improved equipment and facilities, the continued development of design for greater comfort and convenience, the attainment of higher speeds and the acquisition of equitable franchises and rates of fare. The engineer must play his part in the working out of these problems. That is indisputable. The meeting in San Francisco emphasized this fact, and the engineers who were present could not but realize the responsibility which they must assume, not for their own property alone, but for the industry.

T. & T. Urges More Intensive Merchandising

PROGRESSIVE thinking on major topics of the day marked the work of the Transportation and Traffic Association during the past year. Reflected in the committee reports prepared and the discussion of them, at the San Francisco meetings, this thinking will be recorded as a definite contribution to the advancement of the industry. Since 1908, when the association was formed, it has contributed much through the work of its many committees. The 1929-1930 period brings to a head this previous study and advances many new ideas.

Handling one of the most important subjects, the

small-city committee continued its collection of data and information. Its report particularly emphasized the need for intensive merchandising. Better selling of the service is the first step the smaller railways should take, and it is encouraging that more attention is being paid to this fundamental requirement.

It is significant that another committee, that on the passenger, should strike down to the foundation of merchandising in its report. Feeling that a better knowledge of the desires of the public for transportation is essential, the committee selected a trained man to establish a scientific method of making market analyses. Intended to determine whether more rides may be sold to the present users and whether non-users can be induced to ride, these surveys will form a standard basis for adjusting service and building up revenue.

Although no direct reference was made to merchandising in the report of the committee on the transportation employee its suggestions for selecting and training men properly will assist in developing salesman. Analyzing the job of each employee is bound to show whether his relations with the public, his appearance and manner, and his ability to do his work will qualify him as a salesman.

Movement of the vehicle, operating economics and equipment were the other subject studies. An analysis of the effect of the automobile on riding is included in the report on the first-mentioned topic. It also gives valuable suggestions on making studies of parking and traffic control. The operating economics report lists many practices generally applicable which have increased revenues or decreased costs. Convincing figures on the beneficial effect of new or rehabilitated cars on revenue and expenses were presented by the equipment committee. Study of the statistics of 40 companies having new cars, and 41 companies operating old equipment, together with a detailed study of two selected cases, led to the one conclusion—that modern cars appreciably increase passenger revenue.

An Opportunity for Utilizing the Art of the Drama

KEEN interest is felt by all electric railway men in their industry and the discussion of its problems, but it is too much to expect that this interest should be so strong as to render them oblivious to the manner in which the subject under discussion is presented. A bright, lively presentation catches and holds their attention whereas a dull tedious presentation allows their interest to slip away. At electric railway conventions, too much reliance is sometimes placed on the importance of the subject as a means of holding the interest of the delegates, and not enough thought given to making the presentation effective. As a result, vital matters frequently do not receive the attention they deserve. It is a great pity that this condition should exist. The opportunity afforded by the annual A.E.R.A. convention for group consideration of transportation problems by executives from all over the country comes but once a year and it is extremely desirable that the fullest possible use be made of this opportunity.

To find a remedy for this situation is not easy. The busy railway executive has no time to study oratory before going to a convention to make an address. It would scarcely be diplomatic for the program committee to offer detailed suggestions in advance to the speaker. One possible solution of the problem might be for the committee to secure the advice of an expert on program arrangement. A man of this kind could render valuable service not only in suggesting how to treat individual subjects most effectively, but also in suggesting how best to arrange the various topics to be considered at each session and how much time should be allotted to each to avoid wearying the delegates. He might also be able to suggest a better balance between formal addresses, committee reports and informal discussion. In short, he would apply the art of the drama to making the program attractive.

It is no criticism of those responsible for the electric railway convention programs that something of this kind is needed. The members of the program committee are transportation men, not dramatists. But experts on the principles of program arrangement are available and could well be utilized. This would in no way detract from the impressiveness of the sessions. Even the most important subject gains emphasis from an interesting and effective presentation. A convention program should be more than a mere collection of topics which are believed to be timely and interesting. It should be put together with the same care that is exercised in the arrangement of a theatrical program in which each act is considered in its relation to the other acts.

Co-ordination Ahead for Chicago

VOTERS at Chicago on July 1, by an overwhelming vote approved the new franchise ordinance calling for co-ordination of all local transportation agencies. That augurs well for the future. Of course, the measure is not perfect. No human document ever is, but it is undoubtedly the best plan that has been proposed.

The old franchises were unsatisfactory in many ways. The idea behind them was to tie the companies up tight. And that they did. It is surprising that under them the companies did as well by the people of Chicago as they did. So far as it was possible to do so under the restrictive grants in force progressive managements of both the surface lines and the elevated have given the public a taste of what could be expected under a grant fair alike to the companies and the city. They kept faith in the larger sense of their civic responsibility. And they have been rewarded and the city has been rewarded by acceptance of an ordinance probably without parallel in the annals of franchise grants of the kind.

It will take some time to work out the financial details, but the stage is all set. Financing is a matter of technique. While this is also true with respect to the plan for the expenditure of $60,000,000 within the next three years and $200,000,000 within ten years, the work of aligning the properties physically can be begun at once and may be expected to proceed promptly.

In the form in which the grant was finally adopted and now passed the ordinance represents many years of effort to find a solution to the question and many months of intensive work by various officials and civic groups. Under it the new co-ordinated company, the Chicago Local Transportation Company, will be enabled to give the millions of people patronizing its lines efficient and satisfactory service. Transportation in Chicago may now be expected promptly to get into step with the march of progress of the city's other utilities. That has been a hope long deferred. Now it should soon be realized. Both the companies and the city are to be congratulated on the outcome.

Newly-Elected Presidents

of the AMERICAN and
AFFILIATED ASSOCIATIONS

1. **J. H. HANNA**, elected president of the American Electric Railway Association, is president of the Capital Traction Company, Washington, D. C., with which and its predecessors he has been connected since 1894. He knows that property and the personnel intimately, and he knows the transportation industry. He is the first man ever to have been president of both the association and its affiliated body of engineers. Long has he been active and prominent in association work. He is well known and well liked, locally and nationally. He is an engineer with vision, as his administration of the Washington property testifies. Mr. Hanna was graduated from Princeton in 1892 as a civil engineer.

2. **L. D. BALE**, elected president of the American Electric Railway Engineering Association, is superintendent of the power department of the Cleveland Railway. His greatest contribution to the industry is the work that he has done in developing the automatic substation. He has seen service with the Louisville Railway, the St. Louis Transit Company and its successor, the United Railway, and with the Cleveland Railway, with which he became associated in 1908 and for which, starting in 1911, he revamped the entire power supply system. He has been unusually active in association affairs. He studied at Rose Polytechnic Institute, but not until after he had served as an apprentice with the Louisville Railway.

3. **PAUL E. WILSON**, elected president of the American Electric Railway Transportation and Traffic Association, has been connected with the Cleveland Railway since 1902, but not continuously. His first work was as office boy. Again he was with the company from 1905 to 1908, in the operating department. Then he served the Cleveland *Leader* and the Cleveland *Press* as reporter, studying law meanwhile at Western Reserve University. His return to the railway dates from 1910. His advance to the post of vice-president and secretary was rapid.

4. **C. E. REDFERN**, elected president of the American Electric Railway Claims Association, is claim agent of the United Electric Railways, Providence, R. I. He entered the service of the predecessor of that company in 1900 direct from business school, transferred to the claims department in 1902, and was made claim agent in 1907. His chief interest is in safety work because of its direct bearing on the affairs of his company and its humanitarian aspects. He is on the executive committee of the National Safety Council and is a member of the Governor's committee in Rhode Island on street and highway safety. Mr. Redfern was admitted to the bar in 1921.

5. **C. E. YOST**, elected president of the American Electric Railway Accountants' Association, is treasurer of the Delaware Electric Power Company, Wilmington, Del. This company is the successor to the Wilmington & Philadelphia Traction Company with ramifications more extensive than the company's title would appear to imply. In the work of the company, Mr. Yost has played a very important part.

Co-operation Is Essential To Meet *1930's Challenge to Transportation*

In his presidential address before the American Electric Railway Association Mr. Shoup points out the problems that confront the industry and outlines a means of solution

By PAUL SHOUP

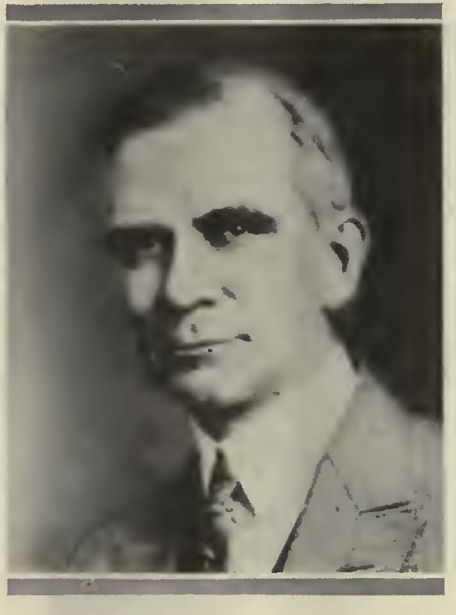
President American Electric Railway Association,
Chairman of the Board Pacific Electric Railway

DURING the fifteen years since the American Electric Railway Association held its annual convention west of the Rockies, many changes have occurred in the whole transportation structure of the nation, the local transportation industry in particular. It has been forced to contend with shifting economic, political and social forces that have put to a most severe test the industry which you represent, and in which there is invested some five and one-half billions of dollars; almost a fifth of that invested in steam railroads.

Out of this battle for existence there is coming a more virile industry. Useless branches of the transportation tree have been swept away by the storm of conflict or removed in the interest of more efficient service. The trunk remains permanently rooted in community soil.

You may well take pride in the recent record of the industry. We are passing through a general severe industrial depression. The output of some of our major industries has been temporarily greatly curtailed. Our local transportation industry has shown only moderate effects from these depressing causes. A non-essential or fading industry does not establish a record like that in times of depression.

It has been increasingly apparent for twenty years that transit and traffic conditions in American cities should receive attention. Transportation facilities in the majority of the larger cities of the country have been permitted to fall far behind the standards for other elements in modern urban life. Measured in terms of convenience, comfort and safety, the conditions to which people in most cities are subjected when they attempt to move about, reflect little credit upon American progress. Inconvenience, crowding and dangers encountered in riding, driving or walking in congested traffic areas have come to be accepted as almost inevitable. That should not be so.



Paul Shoup

The remedy for these conditions lies in the hands of transportation men and the public working co-operatively. It is part of our job to show the public what the remedy is, and how we can join hands and apply it. The job is worth doing, and worth doing well. Unless I am greatly mistaken, eventually it will fully reward the men who do it.

Companies providing public transportation service in cities are seriously handicapped by the lack of public understanding of the problems involved and consequent lack of public co-operation. Measures for the improvement of the service naturally raise many public issues that are complicated, and to some extent of a technical nature. Any sound program of improvement must put the needs of the community as a whole above the interests of a particular section or group, but partisan politics, prejudice, and, finally, selfish interests of individuals or groups, tend to obstruct progress. There is need, therefore, for a better understanding by each community as to transportation policy that will be most beneficial to it as a whole.

Back of our so-called street traffic problems lies the major problem of transportation. Traffic and transportation are closely related in their activities. It is not my part to discuss a solution; I will mention but a few of the problems that are up for solution. These concern not only our companies engaged in this public service, but the cities and communities thus served.

Here is a vital and necessary utility service which carries seventy-five per cent of all the people who move daily in and out of the central areas of large cities. The industry ranks about eighth in the amount of invested capital in the United States. But while the difficulties of other industries attract attention as national business problems, the long protracted struggle of the local transportation industry to maintain a vital public service while handicapped by serious economic and political obstacles attracts far less public attention than is warranted by its importance.

This situation is the more to be lamented because of the fact that relief can be given at no expense at all to the public. With such relief will come a vast improvement in personal comfort, in convenience, in maintenance of home and business values, and creation of new values for all the people of the communities served.

It is absurd, as was shown by the recent report of a State Taxation Committee of the State of California, that the electric railway industry—the least remunerative of industries in this state—should be bearing the highest tax relatively compared with all other public service corporations. It is absurd that these companies should be compelled to continue the paving and maintenance of sections of streets and highways—in many instances the major part—when it is the tremendous traffic of the last few years of motor vehicles used in private service that is wearing them out.

The uncertain policies of the cities with respect to franchises, whereby the owners of invested capital do not know when it will disappear absolutely, and the thoughtless use of police power that puts added operating burdens upon the companies in so many localities, can be so easily and simply removed, in so far as the mechanics of the problem are concerned, that it seems almost unthinkable that enlightened policies have not been established, since they are so essential to the life and growth of the cities.

Experience has indicated that the construction of rapid transit structures, either subway or elevated, is not a suitable field for the investment of private capital. Due to high fixed charges, the riders cannot furnish revenues sufficient to carry the fixed charges, and maintain these structures. The question then arises, if the necessity takes on a conclusive aspect, as to who is benefited, and who should help carry the charges that are not properly allocable to the riders, because of the greater convenience and more rapid transit given them in their transportation.

It is believed by some students of this question that a clearer understanding is needed of the distribution of benefits from transit improvements among the several groups in a city which are affected thereby; namely, the community as a whole, property directly enhanced by the location of transit lines, and the riders who use the service. Though the property which receives direct benefits from the location of transit routes plays a very active part in dictating the location of lines and even of stations, it has so far failed to carry its proper share of the construction cost burden. In this fact seems to lie the difficulty both financial and political of providing adequate rapid transit.

Few companies in the United States are able to pay a satisfactory return to their investors, even though the average rate of fare has steadily risen during the past decade. In consequence, the financial and physical status of electric railways in many cities is in serious jeopardy. As a result, the communities are faced with large expenditures for increased street capacity, because the public very naturally prefers to use its automobiles as a substitute for public transportation when the latter is not permitted, through either political, physical or economic handicaps, to develop the class of service to which the public feels itself entitled.

Nor is the outlook for other public agencies of urban transportation much better without adequate public co-operation than is that for street cars. The bus, though rapidly finding its level as an adjunct to other transportation agencies, offers no permanent solution of present difficulties. It merely furnishes another tool of transportation that fits in between the individual automobile and the street car, and is particularly adapted for furnishing certain forms of service. In general, it has been clearly established that the wholesale replacement of street cars with buses, though it would involve the wiping out of an investment amounting to several billions of dollars in present street railway plant and roadbed, would complicate rather than simplify the urban transportation and traffic problem. One fact is definitely established: in any city, buses and street cars need to be operated in harmony and under one management.

Next, we come to the individual public vehicle—the taxicab. Here again we find an unsettled and unsound financial condition. As a matter of fact, the situation is such that it is unattractive to responsible capital and the growth of unregulated and destructive competition has resulted in widespread evils, and in some large cities is a major factor contributing to the traffic congestion problem.

Thus we have in every form of public transportation service in cities, in rapid transit, street railways, buses and taxicabs, the same general situation—unstable and unsatisfactory present conditions which threaten to become worse. At the same time there is no generally accepted policy under which these facilities may be expected to grow and develop.

The conditions to which pedestrians are subjected in present day traffic are a serious reflection upon our ability to provide for the intelligent and safe use of the machines which we ourselves have created. All of this is attributable to destructive policies, inadequate planning, and improper regulation to meet changing conditions. There seems to be great need for more general recognition of the relation between transportation and traffic in order that improvement programs may be developed on a basis broad enough to insure substantial relief and to provide for future requirements.

The situation has been summarized for me in this sentence: Cities cannot get along without local public transportation, and local public transportation cannot get along without the cities. But the cities and communities need to realize their obligations in this connection, because of their own interest, irrespective of the contractual relations that were entered into under different conditions when those companies first took on the obligation of carrying the public locally. The congestion in the business areas reaching points of stagnation, as I have said, makes more essential than ever before a complete co-operation involving the city governments, the public organizations seeking to solve the problems, the automobile associations, the transportation companies, and the individuals. These last named are very changeable, having, as each one of us knows, varying viewpoints according to whether they are on foot, riding in street cars, taxicabs, or in automobiles, or merely the immobile statues of patience waiting for these moving activities to get out of the way.

Meeting the Problems of Today in the Transportation Field

American Association sessions discuss vital subjects affecting the industry from many angles

THIS year three sessions of the American Electric Railway Association were held at San Francisco, on June 23, 24 and 25. The general theme of the convention was "1930's Challenge to Transportation Men." Each day the subject was treated from a different angle. On Thursday there was no formal meeting, but a general luncheon conference was held at the Fairmont Hotel, at which those present informally summed up the convention.

Monday's session, which marked the opening of the convention, began with the presentation by the chairman, President Paul Shoup, of Hon. A. J. Rossi, acting Mayor of San Francisco, who welcomed the delegates in most cordial fashion.

In his presidential address, Mr. Shoup sketched the development of the local transportation industry, pointing out the essentiality of the service rendered and the impossibility of building up great cities without adequate transportation.

Following Mr. Shoup's address, D. W. Pontius, president of the Pacific Electric Railway, Los Angeles, delivered an address giving in some detail the things that can be done to improve interurban operation and revenues.

"Making the Most of Existing Street Railway Properties" was the subject of an address by Samuel Kahn, president Market Street Railway, San Francisco. The problem, he said, is the same as it was in the horse car days. The desirable features of service include speed, frequency and comfort. The standards by which the public measures the service, however, have changed and it has been necessary to revamp the traction systems time after time. He believes it is necessary to cater to the needs of the patrons and to their whims as well. Fast schedules without layover, he thinks, are essential if a company would succeed.

Abstracts of the addresses appear elsewhere in this issue.

The Industry's Plans to Help

TUESDAY morning's session of the American Association opened with the report of Managing Director Charles Gordon. He emphasized that in order to provide a satisfactory solution of the street railway problem public understanding is necessary. In order to obtain results it is essential that greater interest be taken in the work of the association and that co-operation be obtained from representative business men in the various cities of the country.

Announcement of the Anthony N. Brady Memorial Safety Awards was made by Mr. Gordon. In his remarks he stated that the record made by electric railways is a bright spot in a generally depressing traffic situation. The electric railways have had a comparatively small number of accidents in comparison with other vehicles operating on the highways; in particular, fatalities are exceedingly low.

The award of the gold medal for Class A roads, those operating more than 5,000,000 car-miles per year, was made to the Duluth Street Railway, with honorable mention to the Ottawa Electric Railway.

The silver medal for those roads operating between 1,000,000 and 5,000,000 car-miles annually was awarded to the Colorado Springs & Interurban Railway, with honorable mention to the Calgary Municipal Railway, Calgary, Alberta.

The bronze medal for those roads operating less than 1,000,000 car-miles per year was awarded to the Lethbridge Municipal Railway, with honorable mention to Montana Power Company, Missoula division.

Nominations were announced by Frank R. Coates in the absence of James P. Barnes, chairman of the committee on nominations. The nominees were elected unanimously as follows:

President—J. H. Hanna, president Capital Traction Company, Washington, D. C.

First Vice-President—G. A. Richardson, vice-president and general maanger Chicago Surface Lines, Chicago, Ill.

Second Vice-President—J. H. Alexander, president Cleveland Railway, Cleveland, Ohio.

Third Vice-President—W. A. Draper, president Cincinnati Street Railway, Cincinnati, Ohio.

Fourth Vice-President—W. E. Wood, vice-president Engineers Public Service Company, New York, N. Y.

Treasurer—Barron Collier, president Barron G. Collier, Inc., New York, N. Y.

Members-at-Large of Executive Committee:

Operating Members (Three-year term)—Dr. Thomas Conway, Jr., president Cincinnati & Lake Erie Railroad, Philadelphia, Pa.; G. J. Kuhrts, president Los Angeles Railway, Los Angeles, Cal.

Manufacturer Members (Three-year term)—E. P. Waller, manager transportation department General Electric Company, Schenectady, N. Y.; C. R. Ellicott, vice-president Westinghouse Traction Brake Company, New York, N. Y.; A. A. Hale, vice-president Griffin Wheel Company, Chicago, Ill.

Myles B. Lambert was elected to fill the unexpired term of E. D. Kilburn, resigned.

E. J. McIlraith, Chicago Surface Lines, addressed the meeting in the absence of G. A. Richardson, vice-president and general manager of the same company. He outlined briefly the work done by the committee on street traffic economics. Mr. McIlraith believes that use of the streets must be regulated in order to help a city grow in a logical manner.

Decentralization of some businesses, such as grocery stores and drug stores, is desirable, according to Mr. McIlraith. These businesses are more or less local in character and there is no advantage in concentrating them at a few points. Other businesses should be grouped together in order to get the best economy of time of those working in them. He believes that centralizing of many lines of business is increasing and

cited New York, Chicago and other cities as proof of this. With this development under way the street railway is not on the way out but is going ahead along with this tendency. In Chicago ten years ago there was a question of whether the streets would be adequate to handle the traffic that was being offered and whether it would not be necessary to distribute business over a much wider area on that account. Today, he said, there is no doubt about it. Changes in traffic regulations and elimination of parking have made it possible to move such an enormously increased number of people in and out of the central district that there is plenty of space for growth in business interests for years to come.

Street railway men must take the leadership in traffic regulation and control in order that it will serve the whole public. Signals of archaic type have been developed and introduced in cities to their great detriment. Mr. McIlraith gave several instances of this, indicating that advanced forms of traffic control are absolutely essential.

Progress in meeting the industry's equipment problem was the topic of an address by Dr. Thomas Conway, Jr. Dr. Conway outlined the work that has been done by the present committee which has been formed to investigate the problem of better design of street cars. He indicated that a new method of approach must be adopted in order that cars may be designed which will better meet the needs of today and can be sold at reasonable cost.

Edward Dana, general manager Boston Elevated Railway, addressed the meeting on the technique and possibilities of conference training for employees, summarizing the work done by the committee on employee training. This committee, he said, believes that the conference method of training is the most important that can be adopted in instructing employees in the technique of their positions. Methods already in use to train men to do their work on the cars efficiently is entirely satisfactory. What is needed is training for salesmanship—selling rides to customers. The most striking feature in the conference method is that it interests the individual worker. Considerable work has been done in the past few years in training foremen through conferences. The experience gained in this is most valuable in formulating plans for a broader type of training that can be adapted to all employees. Experience indicates that what should be taught is customer contact. The first thing necessary in selling car rides is to determine what is a satisfactory ride, and the next necessary thing is to determine what is satisfactory service.

Edward Dana

H. G. Taylor

Who presented addresses before the American Association

The conferences that have been successful in Boston in carrying out this plan have been quite short, lasting one to 1¼ hours. It has been possible to interest all of the men and to have each one take a part. Mr. Dana outlined in some detail the courses offered to foremen and supervisory officials in Boston. He stated that it is necessary to emphasize the relationship of the employee toward his job and toward the public. It also is necessary to develop in him a feeling of loyalty and desire to give the best service possible. Another need in the training is to develop a technique of customer contact. In this particular the conference method is the only approach that is of value in instructing adults.

Future of Public Control

AT THE Wednesday session of the American Association the *Electric Traction* Speed Trophy was awarded for the year to the Chicago, South Shore & South Bend Railroad. The presentation was made by J. M. Bamberger and the cup was accepted by W. A. Sauer, vice-president of the railway.

Mr. Shannahan reported on the relations of the association with the United States Chamber of Commerce. This, he said, is the only way the American business man has of making his needs known and it is essential that the electric railways be recognized as a vital element in American industry.

Mr. Shannahan then discussed briefly the relationship companies should have with their employees. The man on the platform of the car is our greatest potential asset, he said. Every operator should take advantage of the plans that have been developed by Mr. Dana's committee on employee relations and adapt them to its individual needs. He told in some detail of the change in sentiment of the public in Omaha since he has been associated with the company and where the public relations were previously very unfavorable. The improvement he credited to the work of the trainmen in engaging the support of the riders and the voters in general. This support made it possible to have a new franchise presented and adopted. Later on the same men made it possible to obtain a much-needed increase in fares.

H. G. Taylor, manager public relations, car service division, American Railway Association, addressed the meeting on the advances in transportation and the problems that have been brought with them. He mentioned briefly the great development in air transport during the past five years, and also the development of the motor bus. The bus, he said, has now taken its place alongside the street car, not to replace it nor to compete with it, but as an ally. Economic conditions must be recognized in the determination of rates of fare, according to Mr. Taylor. This contemplates regulating traffic conditions, which are chaotic all over the United States. The sentiment in favor of automobiles as against everything else, he believes, is waning and the street car is coming back into its proper field.

Need of better street cars was emphasized by the speaker. As illustrating his point, he told of the progress made by the steam railroads, which since 1920 have put a large amount of capital into the business and as a result have been able to obtain economies resulting in a great increase in net revenue. The program for improvement of car design which was adopted at this convention he believes is excellent and that it should lead to good results. Old cars, he holds, advertise the business as decadent and should be retired as soon as practical.

Mr. Taylor believes that there should be close co-operation between street railways and public utility commissions. There should be an interchange of information and better understanding of the problems involved. As to the future of the street railway, he is optimistic. He believes that it is an essential industry. However, the idea must be sold to the public that it is superior to any other form of transportation in its field and he believes that this has not yet been done.

An outstanding address was delivered by John E. Curtiss, chairman Nebraska State Railroad Commission, on the subject "Public Responsibility in Regulating a Competitive Industry." Illustrating his remarks with pointed anecdotes, Mr. Curtiss said that competition itself makes a very effective regulation which determines the maximum rates that can be charged and dictates to the managements the need for efficiency and economy.

An address on the subject of taxation was read by M. D. Lack, tax counselor California Taxpayers' Association, Los Angeles.

An address on the subject of "National Relations," giving the results of the work accomplished during the year by the American Association committee on that subject, was read by Ralph Bradley in the absence of C. D. Cass, general counsel American Electric Railway Association.

Following the adoption of report of the committee on resolutions the new officers present were installed. The meeting closed with an ovation to the retiring president, Paul Shoup.

Luncheon Conference Summarizes Situation

AS A FITTING climax to the convention, a general luncheon conference was held Thursday noon, after the official closing of all other meetings, for the purpose of summarizing the high spots of the convention and analyzing the future prospects of the industry. The chairman was D. W. Pontius, president Pacific Electric Railway.

In opening the comments on the convention, Dr. Thomas Conway, Jr., Cincinnati & Lake Erie Railroad, spoke of the President's Conference plan and its purpose of co-ordinating all developments of the past and future in the perfection of the street car. He cautioned against the expectation of startling results immediately and stated that only through a slow, orderly advance could progress be made. "The success of the efforts," he said, "depends on the co-operation of all electric railways and manufacturers."

Frank Karr, Pacific Electric Railway, gave his impressions of the convention and the principal things derived from the meetings.

Striking the keynote of the convention activities, W. B. Brady, Central Public Service Corporation, voiced optimism in the future of the industry because the problems are being attacked scientifically. He pointed to the new car plan, the recognition of the need for merchandising, the specific efforts in this respect through the introduction of market surveys, and the further studying of what properly may be termed a scientific fare structure.

Samuel Kahn, Market Street Railway, lauded the seriousness with which the problems of transportation were attacked, and cited the convention as the beginning of a new era.

That the association must broaden its scope of activities and include every form of public transportation was the view expressed by Julian M. Bamberger, Bamberger Electric Railroad. "We cannot be satisfied," he said, "with being street railway men. We must become public transportation men." Mr. Bamberger also commented on the lack of symposiums, discussion and attention to the problems of the interurban, and voiced the opinion that some means must be obtained of securing more collective data on specific problems.

Acquainting the public with the industry's problems and burdens is one of the vital needs, according to A. J. Lundberg, Key System Transit Company. Before giving them the facts, however, the railways must put their house in order, he added.

In the opinion of R. O. Crowe, Los Angeles Railway, the biggest thing which the delegates will carry from the convention is a renewed enthusiasm and faith in the industry.

"Find out how to sell your product," was the advice given by O. A. Smith, Pacific Electric Railway. Mr. Smith commended the merchandising activities started during the past year and added that all of the fundamental problems of the industry must be attacked from a merchandising angle.

Attractive service and well trained salesmen are the two biggest needs at the present time, according to A. T. Mercier, Pacific Electric Railway.

"The President's Conference plan and the making of surveys to determine what the public desires," stated Edward Dana, Boston Elevated Railway, "will open up a new effort in accomplishing the plans for modernization which have been under way for some time and which all railways have considered necessary."

J. M. Shannahan, Omaha & Council Bluffs Street Railway, commented on the seriousness with which the delegates engaged in the meetings and praised those responsible for the perfect convention arrangements and the splendid entertainment provided.

Three subjects, all of vital importance, were covered very thoroughly at the meetings, the comfort and convenience of passengers, fares, and speed. "The full discussion of these," stated J. H. Hanna, president of the Capital Traction Company and new president of the association, "will go a long way in attracting riders and making the public desire to use the service."

S. B. Way, Milwaukee Electric Railway & Light Company, commented on the service rendered by the San Francisco systems, and praised the work of the committees in charge of this year's program.

Charles Gordon, managing director of the association, summed up the high points of the convention and added an optimistic note to the closing. The obtaining of the other man's view at a convention of this kind, he pointed out, enables the interpretation of his ideas and the use of these throughout the entire year. Mr. Gordon spoke of the great responsibility, other than that of moving people, of acquainting the public with the problems and learning more about how the people wish to travel.

G. A. Richardson
First Vice-President

Guy C. Hecker
General Secretary

Barron Collier
Treasurer

Vice-Presidents and General Officers of the A.E.R.A. *for 1930-1931*

J. H. Alexander
Second Vice-President

W. A. Draper
Third Vice-President

W. E. Wood
Fourth Vice-President

Newly-Elected Members of the Executive Committee

1. E. P. Waller
2. Dr. Thomas Conway, Jr.
3. A. A. Hale
4. C. R. Ellicott
5. G. J. Kuhrts

Co-operative Effort

Is Essential

By CHARLES GORDON
Managing Director
American Electric Railway Association

Charles Gordon

COMPARED with other classes of utility services, local transportation companies are seriously burdened by limited man power and small staffs—particularly at the top. The long period of inadequate earning and unsettled future which we have experienced, has forced the most rigid economy in every department. Consequently, the chief executive of the average company is burdened with a heavy personal load.

There is still another situation which is above all the most discouraging with which the executive of a local transportation company has to deal. This is brought about by destructive tactics of the self-seeking politician who has little sincere interest in the transportation problem beyond the opportunity which it offers to get himself favorable notice in the press as a champion of the people at the expense of a corporation. The railway executive seeking intelligent public consideration of the many problems which he faces in his effort to preserve and rehabilitate a vital service to the public, is still frequently hamstrung and kept on the defensive by this type of political buffoonery.

Nevertheless, the situation with which an individual company contends is in a large measure circumscribed and materially influenced by developments in many other communities. Consequently, the action of each management and each community influences the situation of every other property in the country. Collective study of common problems and the very closest possible co-operation between companies is therefore of paramount importance.

Those of our current problems which lend themselves best to collective action, divide logically into six principal elements. Three of these have to do with the technique and methods within our industry; the other three involve questions of public policy which we can influence only indirectly, and then only in the development of policies and the application of measures intended to serve the best interests of the community as a whole.

Within the first group I place the equipment with which we render service—the general character and performance of the cars which we operate. The importance of this question has been recognized for several years and it has a prominent place on the program of this convention.

Second is the human factor in our business; that is, the attitude and the skill displayed by our employees in direct contact with the public.

It is absolutely essential that we have their full co-operation. But loyalty and the desire to co-operate are not alone sufficient. In addition, modern transportation conditions require a high degree of skill both in the operation of equipment through congested streets and in dealing with the public that boards our cars.

The third factor is the method of charging for our service. First of all, the product itself must be saleable. Next it must be sold by the people with whom the public is willing to do business. Finally, the price must be right. Other factors have an important bearing. Not the least of these is the presence of competition. Where it exists it exerts a strong influence on the making of rates or prices.

Turning now to questions of public policy upon which we can do little more than seek intelligent co-operation, there are again three principal problems which lend themselves to co-operative effort by the industry. There are three outstanding questions —taxation, franchise terms and regulatory policy, and the extent to which the efficiency of public transportation is recognized in seeking relief from street congestion.

All three of these topics—taxation, regulation and the economics of street use—have an important place and I shall do little more than merely mention them.

As I have already indicated, the development of local transportation is so interwoven with that of the community itself, that many of our problems are likewise public problems. If we are to unite upon the advocacy of measures based on certain general principles, these principles must be sound from the standpoint of the public interest, not in one community alone, but in cities of various sizes and varying characteristics throughout the nation. We know that the action of one community frequently affects many others. We have had ample evidence of this in matters of franchises, fares and taxation. We also know that each operating property is dependent for its development upon the state of the technical art in the industry as a whole. This is illustrated by our present efforts to develop more satisfactory types of car and bus equipment. With all this in mind, therefore, the importance of co-operative planning and co-operative action cannot be over-emphasized.

I am convinced that the business in which we are engaged renders a vital and necessary service which the 16,000,000,000 passengers who use it each year could not get along without.

There is every reason to believe that the business of providing public transportation service can be put on an economically sound and stable basis. I am fully aware of the difficulty and complexity of the problems involved. But I am hopeful that with your continual confidence and co-operation we may make steady progress and that my reports in the future may be expressed not in words but in results.

Meeting the Industry's *Equipment Problem*

Progress of the work of the Presidents' Conference Committee summarized in a significant address before the American Association

By THOMAS CONWAY, *Jr.*
President Cincinnati & Lake Erie Railroad
Chairman Philadelphia & Western Railway

IT HAS been generally recognized by the industry that progress is required in two directions: (1) improvement in the character of service rendered so as to make it more attractive to present and prospective patrons; (2) a substantial reduction in costs. Both factors are controlled largely by the design, age, condition, performance, weight and cost of the equipment operated.

Thus we are brought to the inevitable conclusion that the cars which we operate represent in large measure the key to our problem. For several years the industry has been aware of the evils attendant on the operation of the large number of obsolete and heavy cars that are in service, and it is gratifying to note that in the year 1929 a total of 1,496 new cars and locomotives were purchased by electric railways as compared with 897 in the year before.

In spite of the fact that the total number of cars purchased by electric railways in 1929 was 68 per cent in excess of the 1928 purchases and that a substantial number of cars were purchased during the first part of the current year, the progress of the industry in modernizing its equipment continues to be discouraging. There are approximately 74,000 electric railway passenger cars in the United States, most of which are in regular use. Half of these, or almost 40,000 cars, are over twenty years old. These old cars are excessively costly to operate, noisy, obsolete in appearance, and not calculated to stimulate riding or to earn a profit.

What is the reason for this anomalous situation? Why is it that an industry with over $5,000,000,000 of invested capital should cling to antiquated equipment instead of ruthlessly scrapping obsolete facilities as a means of promoting progress and increasing its earning power? The most important reason is that, while substantial progress has been made in the evolution of the railway car, it has not entirely measured up to the expectations or requirements of the shrewd railway executive. The competitor of the railway car is the private automobile and by the standards of the automotive industry the comparative progress of our industry in large part must be measured. Judged by that standard, the evolution of the urban railway car has failed to keep pace with its rival. The 1930 model automobile is infinitely superior to the product of five years ago.

Thomas Conway, Jr.

While the private automobile and motorbus are decreasing in cost, the electric railway car is constantly becoming more costly. Many operators refuse to buy cars to replace old equipment now in service because of what they regard as the prohibitive cost of the type of equipment which they would consider purchasing.

About a year ago a comparison of views and an exchange of ideas began between a number of the senior executive officers of large electric railway properties concerning the problem of car improvement. The upshot of the matter was that at the October, 1929, meeting of the Advisory Council, this question was brought up and thoroughly discussed, and it was informally agreed that steps should be taken by the railway operators to expedite the development of the urban railway car. To that end, I was requested to make a study of the problem and to prepare for submission to a group of the senior executives of our large city properties a memorandum outlining a plan of procedure to achieve the desired end. A notable meeting of the executives of such properties was held in Chicago in December last at which the so-called Presidents' Conference Committee (of which I have the honor to be chairman) was organized. Steps were taken to secure subscriptions aggregating at least $500,000, in roughly equal proportions, from the interested railway companies and from the manufacturers.

At the last meeting of the Presidents' Conference Committee held in Chicago on May 22, a subcommittee was elected to select a chief engineer and to make arrangements therewith. After a most thorough canvass of the problem, the committee unanimously decided that a knowledge of car building or of the operation of railway properties was not a prerequisite to the position and in many ways might constitute a handicap, particularly in the highly competitive situation which exists in the car building industry. We were advised by some of the foremost engineers and business executives of the country, who have had wide experience in handling research projects, that what was needed was an engineering executive—a man who has demonstrated his ability to conduct large research projects and bring them to a successful conclusion; who has shown his acumen in the selection of technicians, each capable of handling a particular part of the work, and who possesses the personal qualifications of winning co-operation and begetting confidence from the engineers and executives of the various manufacturing interests involved.

After a most careful study of the men suggested, the nominating committee, elected by the Presidents' Conference Committee, has unanimously selected C. F. Hirshfeld of Detroit, Mich., who for many years has been head of the research department of the Detroit Edison Company, as the chief engineer of the committee. Mr. Hirshfeld has had a wealth of experience in conducting research projects for his company, for the National Electric

Light Association, and for other interests. He is not a railway car specialist; he is relying upon the active co-operation of our master mechanics, of the engineers and technicians of the car builders, the manufacturers of electric equipment and of braking apparatus, and of other groups whose products enter into the railway cars.

In considering how a group of associated operating companies may bring about a radical improvement in the present car situation, which is so important to the industry, two broad courses of procedure are open. The first is for these properties to appropriate a substantial sum of money, hire engineers and proceed to take the initiative in designing, building, and testing one or more cars to meet their requirements. Although this procedure might seem to offer the most direct method of attacking the whole problem and of bringing about immediate results, it contains a number of serious objections, one of which is the problem of finding engineering talent which may be expected to be more successful in producing results under operator sponsorship than could be achieved by keeping the initiative entirely or in large part in the hands of the manufacturers who have had very wide experience in design and in the details of construction.

It seems wise and most important that the whole future of car development should not be contingent upon the success of any one or even several designs. The best results can be expected through the simultaneous effort on the part of as many individuals and groups as can be interested in the problem. By working through and with the present manufacturers, the committee may expect to stimulate the maximum number of simultaneous development projects, which in turn is the method which seems to offer the greatest assurance of ultimate success. By pooling the influence of a representative group of important properties, it can coordinate the efforts of the manufacturers and eliminate confusion.

The committee plans to take advantage of the natural stimulation of competition in attempting to achieve its objectives. Competition between manufacturers in the effort to excel is potentially a strong force, which, if properly stimulated and directed, will tend to accelerate development. It would be unwise, therefore, to stifle this competition by taking development initiative out of the hands of existing manufacturers.

The purpose will be to try out each new idea that is suggested and considered worthy, in such a way that there will be a minimum of duplicate effort and a gradual process of eliminating those features found to be impracticable or too costly. Thus, through co-ordinating the experimental work which is now being done individually by the participating properties, it is believed that the work can be organized among them and among the manufacturers with whom they now deal separately. In addition to its other advantages, the cost to the companies would be considerably less than that for individual effort.

In brief, the program of the Presidents' Conference Committee is one of co-operative effort with every group interested in any way in the construction of railway cars. The committee does not contemplate going into the car building business; it is not seeking to destroy or restrict the field of activity of any car builder or car equipment manufacturer. It will strive to co-ordinate the efforts of these groups; to bring to a focus the minds of the engineers and technicians in these industries; to stimulate inventive ingenuity; to finance worthwhile experiments and to try out the experimental product to determine its practical usefulness.

It is estimated that the railway properties whose chief executives are members of the Presidents' Conference Committee represent over 60 per cent of the potential car buying power of this industry. It is unusual for a customer to match dollars with a manufacturer for the improvement of the manufacturer's product, but our need is so great that every railway company which has subscribed has done so realizing that if the effort is crowned with any measure of success, it will be repaid many fold the amount of its subscription in the lessened cost of new cars and the betterment of the car builders' product.

The subscribing companies have underwritten the work of the Presidents' Conference Committee for a period of three years. Research and experimental work takes time and it is believed that substantial results cannot be expected in a shorter interval. In order that there may be no misunderstanding, let me make it very clear that whatever advantages accrue from the work of the Presidents' Conference Committee will benefit the entire industry. This is not a little clique of railway companies seeking to gain a selfish advantage. Any railway company may participate in this effort upon the same general basis as those companies which have heretofore subscribed and their co-operation and cash will be most welcome.

In conclusion let me dwell upon one matter which is most important. I hope that the activities of the Presidents' Conference Committee will not deter any railway company from buying new equipment until the committee's work is completed. This would be a great mistake both from the standpoint of the railways in question and the industry as a whole. All progress cannot be wrapped up in the work of this committee. The committee hopes that our member companies will continue to buy cars as usual and, in fact, in larger quantities than heretofore. Many ideas can be tried out in this new equipment to the great advantage of all concerned; many valuable lessons can only be learned by actual experience. In exhorting other companies to go forward and purchase new equipment, may I call your attention to the fact that the company represented by the chairman of the Presidents' Conference Committee has had delivered to it within the last few days new interurban equipment in sufficient amount to enable it to operate its entire interurban property with cars none of which is over three years old, and that the company represented by the vice-chairman of the Presidents' Conference Committee has booked within the last few weeks the largest order in 1930 for electric railway equipment. A substantial number of new cars will be purchased within the next few months by other members of the Presidents' Conference Committee who recognize the futility of waiting until the work of the committee is completed.

The railway industry has suffered untold losses through indecision and delay in striking out boldly along the line of experimental research, which has proved to be the salvation of most of the successful industries of America. Of one thing only can we be certain, and that is that success never comes to him who stands still. We must keep moving; we must show the people of the United States that there is vitality and life in our business; we must buy new equipment—the best that can be designed at the time the purchase is made—relying upon the fact that inventive skill and engineering ingenuity can be relied upon to enable us to bring this equipment up to a reasonable standard of performance and at a reasonable cost.

Transportation Men Are

COMMUNITY BUILDERS

Definite obligations rest on the utility, the community and the regulatory body, said the author in addressing the American Association

By JOHN E. CURTISS
Chairman Nebraska State Railway Commission

WE ARE living in a day and age of tremendous rush and hurry. We are being carried along in an hysterical atmosphere of getting some place quickly, and of doing things rapidly.

Accordingly, I suggest that in the midst of this atmosphere of speed, it is well to gather together on occasions such as this, renew acquaintances, and discuss problems of common interest and importance. Surely from such a convention as this comes enthusiasm for the daily task.

I believe in optimism, in spite of Owen Wister's thought that common sense repudiates both optimism and pessimism. Someone said an optimist is a man who sees the light that isn't there, and a pessimist is a fool who is trying to blow it out. As between those two types, and we have them both in this great country, we all prefer to mingle with the man who attempts to see the light that perhaps isn't always there, but in spite of that fact, is struggling forward and on.

Quite naturally there are problems to be solved. Problems of government, problems of industry. They are frequently inter-related. Your industry has them, every industry has them, and in their solution we must have leadership. You have perhaps heard of the fellow who was standing along the curb when a great crowd dashed by. He watched it pass and then started out on the run to catch up with it. He pulled a fellow from the rear of the crowd and said: "Where's this crowd going?" The man replied, "I don't know." Again he rushed on and caught up with the crowd and pulled another man out of the rear of the crowd and said, "Where's this crowd going?" This man replied, "I don't know, I'm merely following it." The stranger said, "Well great heavens, man, I've got to find out where this crowd's going. I'm its leader."

John E. Curtiss

There is plenty of that kind of leadership today. The kind of leadership that involves following the crowd in the direction that it goes, rather than being out ahead pointing the direction in which it might properly go. Plenty of leadership that involves bringing together facts—but not too many, not enough to be embarrassing — mixing them together with a loud noise, indulging in mental gymnastics, a bit of legerdemain, some violent waving of the arms, and then, like finding the rabbit in the hat, reaching down in the can and pulling out the answer. We need men and women today who can see straight, think fast, and above all else, act honestly.

Indeed we live in a universe of law. This is true in the field of science, but it is just as true in the field of economics and of finance. Certain fixed results are sure to follow certain definite transactions. There is no financial escape from receivership when a company fails to earn fixed charges. There is no escape from embarrassment that follows, both to the utility and the community, when such a return is not paid on the value of the properties as will attract the necessary capital to provide for the proper development of the industry. There is no escape from unfortunate results that follow improper public relations, when the management, that is, the employer and employee, fail to understand the customer, and in a courteous manner render the highest type service possible.

And so, in the midst of constant change, we move forward. Accomplishment that a few years ago was declared impossible, is today accepted as commonplace. Probably the most important discovery made in our generation is that we know practically nothing about anything. Having discovered that, we place ourselves in the position to move forward, and no industry can be listed among the casualties so long as it understands that there are further problems yet to be solved and that they can be solved—will be solved—in the light of constantly changing conditions.

So I say, change is the order of the day, and I know of no industry more directly affected by this change than yours. And in that change, I conclude, comes the inspiration for the subject assigned me for brief discussion—"Public Responsibility in the Regulation of Competitive Industry."

Thirty years ago your industry had well nigh a complete monopoly in its field. You furnished the fastest, most certain, most satisfactory urban transportation. Indeed the opulent citizen owned a team of high-stepping horses and a fine rubber-tired buggy, but this was a luxury enjoyed only by the few, and even those few, together with the masses, depended on you for local transportation.

But we have pressed forward—at least, we hope it is forward. Today the horse and buggy have passed from the picture, and the smell of the exhaust and the roar of the cut-out are endured on every highway, as countless thousands of automobiles—there are more than 5,000,000 new cars sold each year—dash by. Thus your industry, once a complete natural monopoly, bringing to the people of our large communities one of the necessities of life, is now confronted with the keenest of competition from the privately operated automobile, and the publicly authorized taxi-cab. I know of no street railway company in the United States that has been able to avoid the acute prob-

lems resulting from this condition.

But with respect to your industry, we have passed through another cycle, and, whereas originally you were a natural monopoly, you now find yourself confronted with the keenest of competition. What is the public responsibility respecting regulation under such circumstances? It is a fundamental principle of regulation that charges authorized by the regulatory body shall be sufficient to pay operating expenses under economical and efficient management and in addition, a fair return upon the value of the property. This principle of course prevails whether the utility regulated be a competitive industry, or a complete monopoly. In other words, the end to be attained is the same in either instance. The means to the end may be different. It appears to be altogether proper that in reaching the end, a different attitude might properly be displayed by regulatory authority, where competition exists, than in the regulation of that utility which operates as a complete monopoly. The Supreme Court of the United States, in the Southwestern Bell Case, said: "It must never be forgotten that while the state may regulate with a view to enforcing reasonable rates and charges, it is not the owner of the property of public utility companies, and is not clothed with the general power of management incident to ownership."

It is always a matter of judgment as to just where management ends and regulation begins. Therefore, as competition reappears in a definite way, it seems that the heavy hand of regulation might be lifted, in degree at least. Competition itself makes for very definite regulation—indeed regulation of rates, service and operating expenses. To be specific, the competition which now confronts your industry, presents a very definite limit to the extent to which rates can be increased, else the point of diminishing return be reached. This very fact compels the most efficient and economical operation. Again this same competition impels you to render the very highest type service possible, that your patrons may not be lost to the competitor. It is a patent fact that officers involved in the management of a utility, have as deep-seated a desire for the successful operation of that utility, as those charged with the responsibility of regulation. Furthermore, they have, of necessity, a more comprehensive understanding of company problems and the possible methods of solution, particularly respecting the manner and methods of meeting competitive effort.

Accordingly, where a regulated industry is faced with actual and effective competition, governmental authority should seriously consider that fact in its regulatory effort. Such regulatory action as is necessary should be prompt. The local industry might easily "starve to death" if regulatory action be tedious and long delayed. And receiverships are always highly unfortunate, not only for the industry, but also for the community. Considerable latitude should be permitted the management in solving matters of service. In so far as it is possible, the management should be given wide discretion in either reducing or increasing service furnished, that competitive effort may be properly met. Again, choice should be permitted the management in reaching conclusions concerning matters largely managerial, such as wages and salaries paid, the proper allowance for advertising, the manner and form of service.

A sympathetic understanding between the utility, the regulatory body and the public served, is highly important and should always exist. The interest which each of these groups has in the problem is a common one. Quite naturally the public does not care to pay a rate higher than necessary, and yet the public has a very definite interest in a rate which is high enough to provide a service that is certain, satisfactory and modern. Such service can only be furnished when a return is paid in amount sufficient constantly to attract the capital necessary to keep the industry modernized. It is, of course, the legal obligation of a regulatory body to grant such a rate.

Confronted with competition, the importance of public relations cannot be over stressed. Whatever the attitude and action of the regulatory body may be, the industry finds that unfortunate public relations can be highly disastrous. In the main, this responsibility is yours. I regard it as your privilege and your obligation to acquaint the public with your problems—problems of finance and service matters. Your contact with the public is in the nature of partnership relationship, and we discover that it is not always a silent partnership, in so far as the public is concerned. Too much silence on your part in honestly explaining your problem to the community you serve may mean some unfortunate noise on their part at a very inopportune time.

I can't say that I am entirely sold on the philosophy which causes us to say, "The customer is always right." He may not be, and it may be your unfortunate obligation so to inform him. Rather would I say, give your patrons a square deal always, and then see that they know they are getting a square deal. Keep no secrets from them. Tell them the story of your problems honestly and constantly. Let them discover that your problem is a community problem. That such misfortunes as come to your industry are verily community misfortunes. Tell them the truth, the whole truth and nothing but the truth.

For indeed you are supplying a basic fundamental community need. The time has not yet arrived, nor does it appear to be imminent, when local transportation service for hire can be abandoned. We have observed the operation of street railways under receivership. In fact we have seen total abandonment of street railway service, temporarily, and in each instance we have seen all manner of business temporarily paralyzed as a result. Accordingly there must be real satisfaction to you in a knowledge of the fact that yours is a labor of service—that you are indeed community builders.

With no thought of being sentimental, I recall the story of the three stone layers. A stranger had been watching their effort from afar. He approached the first and inquired as to what he was doing. With a grunt he said, "I am working for $6 a day." To the second he directed the same query, and discouragedly the man replied, "I am laying stone." To the third man he addressed the same inquiry. For a moment he hesitated, his eyes flashed and his face beamed satisfaction as he said, "Sir, I am building a cathedral." I know of no industry, in spite of the change of the day, which can still say with such satisfaction, "Sir, we are building a community." Certainly in that effort, those charged with the public responsibility of regulation, recognizing a real competition which constantly challenges you, should be prompt and courageous in meeting that responsibility—should approach the problem with a sympathetic understanding that the best interests of the riding public, the community and the utility serving may be safeguarded.

Speeding Up Service

The speaker, addressing the American Association, told what has been done in San Francisco by scientific scheduling

By SAMUEL KAHN
President Market Street Railway,
San Francisco, Cal.

Samuel Kahn

EXPIRING franchises; a public somewhat uninformed, often misinformed; structures and equipment in good physical condition but not always embodying the last details of design to meet increasingly exacting passenger demands is a summary of the situation of the Market Street Railway when the present management took it over.

Just what does the public consider desirable in a 1930 street car ride? In following that quest, except for the date, we are treading the same trail followed by the horse car operator. He was required to furnish a speedy ride, at frequent and regular intervals, to carry the passenger in comfort—yes, even luxury—for that day and age. Was not the board seat of the horse car upholstered with its fine Brussels carpet a luxury in the days of plank sidewalks and mudhole streets?

From our experience in San Francisco it seems there can be little doubt about the public's demand for a quieter, smoother ride. The use of rubber shock pads between car body and bolsters; acoustical cloth under the car floor, under the trolley base, and under the air pump base have shown marked results with our own equipment—of all ages and designs.

Are new motors, quicker pick-up and quicker acceleration the only answers to the demand for greater speed without greater hazard? That these features are most desirable is beyond question, of course. But what of the street railway property that is not in a position to install such new equipment? Must it forego the essential benefits of more speed without more accidents?

It has been our experience that it need not. For instance, without change of motive equipment our speed has been increased from 9.4 m.p.h. four years ago to very nearly 11 m.p.h., day and night average, including all stops and delays except layovers. This has been done with a reduction of operating cost which materially helped in attaining an expense reduction which was greater than revenue decline last year.

Service to the public was not decreased, but rather increased 800,000 car-miles annually compared with four years ago. This car-mile increase served to absorb car-hour reductions sufficiently to obviate any reduction in operating force beyond the normal turnover, thus avoiding hardships to employees.

At the same time energy consumption has been reduced, and accidents substantially decreased.

UTILITY TAXATION

Advantages and disadvantages of gross receipts tax are set forth in a paper presented before the American Association

By M. D. LACK
Tax Counselor
California Taxpayers Association

IN CALIFORNIA, the tax situation reached a climax in 1910, when a constitutional amendment was adopted completely changing the revenue system of this state from the uniform *ad valorem* system for the support of both county and state to a separated system, setting up different sources of revenue for state and local purposes. By this separation, there was turned over exclusively to the state for its support those classes of properties such as public utilities, banks, insurance companies and the like which rather readily fell into a class whose activities were not circumscribed by county boundaries, leaving to the counties such properties as could be said to have a local situs.

The act of separation provided a tax measured by gross income, or gross receipts, for the former classes, with gross premium taxes for insurance companies, a capital stock tax for banks, and a franchise tax for business corporations; the tax to be collected from these classes was designated as strictly and exclusively a tax for state purposes, at least payable exclusively into the state treasury, and subject to its appropriation.

The state tax on these classes of taxpayers was made a tax in lieu of all other taxes and licenses of every kind, except payments agreed to be made to certain subdivisions for rights-of-way, franchises and the like, and neither the counties nor the cities were thereafter allowed to levy any tax against the property of these classes, when such property was used in the operation of their business, or in the production of the gross income which served as the measure of the state tax.

In return for the withdrawal from taxation from the counties of these classes of property, those subdivisions were no longer required to collect or to pay any tax for state purposes on their remaining properties, except that the act contained a

clause reserving the right, never yet brought into use, for the state, in case of an emergency, to levy an *ad valorem* tax on all classes of property, both state and local, equally, to take care of such emergencies.

Advantages and disadvantages of the California gross receipts tax might be summarized briefly as follows:

First, as to its advantages: It is certain, not subject to variation because of too much latitude for the exercise of individual judgments; it is simple of administration; it substitutes one central state authority with which to deal in the consideration and administration of the tax on operative property in lieu of a number of independent officials limited only by the number of cities and counties in which the property is operated.

Objections that may be urged against it are: Inequalities of tax burden between members of the same class of operators or utilities; tendency to remove the intelligent interest in and influence upon state expenditure programs by relieving the citizen of any direct tax for state purposes; creation of a tendency of both state and local subdivisions to transfer expenditures from one to the other, and, more serious still, for particular locally-supported activities to advocate additions to their income or revenues by persuading local citizens to join them in advocating that the state make a new or greater contribution to such activity on the theory that the local portion of it is too great by comparison, and thus securing their co-operation to bring about increased state contribution on the almost universally erroneous theory that it will reduce the local tax burden; the inclination to discontent between the two classes of taxpayers, growing out of the fact that the different methods of levy are not easily comparable as to equality, with the resultant tendency to conclude, on the part of one group, that the other is carrying less than a fair share of the load.

Interurban Revenues

Means of popularizing passenger service and attracting freight business discussed before the American Association

By D. W. PONTIUS
President Pacific Electric Railway,
Los Angeles, Calif.

REVENUE prospects of the future for the interurban electric railway are, to a great extent, what we make them. We must recognize the industry as a merchandising organization since transportation is the article for sale. There are certain groups of people who will buy our transportation because it fits their need; they realize its many advantages and are quick to see our faults. These form a large and important part of our patronage, and will stay with us so long as the service is satisfactory. There is another group who do not use interurban railway service, but who certainly should use it. At a much higher cost than rail service, they drive their automobiles to shop or to work. A large percentage of this group must sacrifice other things in order to do so. Efficient, dependable service with high-class, modern equipment will eventually bring a great part of them back to rail travel.

D. W. Pontius

Speed of service is an important point, and is demanded by present and prospective patrons. For this reason, we must encourage and to some extent participate in important grade separations; we must protect our private rights-of-way against further unreasonable opening of grade crossings, and endeavor to have eliminated all crossings now established when not essential.

Cleanliness of equipment, courtesy and attention of the platform men is an important feature that must be given constant attention to attract and hold business. Noise elimination is worth while, and this feature is now being given some much-needed consideration.

Retirement of obsolete equipment has been deferred perhaps too long in many cases. While this has been because of the necessity of keeping operating costs down to meet the revenue, undoubtedly this has been carried to extremes in some cases. There is a demand for first-class equipment that must be met.

Serious consideration must be given to the matter of fares. Our company has experimented with reduced fares extensively during the past three years. Fares are now on an unusually low basis, but we are convinced that the right step has been taken to increase the volume of traffic.

What applies to passenger traffic also applies, in a general way, to freight traffic, with the possible exception that probably the competition is more intense in connection with freight. The delivery of freight by trucks directly to the merchant, commonly called "store-door delivery," is, in my judgment, the strongest factor in this competition.

Retrieving of lost less-than-car-load freight traffic and promotion of new less-than-car-load business has been accomplished to a gratifying extent on the Pacific Electric Railway by the establishment of store-door pick-up and delivery. This service, although only begun in March, 1929, at 28 stations, has been extended to 51 stations; showed an increase of 12 per cent in the railway's less-than-car-load tonnage between March and September; and in the fifteen months since its establishment, less-than-car-load tonnage has increased 100 per cent. The railway's cost per ton for handling such freight at Los Angeles has been reduced about 18 per cent. The astonishing and very pleasing part of this is that of the business the "store-door" feature has brought in 95 per cent has been new accounts.

Advisory Council Activities Outlined at Banquet

Announcement made of selection of research director. Coffin prize presented to Youngstown Municipal Railway. Transportation problems discussed by A. W. Robertson

A SUMMARY of the activities of the Advisory Council of the American Electric Railway Association for the past year was given at a dinner in the Palace Hotel on the second night of the convention in San Francisco. Nearly a thousand delegates and guests filled the Palm Court and Rose Room. Other features of the evening were the presentation of the Coffin Award and an address by A. W. Robertson.

The meeting was opened by J. N. Shannahan, chairman of the Advisory Council. In speaking on the subject of its activities, Mr. Shannahan reviewed the five years since the Advisory Council of the American Electric Railway Association was organized under the chairmanship of B. C. Cobb of New York. Continuing, he said:

"The members of the Advisory Council represent a large proportion of the nearly six billions of capital invested in the business of providing local transportation service to American communities. The idea in the minds of those responsible for the organization of the Council was that in bringing together these men of large affairs, of wide experience and broad vision, their collective judgment and advice would be of the greatest help in working out the many baffling problems with which the industry has been confronted for a decade. These problems have been materially complicated by the necessity for keeping pace with the growing requirements of modern communities, while at the same time attempting to improve and modernize our facilities to meet new conceptions and new standards of public transportation service on the part of the people whom we serve.

"The men responsible for meeting the demands of the people for adequate, safe and speedy local transportation are alive to their responsibilities, and anxious to so satisfy the riding public by the character of the service they furnish that everyone will acknowledge that such service is in fact an essential, yes, indispensable, need of the community; service of such a character that the car rider will gladly pay such a fare as will enable these companies to compete in the money markets of the world for the funds so necessary to provide these extensions and betterments in which the riding public has so vital an interest.

J. N. Shannahan,
Chairman Advisory Council

"There is no mystery regarding the cause of the change in the public's conception of what it is willing to consider satisfactory transportation service. The rapid and remarkable development of the automobile created new standards of speed, convenience, and even luxury in transportation. This threatened to make obsolete much of the equipment and other facilities of our companies. At the same time, rapidly rising costs of materials and labor made the most rigid economy imperative and prohibited sweeping replacements of physical property.

"But while the public approved the expenditure of vast sums for the construction of streets and highways, without which the rapid development of the automobile would have been impossible, it failed to permit the modernization of public transportation facilities by insisting upon the retention of obsolete franchises, obsolete fare schedules, and obsolete taxes and imposts of various kinds. These have been the basic obstacles to the modernization of public transportation facilities. They have had much the same effect in curtailing the improvement and extension of community transportation as a failure to build roads and to improve streets would have had upon the development of the automobile. As a consequence, public patronage of transportation facilities which came to be looked upon as obsolete and out of date, was rapidly curtailed to merely necessity riding.

"Because the people as a whole agreed to assume the cost of adequate roads and highways, they have made possible the development of the automobile as we know it today and have permitted the automotive business to grow into one of our largest and most important industries. It has become a very important factor in our present industrial structure, and nothing should be done to injure it. When the public understands that obsolete methods of dealing with its local transportation problems constitute the primary cause of many of the difficulties faced by cities of various sizes throughout the country, the way will have been opened to that rapid development and improvement of community transportation facilities which is so greatly needed today.

"For the past four or five years there has been considerable activity on the part of individual operating companies and manufacturers in developing improved type of street cars, suitable for modern traffic conditions and designed to meet the transportation standards of a public whose tastes and transportation standards have been so materially affected by the convenience and luxury of the automobile. The Advisory Council, sensing the need for co-ordination of individual activity in meeting this common problem, at the last convention authorized the organization of a special committee

of executives under the chairmanship of Dr. Thomas Conway, Jr. That work has been consistently pressed forward since that time. A careful analysis of the whole car and equipment problem in the industry was necessary before a definite plan could be developed. This, however, has been done and as a result the electric railways of the country are about to launch a co-operative program of research and development, which has long been needed and which, if successful, will be a most important forward step in meeting one of our most acute problems.

"Dr. Conway's committee, after a careful study of the problem, decided that in the selection of a chief engineer to have immediate charge of the work of research and development, it should choose not necessarily a man familiar with the construction of cars nor even with the operation of them, but rather an experienced and competent engineering executive — a man who has demonstrated his capacity to conduct research of large projects and bring them to a successful issue. The committee believes it has found the right man for this work in C. F. Hirshfeld of Detroit, Mich. Mr. Hirshfeld has been for years head of the research department of the Detroit Edison Company. He has had an extended experience in carrying on research work for that company, for the National Electric Light Association, and for other important interests. His is a great task and can only be brought to success with the cordial support and help of all those intimately concerned in the building and operation of the electric car.

"The Advisory Council commends this project to the industry and to the public. Recognizing that there are many street cars in operation today that are badly in need of replacement, it feels confident that the development of designs to meet modern traffic conditions and which will at the same time eliminate much of the popular impression that the street car is an obsolete means of transportation will prove entirely feasible. A group of important railways and large manufacturing companies are backing this project, and it is confidently expected that there will in a relatively short period be available improved types of cars which will make replacements of many existing cars economically practicable."

Mr. Shannahan then introduced the toastmaster of the evening, President Paul Shoup, who again welcomed the delegates from all over the country to the convention and to San Francisco. President Shoup read the report of the committee on the Charles A. Coffin Foundation Award and presented to C. S. McCalla, president and general manager Youngstown Municipal Railway, the Charles A. Coffin Medal and the accompanying check for $1,000.

The address of the evening was made by A. W. Robertson, chairman of the board Westinghouse Electric & Manufacturing Company. Mr. Robertson offered as one step in the solution of the urban transportation problem, the establishment of "transportation districts" for a given community. He urged a closer co-ordination and co-operation between the railways and the various official factions of the area served for the purpose of obtaining better operating conditions under revised franchises and adequate fare structures.

Mr. Robertson further stated that mass transportation is as essential to public service as water, gas, telephone, or any of the other common modern conveniences. For more than a generation street railways have furnished this transportation to our cities. The development of the automobile has reduced the earnings of the transportation companies, but the need of some form of mass transportation is as real as ever. If it were not for the congestion on our streets and the reduction in the number of riders on our street cars, this form of surface transportation might well compare in speed, comfort and safety with any which the world has known, but due to the congested streets and reduced revenue under which the street railway operates, it has to do without many things which the transportation company and the public might otherwise consider necessary.

Many things have been done and are being done to assist the transportation companies in rendering service, but real forward steps cannot be successfully undertaken until the business men, the people at large, and the civic authorities realize fully that the handling of huge masses of passengers in our municipalities is a very complex community problem, and whole-heartedly and constructively co-operate with the local transportation company in solving it. Traffic congestion in our cities not only causes loss and inefficiency to the street car company but also represents a gigantic economic waste to the community. Every city is suffering from its blight. If we can solve the traffic congestion in any acceptable way we solve our mass transportation problems at the same time.

American Executive Committee Breakfast Meeting

REPORTS of several committees of the American Association were presented briefly at a breakfast meeting of the executive committee held on Monday at the Fairmont Hotel. G. C. Hecker, general secretary, presented the report of the publications committee, suggesting that renewed consideration be given to the publishing policy of the association magazine, *Aera*. F. R. Coates told of the gratifying increase in the number of state and sectional associations which have joined the American Association. An outline of the insurance situation was presented by F. L. Butler in the absence of the committee chairman. Leslie Vickers, economist, spoke briefly concerning the work of the committee on taxation. Arrangements for the convention were commented upon briefly by W. V. Hill, who introduced the chairmen of the various local committees which were instrumental in the preparation for the meeting. It was decided, on the suggestion of J. H. Hanna, that a committee should be appointed to study the problem presented by changing conditions in the industry with a view to making corresponding changes in the organization of the association.

W. W. Wysor, president of the Engineering Association, E. H. Reed, president of the Accountants Association and J. H. Handlon, represening the president of the Claims Association, spoke briefly concerning the work of these affiliated bodies. It was decided that the next meeting of the executive committee should be held sometime in August at New York City.

COFFIN AWARD Won by *Youngstown*

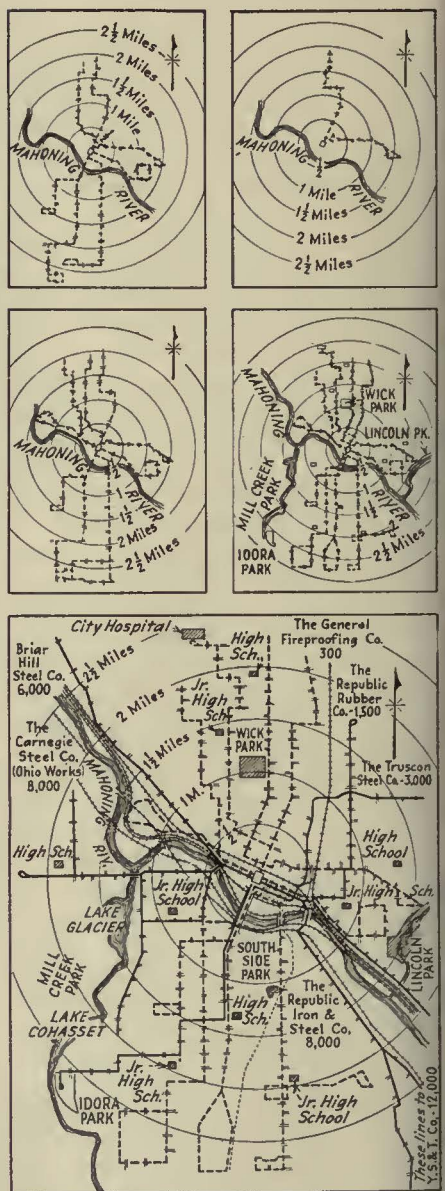
Modernization of equipment, plant and operating practices, co-ordination of rail and bus services, satisfactory public relations, and co-operation of and with employees mark year of progress. Briefs submitted by six contestants summarized

IN VIEW of its skill in successfully fitting the character and amount of service to the needs of the public and in effectively selling that service to the public, the Charles A. Coffin Prize for 1930 has been awarded to the Youngstown Municipal Railway, Youngstown, Ohio. Five other companies, which submitted a record of their accomplishments during 1929, made noteworthy contributions to the development of the electric railway industry. They are the Cleveland Railway, Cleveland, Ohio; Community Traction Company, Toledo, Ohio; Union Street Railway, New Bedford, Mass.; Eastern Texas Electric Company, Beaumont, Tex., and El Paso Electric Company, El Paso, Tex.

Six principal factors were considered in making the award: more riders and more revenue; friendly public; lower costs and increased reliability of service; increased safety for riders, employees and the public; co-operation between management and employees; and financial accomplishments. Seven electric railways have received this award since its establishment: the Chicago North Shore and Milwaukee Railroad, in 1923; the Northern Texas Traction Company, in 1924; the Pittsburgh Railways, in 1925; the Pennsylvania-Ohio Electric Company, in 1926; the Grand Rapids Railroad, in 1927; the Virginia Electric & Power Company, in 1928, and the Chicago, South Shore & South Bend R.R. in 1929.

New Franchise Assures Continued Success in Youngstown

FULL realization of an extensive program of modernization which included a new franchise, new cars and unbroken progress in the standardization of operating methods, materials and economies was the contribution of the Youngstown Municipal Railway, Youngstown, Ohio, to "the development of electric railway transportation for the convenience of the public and the benefit of the industry." This privately owned and operated utility is a part of the Penn-Ohio System which serves the city of Youngstown and suburban territory with an aggregate population of 216,000. Complete co-ordination of street car and bus services has been



Youngstown is now served by an efficiently co-ordinated system of car and bus routes. The four smaller drawings represent bus lines in 1922, 1924, 1928 and 1929. The larger one the complete system now operated

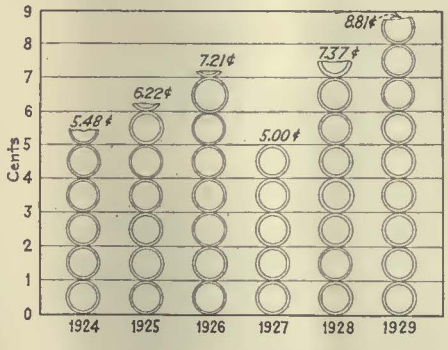
A complete program of rolling stock modernization

Municipal Railway

effected in this territory, the two being used as equivalent vehicles in equivalent service. On this property the bus is not parallel or supplementary.

The new franchise, made final by act of the city government on May 22, 1929, was the outstanding accomplishment of the Youngstown Municipal Railway. The negotiations, in open forum, with the leaders of business, finance and industry of the city resulted in a franchise which not only provides for flexible rate of fares, relief from unnecessary burdens, assurance from competition and genuine co-operation between the city and company in efficiently serving the traveling public, but also provides an arrangement financially satisfactory to the company and affords a basis on which it is justified in spending money for extending and improving its service.

The salient features of the franchise are: complete freedom from all obligations for construction of paving, or paving foundations, except such additional foundations as are necessitated by tracks; complete relief from any obligations for repair of pavement, except repairs actually occasioned by any act of the company; complete relief from all minor exactions such as sprinkling, street sweeping and cleaning, and burdens of this character. The franchise acknowledges the company's right to operate without cost or consideration over all bridges and grade separation viaducts now built and in case of rebuilding said bridges or viaducts, or the construction of new ones, at only such cost as the construction of tracks may add to the cost of the bridges or viaducts; deprives the city of any control over service or fares of the company in case the city should suffer, permit or aid competition with the company, with the exception of existing street railway and taxicab companies and provides that the cost of city control, including salary and expenses of street railway commissioner and his assistants, shall be paid by the city instead of by the company as heretofore.



Growth in net revenue in cents per mile before taxes and depreciation

An initial rate of fare of 10 cents cash, six tickets for 50 cents is allowed with provision for increasing and decreasing fares automatically, but with further provision that such sliding scale of fares shall not be impaired by fares other than the sliding scale placed in effect by agreement between the city and the company. Finally, the company shall receive after taxes and depreciation, 6 per cent return on its original capital value and 7 per cent return on all additional capital value, and further, the company shall participate in all excess fares over the rate stipulated to the extent of one-half after a surplus of $100,000 has been accumulated.

During 1929 the Youngstown Municipal Railway acquired thirteen of the most modern cars, of extremely low weight per seated passenger, high-speed motors, double-reduction drive and automatic foot controls. Thus it completed a program under which there does not remain a single street car in use on the property purchased prior to 1917 which has not been fully rebuilt.

The speed of the new cars means cash savings in actual service. The thirteen new cars purchased in 1929 develop an acceleration of 3½ m.p.h.p.s., and unusual deceleration. Advantage is taken of this improved acceleration and braking ability on the main trunk line extending the full length of the city from the industrial plants at Mosier on the west

has been carried out by the Youngstown Municipal Railway

side to those of Campbell, on the east side. Through the use of this new equipment 237 car-hours per day, or 6,665 car-hours per year, are saved in giving equivalent service. The actual economy realized through the substitution of this modern equipment is approximated at $80,000 per year.

The net earnings of the company available for taxes and depreciation and after the payment of operating expenses, including the purchase of power, have been steadily on the increase during the past seven years. In 1923 the net income was $250,967 and in 1929, $513,369. This increase is attributed to the constant attention to the popularizing of electric railway service in Youngstown and meeting the competition of private automobiles by improvement in character, speed, comfort, convenience and general attractiveness of the service rendered and by application of merchandising methods in selling this service.

Economies in operation have been effected as the result of original ideas and the application of ideas orginating with others so that revenue per employee has increased, unit revenue has increased, and unit expense has diminished. The largest net revenue in the history of the company resulted in the year 1929. Car and bus changes were reduced, the number of pull-ins cut and a variety of methods and practices resulting in satisfactory service to the public and improved financial returns have been adopted.

The Youngstown Municipal Railway gives evidence of its faith in the continued success of its operations in its plan for the continuance of further development. The budget for 1930 contemplates an expenditure of $543,400. This expenditure is all voluntary and, on a property of this size, manifests the faith the management of the company has, not only in the industry in general, but, under the present conditions, of its future in Youngstown.

New cars purchased by the Union Street Railway are modern in appearance and equipment

Car, Bus and Taxicab Services Co-ordinated at New Bedford

CONTINUED success in the operation of an old, well-established railway is reflected in the claims made for the 1930 Coffin Award by the Union Street Railway, New Bedford, Mass. Aside from operating the railways more efficiently and economically, the company has benefited from the increased gross revenue obtained from taxicab and bus operations. While these new forms of transportation have been added, operating expenses have decreased markedly.

Comparison of revenues between 1928 and 1929 are reasonable and fair as there has been no refinancing of the company since the last issue of common stock in 1918 and there has been no increase in fares since May, 1927. The story of accomplishments reflecting the results of operating effort during 1929 are as follows: the gross earnings from operations in 1929 were $1,283,221 as compared with $1,286,624 in the previous year. This is a decrease of only 0.2 per cent, so it is fair to state that the gross earnings for the past two years were practically constant; during the same period the operating expenses decreased 3.9 per cent, or from $1,165,964 in 1928 to $1,120,118 in 1929; the operating profit after depreciation increased 35.1 per cent, an increase of $42,442; the depreciation rates in 1929 were not decreased over those used in 1928; the net operating profit, after interest and taxes, increased 71.9 per cent, or from $50,733 in 1928 to $87,223 in 1929 and the credit balance of the company was increased 6.2 per cent.

For a number of years the Union Street Railway has maintained a traffic department which devotes the greater part of its time to analyzing riding requirements and making time-tables to meet the needs of the public. Not only has this given service where, when and as required, but it has been the means of saving thousands of dollars by eliminating unnecessary service. During 1929 this department functioned in such a way as to make it possible for the company properly to segregate its various classes of service. The following figures show the results of this work: 18,108 miles of bus, trolley and taxi operation were saved over the previous year's operation, or 0.1 per cent; receipts per car-hour increased from $3.46 to $3.47, and receipts per car-mile from 40.17 cents to 41.04 cents. The decreased mileage

A large, centrally located bus and taxi terminal has resulted in more efficient operation of the two services

was due to increased schedule speeds, service adjustments and bus co-ordination, resulting in increased receipts per car-hour and per car-mile.

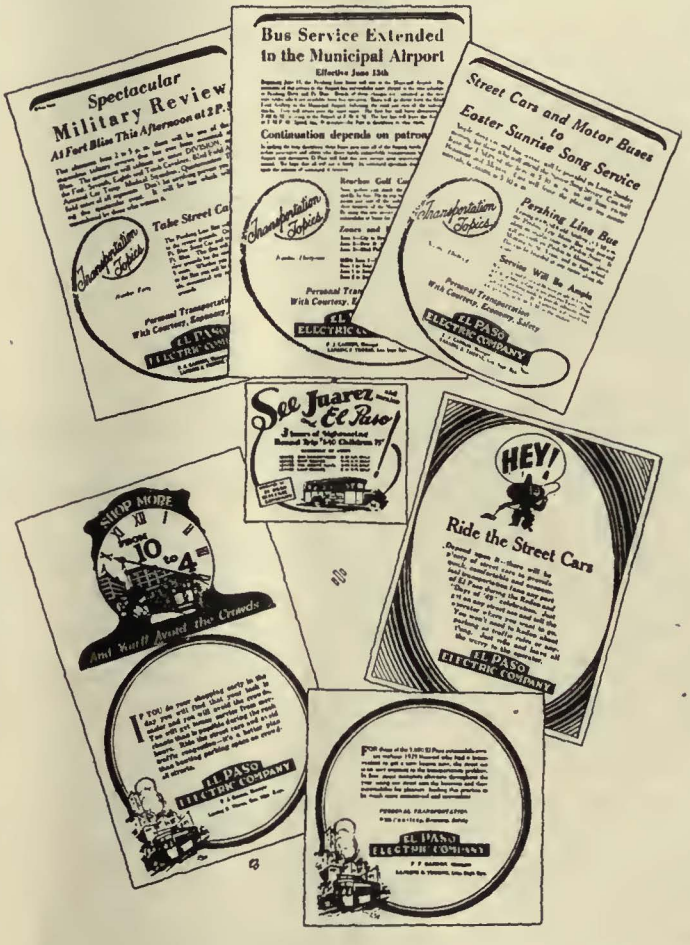
Practically all existing rolling stock has been rebuilt and remodeled into modern one-man cars. Modern de luxe interurban cars have been put in operation on the line between New Bedford and Fall River. The entire complement of older street cars has been kept in excellent condition and a series of new cars were purchased in 1918, in 1923 and in 1929. The latter cars are of the most modern type equipped for one-man or two-men operation. They resemble the automobile to some extent, the body being painted to produce the streamline effect. The cars provide seats for 44 passengers, and all seats are covered with leather upholstery. All mechanical equipment is automatic and is concealed from view. The windows are especially wide so that regardless of where a passenger is sitting he has a clear view outside. The cars weigh 17½ tons and are equipped with four 35-hp. motors. Fast accelerating and braking rates are attained.

An example of proper co-ordination between street car and bus is found in the service between New Bedford and Fall River, Mass., and Providence, R. I. The service, inaugurated in 1925 by the Union Street Railway, competed with the company's existing trolley lines that operated between New Bedford and Fall River, Mass. The rate of the fare charged on the buses is 50 cents between New Bedford and Fall River, and $1 between New Bedford and Providence. The motor trip between New Bedford and Fall River takes 40 minutes. The trolley fare for a ride between New Bedford and Fall River is 30 cents, and the running time 50 minutes. In these two services, patrons have the choice of the speed and rate of fare they desire. No local stops are made by the bus, while the street car accommodates all local patronage en route. The result of this co-ordinated service shows that the combined gross revenue of both trolley and bus operations has more than made up for the loss of trolley revenue. Decreased trolley patronage has made it possible to effect a decrease in street car expenses.

During 1929 the company purchased a large, centrally located gasoline station, which, in addition to having a large amount of land, had a permanent canopy extending over most of its property. It was possible to park several buses at a time under this canopy, and to accommodate the entire taxicab fleet on private property in front of this taxi and bus terminal.

The taxicab service performed by this company is based on its reputation for reliable, convenient and comfortable service. Taxicab fares are based on flat rates because of independent competition, but the company has been able to do a good business in spite of the fact that other long established companies charge rates nearly one-half of what the railway charges. Telephones are located throughout the city and have been used for a number of years by the railway inspectors and starters. By using these telephones, the taxicab drivers eliminate a great deal of dead mileage.

More Passengers and Fewer Accidents at El Paso



Timely advertising has resulted in increased riding in El Paso

HANDLING passengers of whom more than half are foreign born, serving two countries with dissimiliar laws and customs and increasing passengers and revenue, marked the accomplishments of the El Paso Electric Company for the year 1929. This company serves the transportation needs of El Paso, Tex., and Juarez, Mexico, as well as a large U. S. Cavalry Post at Fort Bliss, the municipal airport and a new industrial center.

THERE are approximately 141,900 people in this service area which are served by 80 passenger street cars, four work cars and fourteen buses, operating on 48.52 miles of equivalent single track. No rail extensions were made during the year, but additional co-ordinated bus routes were established to supplement street car service. The principal factors contributing to improvements are measures that have been responsible for both increased efficiency and added economy.

The operating revenue in 1929 was greater than for any year since 1921 when El Paso's normal population was augmented by some 60,000 or 75,000 soldiers concentrated for demobilization following the World War. The gain in gross receipts was $60,988 or 7.2 per cent above receipt for 1928. Street cars and buses carried over a million more revenue passengers in 1929, an increase of 5.82 per cent over the previous year.

Broadly speaking, the marked improvement in earnings made has been

brought about by the speeding up of service, through the intensive sales efforts carried on throughout the year and by accurately fitting service to conditions. Speeding up of service was the result of faster schedules and closer supervision. A considerable portion of the rolling stock is new while the older equipment has been completely remodeled and includes the latest improvements in operating comfort and convenient details.

Merchandising plans carried out fully have embraced all the popular practices as well as many that are novel and which have been used in El Paso and Juarez with unusual success. The operators have been trained in courtesy, in safety, and in skillful salesmanship. Sales efforts have included house-to-house canvassing backed by the liberal use of newspaper advertising, pamphlets, inside car cards and various other mediums. The methods used to sell car rides incorporate credit sales of ticket books, department store cards, special service and other novel ideas.

One of the outstanding accomplishments of the El Paso Electric Company for 1929 was a further reduction in accident costs. Within the five-year period from 1921 to 1926 inclusive, this company effected a reduction in accidents equivalent to 76 per cent, as well as making other remarkable improvements in safety. In 1921 the company was experiencing 8.83 accidents per 10,000 car-miles which was reduced to 1.42 accidents per 10,000 car-miles in 1926. This low ratio was maintained until 1929 when a further substantial improvement was made with a further reduction of 68 per cent in the settlement of claims, suits and judgments. The amount paid in settlements during 1928 was $29,374 as against $10,402 for 1929. Safety contests, first aid demonstrations, honor roll systems, safety banquets and similar measures were used to maintain interest in accident reduction.

An excellent record for economy and efficiency in the maintenance of equipment has been made in the past and further carried on in 1929. Modern methods, original devices, improved practices and better facilities together with a highly skilled personnel have all contributed in this phase of operation. Particular attention has been paid in the recent past to the establishment of an upholstery department and the adoption of a centralized system for reclaiming scrapped material.

Large savings are reflected in improved construction methods as well as better maintenance practices. Original plans for track paving and similar measures have produced improved operating results at reduced costs. After a careful study of the different types of tracks and construction the El Paso Electric Company has standardized on a 90-lb. A rail, steel ties, crushed stone ballast and concrete pavement.

Concentration upon the concrete pavement is a measure of economy practiced in construction worthy of note. This, in general, is one-course construction, but in heavy traffic intersections or under other special conditions it is two-course construction, consisting of a rather lean base (1:3:6) and a granolithic surface of a much richer mix resembling a good sidewalk coping. For both, the company insists on a dry mix of good workable consistency. It has trained its crews to the point where the costs are way below that of the local paving companies and in addition it gains the most desirable end, that of having the entire job under its control.

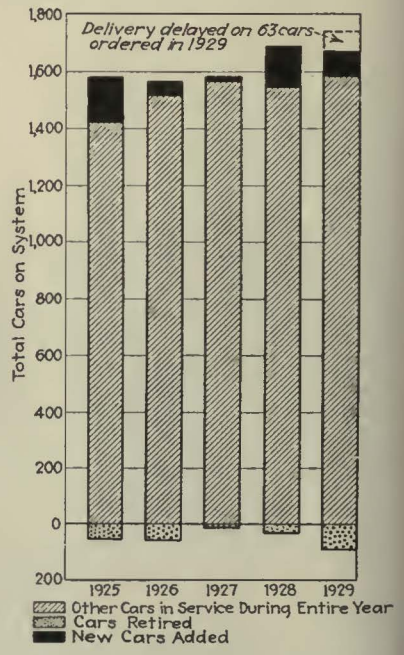
The construction program for 1929 called for a larger investment than that annually required for the past sixteen years. It included construction of a new power plant, a substation, a connecting transmission system and installation of equipment in the old power station necessary for the utilization of natural gas as fuel. The company also built a new reinforced concrete and steel bridge over the Rio Grande River to replace the old wooden structure.

In order to retire existing floating indebtedness and to finance the major portion of the construction program, $4,000,000 of 5 per cent bonds were issued in addition to the bonds already outstanding under a mortgage dated June 1, 1925. The bonds were sold to a syndicate of brokers for offering at a price of $95 to yield 5.40 per cent to maturity. The net to the company was $91. After discount and other expenses incidental to the issue, the net cost of this new money to the company was approximately 6½ per cent. This financing reflects a rather outstanding achievement since it was necessary to float this issue in June during a highly speculative market.

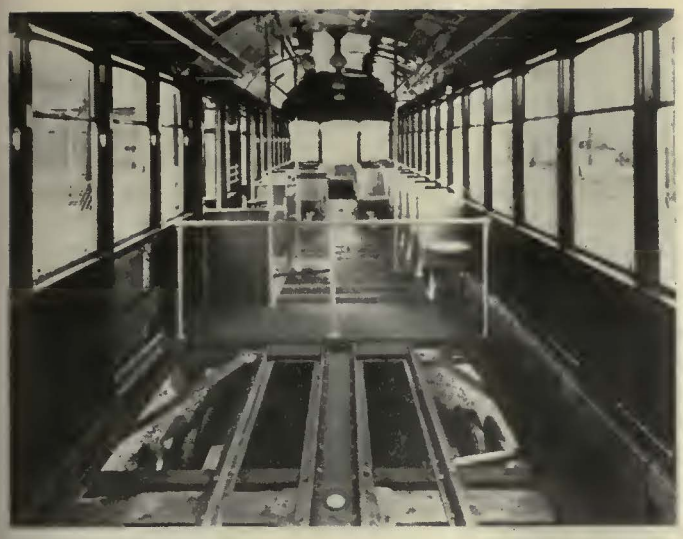
Cleveland Railway Pioneers with New Cars and Maintenance Equipment

FOREMOST in the Cleveland Railway's 1929 program to popularize electric railway service and to meet the competition of private automobiles was the purchase of 100 new single multiple unit control type of cars, following a purchase in 1928 of 50 new single-unit and 28 articulated trains. These 206 cars have given to the Cleveland public considerable convenience and generally attractive service. They have been designed for high rates of acceleration and therefore will function well in securing high speeds when schedules are revised as a result of transportation research.

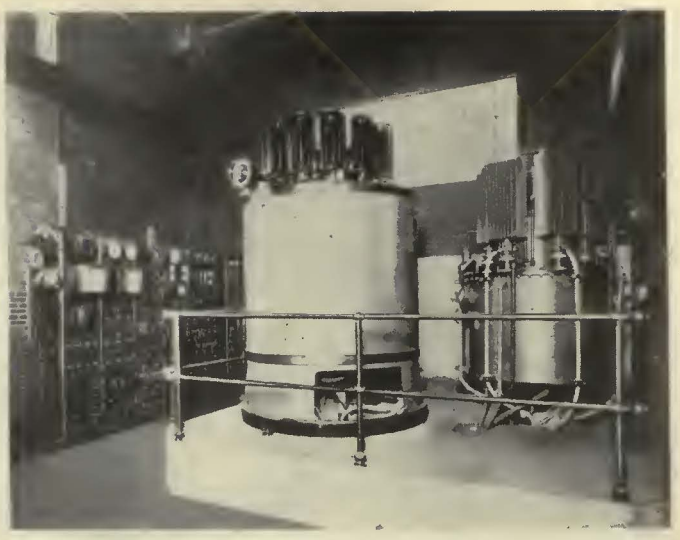
Cleveland pioneered the aluminum car for street railway use. It was built to demonstrate the durability of this material and that lightness could be obtained without sacrificing strength. The substitution of aluminum for steel reduced the weight of the car 12,900 lb., or 29.9 per cent. Its weight is 30,300 lb. as compared with 43,200 lb. Actual power saving per car-mile is 15.3 per cent. Aluminum was substituted for steel wherever possible. The superstructure, conduits, fenders, ventilators, couplers, trucks, compressors,



The purchase of new cars is a continuous policy in Cleveland



Interior view of aluminum car with which Cleveland Railway has been experimenting



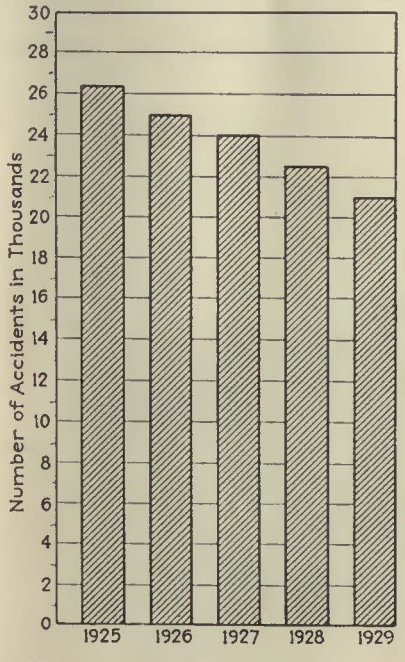
The Cleveland Railway is studying the mercury arc rectifier and its application to service conditions

brake cylinders, brake rods and bolsters were made of aluminum. Wheels, axles and motors, with the exception of bearing housings, remained steel. This car was put into regular service Jan. 1, 1927, and has been in constant use since that time, operating an average of 2,200 miles per month.

Recognizing the need for coordination of all transit facilities in the city of Cleveland and surrounding territory, the Cleveland Railway has co-operated with the rapid transit interests in developing a terminal plan around the public square. This plan will focus the principal industrial, business and banking activities at this central point and will provide an easy interchange of passenger traffic between main railroad trunk lines, the rapid transit system, the surface rail and bus system, taxicab service, private automobiles and pedestrians.

More riders and more revenue were obtained when the Cleveland Railway made a profitable substitution of a motor coach line for an unprofitable street car line. Flexibility of the motor coach not only permitted necessary rail abandonment, but also secured service extensions. This new express service from Cleveland Heights to Public Square, a distance of 7.92 miles, is attracting the previous user of the privately owned automobile. It is making a steady customer of a former occasional user of the Cleveland Railway Transportation Service. The earnings under the fare of 25 cents are averaging 30 cents per mile.

With the incentive to produce the very best service at the lowest possible fare and the lowest cost, the Cleveland Railway has continuously developed new equipment, machinery and methods. The automatic substation and remote control system first applied to metropolitan service in Cleveland has resulted in a continuous system power supply which has experienced no interruption on the system as a whole in over five years. This company not only conceived the idea of applying the automatic substation to metropolitan operation but actually specified and assisted in developing the equipment necessary for the operation and control. In the early development of a 60-cycle a.c. transmission system, there was no synchronous converter equipment available, and realizing the advantages of purchasing power from the existing 60-cycle central station rather than building a 25-cycle plant, the Cleveland Railway, after extensive investigation, undertook to design the first large capacity unit, namely, the 1,500-kw. size. With this machine they blazed the path for large capacity with 60 cycles. While it was a success from the start, the company has continued to improve its operation down to date.



Accidents are showing a steady decline in Cleveland

The possibility of applying the mercury arc rectifier to a metropolitan 600-volt power system has been carefully studied by the Cleveland Railway, and experimental installations have been made in co-operation with manufacturing companies. These experiments have included the application of automatic control, the super-imposition of remote supervisory control and the necessary changes to adapt the device to parallel operation with a synchronous converter in the same plant, and the development of means to overcome interference with telephone circuits. The original experimental units have now been replaced by the most recent development, consisting of a 500 and 1,000-kw. unit. As a result of these experiments, it is expected to ascertain how the mercury arc rectifier can be best applied to service conditions.

The Cleveland Railway has been a leader in the development of labor-saving machinery and equipment designed to reduce cost of operation. The shop, tracks and maintenance departments have all benefited from this progressive policy of developing new devices.

The Cleveland Railway has proceeded with its own safety program from an analytical standpoint to de-

termine the basic causes of accidents, having in mind the establishment of safe practices without affecting speed Reduction of costs of injuries and damages has been the result of this study. In addition to this encouraging financial success, the extensive first aid instruction has caused the employee to sense the economic aspects of accident prevention. All transportation accidents show a study. In addition to this encouraglast five years.

Because it recognizes that profitable public relations depend largely upon the trainmen, the Cleveland Railway has centralized all industrial relation functions such as job analysis, selection and training of employees, accident prevention, public relation activities, suggestion systems, insurance and pension plans and welfare activities. This unusual centralization has resulted in an organized program of strengthening the trainmen's morale and inaugurating an intensive sales effort as a specialized activity of the company's personnel department.

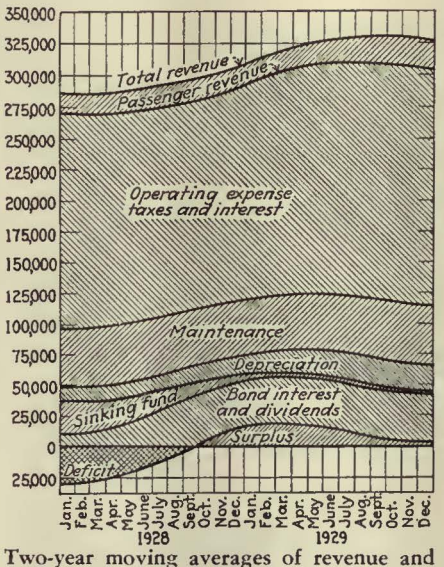
Other results have been improved employee relations, and the process of the employment interview, together with its public relation phase; standardized grading of applicants; standardized ability tests, and subsequent training. The aim is the training of specialized salesmen to enter a highly competitive market in which the company has at stake a million sales per day.

Services Modernized and Co-ordinated in Toledo

SUCCESSFUL co-ordination of street car and bus operations, permitting the extension and improvement of service with little new capital, is submitted by the Community Traction Company as its outstanding accomplishment in 1929. An increase in riding of 5.25 per cent and of passenger revenue of 5.35 per cent in contrast to an increase in average of employment of only 2 per cent was gained on the basis of better service because there was no change in company fares and the present franchise permits no opportunity for trials of special ride-selling fares. That the company kept pace with this increased patronage is shown by the fact that there were nearly 1,000,000 more service-miles operated in 1929 than in the previous year, an increase of 11.62 per cent.

A terminal-to-terminal speed increase of 22 per cent was made possible largely by rescheduling various car lines after increasing the horsepower per car from 70 to 140 and by rearranging the stops. This result was obtained during the greatest street reconstruction program in the history of Toledo.

Bus service was developed to a high degree with special attention to peak-hour industrial short-cut routes, schools, replacement of steam shop trains, door-to-door delivery of night workers, extensions to outside industries, guaranteed operation for suburbs and chartered service.



Two-year moving averages of revenue and expenses show progress in Toledo

The reduction in railway route mileage and the remarkable rise in motorbus routes does not in any way indicate the early demise of Toledo's street cars. Proper co-ordination of these services has strengthened the operation. The trunk line street car routes, particularly on the wide improved streets, have been rejuvenated to carry still heavier loads. On the other hand, the bus has been used to replace the slow, weak-traffic, single-track routes of narrow streets, to take up the loads of the non-competitive portions of old duplicative routes, to develop new crosstown routes for expanding and relocated industries, to serve as feeders and "owls" of street car routes and finally to create a variety of chartered daily and casual services made possible by the flexibility of the bus.

Traffic studies and new scheduling practices have resulted in better use of mileage. Former practice provided a certain number of base vehicles to run from 5 a.m. to midnight. Additional service was provided during the intervals, from 5 a.m. to 9 a.m. and from 3 p.m. to 7 p.m. This arrangement gave too much service just before and after the peak, yet not enough service at the peak.

A definite humanizing of employee relations has been continued during 1929. Comfortable working quarters and shopmen's uniforms have been supplied. Athletic and musical organizations have been fostered and economic matters, such as the treatment of veteran employees, of the superannuated, sick and injured, and of the families of deceased workers, have been furthered. All this work was done with the restriction imposed by the service and cost operation of a union property.

Two renewals of wage agreements have been made—the first in June, 1928, with no changes in wages except adjustments for some shopmen, and the second in June, 1929, when trainmen's wages were raised 2 cents an hour plus 1 cent an hour additional to each man who has a "No Accident" month. Further evidences of proper relations between management and employees are found in the growth of one-man operation and the selection and retraining of electric operators for bus service.

All financing, with the exception of the five-year way reconstruction program, has been done out of the earnings and on unsecured loans from local bankers. One of the most notable examples has been the fact that the extensive motor bus development of Toledo has been built up without any new capital. Buses are acquired on a rental basis, involving monthly payments over a period of years. Thus the buses can and do, in their entirety pay for themselves directly out of their earnings. The only buses that appear in "plant accounts" are those taken from the independents. Profits from operations which comprise any money remaining after expenses and rentals are assigned to "general surplus." To this "general surplus" will also be assigned whatever turn-in value the buses may have.

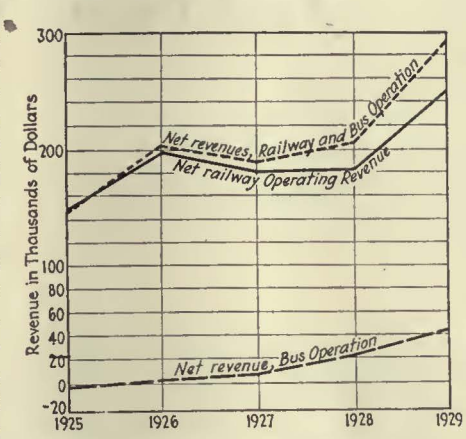
Gross and Net Increased by Eastern Texas Electric Company

POSITIVE evidence of progress, written in terms of greater gross and net revenue, is given by the Eastern Texas Electric Company in a statement of accomplishments for 1929. Serving a total population of approximately 116,000, this company furnishes street car and bus transportation in the cities of Beaumont and Port Arthur, Tex., and operates an interurban car line between them.

Local transportation has been furnished by the Eastern Texas Electric Company in Beaumont since 1912 and interurban service to Port Arthur since 1913. The successful operation of these systems, together with their progressive attitude in civic affairs, has built for them an enviable reputation. This reputation led the citizens and business interests of Port Arthur, acting through its city administration to petition the Eastern Texas Electric Company to take over the failing system in that city.

After a very thorough investigation of the situation, this property was purchased and a program of complete rehabilitation put into effect. Within the short course of slightly more than a year a property with worn out tracks, patched-up network for overhead, junk for rolling stock and ill-will instead of good-will was rendering a modern service and was put on a sound operating basis. The results speak for themselves. Gross revenues were increased from $6,023 in February, 1928, the first full month of operation, to $21,397 in December, 1929. In this latter year the property made a net earning of 16.8 per cent on the capital invested.

Accomplishments on the property as a whole, considering the two local services and the interurban line, can further be told with more figures on net revenue. Operating revenues for the year 1929 have been increased 18.8 per cent over the preceding year, while operating expenses only increased 8.2 per cent. Net revenues after taxes show the remarkable increase of 65.5 per cent. The railway department increased operating revenues 13.1 per cent, while increasing the expenses only 1.8 per cent. Net revenues in this department were increased 37.8 per cent over 1928. The bus division likewise showed a substantial increase in operating revenues amounting to 48.9 per cent with increased operating expenses of only 38.9 per cent. The net bus operating revenues are 80.7 per cent higher than in 1928. Since 1925, earnings in the railway division have increased 2.11 cents per car-mile, while operating expenses were decreased 1.37 cents per car-mile, leaving an increased net rate per car-mile of 3.48 cents.



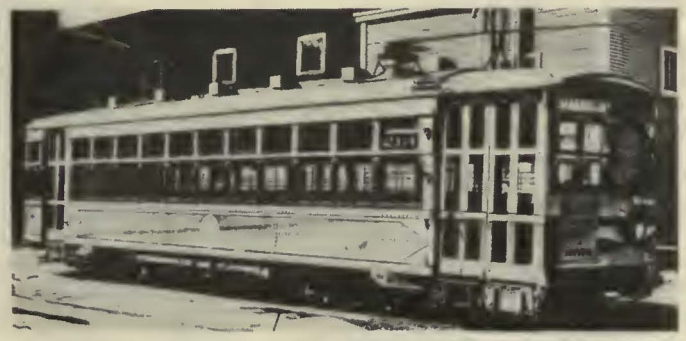
Efficient operation and aggressive merchandising have resulted in greater net revenues for the Eastern Texas Electric Company

Operation of buses began on this property in 1924, and showed a net loss of 8.76 cents per bus-mile. In 1929, this figure had been turned to a net profit of 6 cents per bus-mile. Earnings on invested capital in 1929 amounted to 10.2 per cent. Net income was increased $88,625 in 1929 over 1928, and this increase amounts to 6.8 per cent on the corporate capital stock.

The company's invested capital account increased $467,000 since 1926 and this includes the funds necessary for acquisition and the improvement of the Port Arthur property. The capital for this expansion was secured through temporary borrowings and all but $145,000 has been repaid out of earnings. Net additions to invested capital accounts during the past three years were returned in a period of eighteen months on the basis of 1929 operating revenue. Net additions to invested capital accounts during 1929 were returned by increased operating revenue in a period of 6.4 months. In addition to repaying a substantial proportion of the money borrowed for expansion, the company has paid stock dividends at the average rate of 6 per cent yearly.

Confronting the Eastern Texas Electric Company in 1929 was not the problem of rebuilding a rundown property or of building up good will which had been destroyed, but rather a problem of increasing a patronage that had in the past been gratifyingly satisfactory and of improving public relations that, throughout the long history of the company, had been above average. This problem could only be solved by thorough and efficient merchandising. Modernization of equipment as well as that of tracks and their maintenance played an important part in this program. That the rolling stock was kept in good operating condition is attested by the fact that the railway equipment during 1929 operated 52,400 miles and the buses 3,332 miles to every pull-in.

As a requisite to success in merchandising the service, the operating personnel took a place of equal importance with modern equipment and convenience, locations of lines and adequate schedules. The company's policy is to employ platform men who are not over 28 years of age. They are carefully selected and trained not only in the work which they are to do but as salesmen of the company's service. The men are urged to live in different portions of the city for the possible good to be attained through association in scattered neighborhoods.



Modern equipment is used on city and interurban lines in Beaumont and Port Arthur, Tex.

Round-Table Discussions Held on Many Subjects

Ten luncheon conferences were held at the San Francisco convention of which three were in connection with the work of affiliated bodies. The other seven were on general topics. Much valuable discussion developed at all of them. Brief reports are given below or elsewhere in this issue.

Relief of Street Traffic Congestion

NEED for scientific methods of locating traffic signals and the effects of parking regulations were the principal subjects discussed at the luncheon conference on "Relief from Traffic Congestion." In the absence of G. A. Richardson, E. J. McIlraith, Chicago Surface Lines, led the discussion.

R. T. Dorsey, city traffic manager, Los Angeles, questioned the possibility of setting up a minimum standard code for the location of traffic signals based on the number of vehicles passing a given intersection.

Some divergence of opinion was evident on the subject of manual operation of traffic signals by police officers. Mr. McIlraith held that manual operation is never as satisfactory as properly timed automatic control, while E. L. Byington, chief inspector Market Street Railway, San Francisco, stated that local conditions have sometimes made necessary manual control on Market Street during peak-load periods.

In reply to an inquiry by E. C. Mitchell of the Los Angeles Retail Dry Goods Association, Mr. McIlraith summarized the history of no-parking legislation in Chicago and pointed to the present agitation for parking restriction on the part of merchants on Milwaukee Avenue as concrete evidence that the parking ban in the central business district has proved its merit.

E. F. Thayer, St. Louis Public Service Company, pointed out the real service which local transportation people can render to the downtown merchants of their communities by working to convince them that their own ultimate salvation lies in taking a constructive attitude toward the street traffic and parking problems. He indicated the analogous situation between the former adverse attitude of merchants toward the by-passing of through traffic and the present unwillingness to listen to suggestions that curb parking in front of their stores be eliminated and the streets reserved for traffic movement rather than used for garaging space.

The advantages of staggered office and store hours and the merits of taxicab stands as compared with unlimited cruising were also discussed.

Others taking part in the discussion were R. T. Dorsey, city traffic manager of Los Angeles, Ralph Robinson, manager of the San Francisco Traffic Survey Commission, and James Davis, deputy chief of police of Los Angeles.

Fare Structures

SUMMARIZING the present situation on fare structures, A. S. Richey, Worcester, Mass., who presided at the luncheon on this subject, pointed out that flat fare increases have not proved entirely satisfactory. However, while exact theoretical fare structures could be worked out it would be impossible to put them in practice. There are three difficulties, he said, which prevent exact fare systems working: to determine the exact fare due from each individual passenger; to collect the fare without slowing up the service; and to audit it. When and if such problems can be solved, the proper fare structure will be in sight. In the meantime, many interesting experiments in fare structure are being made.

J. G. Hunter, transportation engineer California Railroad Commission, felt that if a 5-cent base fare is retained it is necessary to go to zones. He has grave doubts as to whether high fares will do any good, at least under conditions existing in California cities.

G. H. Binkley, Market Street Railway, San Francisco, stated that on his property, while the 5-cent fare is not satisfactory as a revenue producer, he questions whether an increased fare would be helpful. A. S. Tilestone, Key System Transit Company, Oakland, stated that his company is now charging 7 cents, excepting that an all-day pass is used on Sundays and holidays. This has proved profitable, he said, and has brought in some additional revenue. Frank Karr, Pacific Electric Railway, Los Angeles, mentioned various changes made in fare rates.

H. S. Dixon, San Diego, said that the fare structure in that city features two city zones, inner and outer. In each there is a 5-cent flat cash fare with tokens good for two zones sold at the rate of four for 30 cents. Some of the suburban routes have as many as ten zones with a fare of 5 cents in each and with reduced rate tickets. There also is a weekly pass on the system sold for $1, which is good in either inner or outer zone, and a school pass restricted to school districts. The pass, he said, has made possible one-man operation, as it is used by one-third of all the passengers.

W. W. Holden, San Antonio, described the service zoning in that city. All street car lines are cut off at a 3-mile radius from the center. There is a second zone 1½ miles wide outside of that and other zones are beyond. In the outer zone, buses are operating which run express through the inner zone. This automatically segregates the passengers into social groups, which he has found helpful. The service is speeded up in the outer zones about one-third. It has made it possible to give improved service without increase in equipment.

R. E. Moody, Milwaukee, discussed the new fares in effect in that city. These include 10 cents cash with reduced ticket fare and pass. The pass, he said, is well liked. In St. Louis there is a modified permit plan. A card good for twelve rides is sold for $1. This is punched by the conductor each time a ride is taken, and after it has been punched

twelve times it is accepted on payment of 5 cents a ride.

L. R. Nash, Boston, summarized the discussion. He indicated that with service such as that given in San Antonio it is necessary to have a sufficient demand to give reasonable headways in each zone. The nickel permit, he believes, has advantages over the weekly pass, in that it distinguishes between casual and regular riders.

Employees Relations and Trainmen Conference

AN ACTUAL trainman's conference with thirteen motormen and conductors, under the direction of T. A. Bragg, superintendent of training and employment, Market Street Railway, San Francisco, was held before approximately 60 delegates at the luncheon on employee relations. The trainmen represented employees who had been in street railway service from 8 to 29 years. The total number of years represented by the entire group was 231. Mr. Bragg announced to the group that the subject for their consideration would be, "Interesting the Customer." The men, asked to analyze this subject, took up the various elements in obtaining more rides from the public.

A further question was asked the group about getting back the rides that have apparently been lost due to automobile and other competition. It was unanimously agreed by these representative trainmen that they should go out and solicit new business. Door-to-door canvassing and merchandising methods were discussed.

Following this demonstration, Edward Dana, general manager Boston Elevated Railway, sponsor for the luncheon, expressed his appreciation of the conference held and told of similar methods of employee contact being carried out in Boston.

Transportation Problems of the Small City

IMPROVED and intensive merchandising methods, accompanied by the best possible service that can be rendered, are the greatest needs of the transportation systems in small cities, according to those who gathered for this conference, which was in charge of F. L. Butler, vice-president Georgia Power Company.

In his opening remarks, Chairman Butler emphasized the importance of the small-city problem and the necessity for taking immediate steps to place them on a sound operating and financial basis. "Any community," he stated, "that expects to expand and prosper necessarily requires some form of dependable and economical public transportation."

The report of the committee on small-city operation, not presented at the regular T. & T. sessions, was read at the luncheon conference by Mr. Butler. The report is summarized elsewhere in this issue.

In the discussion which followed, the subjects of bus substitution, transferring from car lines to feeder buses, selling the service, employee sales campaigns, radio, new equipment, one-man operation, public relations, fares and market surveys were covered.

Those who participated included C. B. Short, Roanoke Railway & Electric Company; John H. Pritchard, Central Public Service Corporation; E. W. Florence, Pacific Gas & Electric Company; A. C. Bradley, Pacific Electric Railway; W. N. Clark, Southern Colorado Power Company; W. H. Heun, Chicago & Joliet Electric Railway; Maxwell E. Benson, Nashville Railway & Light Company; R. E. Plimpton, White Company; and A. H. Gossard, Middle West Utilities Company.

Interurban Management and Operation

DISCUSSION at the round-table luncheon on interurban management and operation, sponsored by D. W. Pontius, centered around plans for recovering the transportation business lost by electric roads. Of particular interest was the discussion of the store-door pick-up and delivery system inaugurated by the Pacific Electric Railway in southern California a year ago. Under this plan the railway company contracts with trucking agencies at terminals and important stations along the line to perform the pick-up and delivery service. Mr. Pontius stated that this service has doubled their business without loss of their former traffic.

It was the consensus of opinion of all those who discussed this important subject that store-door delivery offers the most promising solution.

Development of Cars and Equipment

GOOD vehicles are essential to good public relations and there is no more important problem before the electric railway industry today than the development of improved cars. Unanimous agreement on this point was evident from the discussion at the "car development" luncheon under the sponsorship of Dr. Thomas Conway, Jr., president Cincinnati & Lake Erie Railroad. He stressed the need of organizing the mechanical men of the industry to secure the benefit of their ideas and experience in the work of the President's Conference Committee. The electric railway as a business undertaking cannot survive unless it can be put on a profitable basis, he said, and the key to the situation is the electric railway car.

Enthusiastic support of the program of the committee was expressed by C. C. Vargas, Key System Transit Company, Oakland, Cal.; J. M. Yount, Market Street Railway, San Francisco; E. B. Meissner, St. Louis Car Company; George Frey, J. G. Brill Company, and C. E. Morgan, Cincinnati Car Company. Mr. Meissner also emphasized the importance of developing methods of financing new car purchases. Prof. D. D. Ewing, Purdue University, prophesied that much good would result from the concentrated research work now being undertaken. Recent experience with new cars in Chicago was outlined by H. H. Adams. That people can be induced to ride only by making the vehicles attractive was the opinion expressed by G. J. Shave, of the London General Omnibus Company.

In connection with the problem of improving rolling stock, a lively discussion occurred concerning depreciation reserves and their effect in making possible the purchase of new cars. W. G. Rennison, Petaluma & Santa Rosa Railroad, spoke of the difficulty which many railways have in setting up adequate depreciation reserves and doubted that it would be possible to depreciate new cars on the basis of a ten-year life as has been suggested. Richard Sachse, Key System Transit Company, and Dr. Conway expressed the opinion that the railways would be allowed to set up depreciation on the basis of the actual useful life of equipment regardless of whether it was more or less than ten years.

Co-ordinating the Taxicab

THAT there is a place and a need for taxicab service which should be furnished by the existing transportation companies provided adequate legislation is enacted was the conclusion reached at a luncheon meeting under the sponsorship of J. B. Stewart, Jr., of the Cincinnati Street Railway.

Electric railway traffic has been seriously affected by the increasing use of taxicabs, particularly in certain cities where the cut-rate taxi business has developed into a situation resembling that created by the jitneys some ten years ago. Mass transportation agencies should be protected against unfair competition of this character, he said.

F. W. Doolittle, of the North American Company, suggested that the railways have been making a mistake in failing to recognize the demand for other classes of service than that rendered by their mass transportation vehicles. O. C. Mills, Key System Transit Company, contended that electric railways cannot go into the taxicab business until more adequate regulation is enacted. The bad effects of low-rate taxicab operation in Columbus, Ohio, were discussed by M. L. Evans, Columbus Railway, Power & Light Company. He said, however, that the general public and the merchants are now beginning to resent the manner in which these cabs are congesting the streets. Conditions in Cincinnati were described by Mr. Stewart.

Development of Buses and Trolley Buses

INTEREST in rail-less transportation centered around a discussion of design, construction, reliability of service, and the riding comfort of the different types of vehicles available at the luncheon meeting on "Development of Buses and Trolley Buses," sponsored by E. A. West, Salt Lake City.

Particular attention was given to the features of trolley bus design and operation, especially the high rate of acceleration and retardation and the effect on tire life, which was said to be negligible.

Trolley bus operation was held to be more economical than that of gas buses as the saving in energy costs, even on a fifteen-minute headway, was sufficient to meet the cost of erecting the overhead wires.

In the discussion of motor buses, trouble from gas fumes was held to be one of the biggest complaints. This difficulty was attributed both to design and to the fault of the fuel refiner.

Small-sized buses—those of 21-passenger capacity—were cited as being of especial value for fast schedules and that speed depended on number of stops necessary to handle the traffic. With twenty seconds as the time for taking on and discharging a passenger, schedule speeds are slowed down in direct proportion to the capacity of the bus operated. Thus if 21-passenger buses can make a schedule in 30 per cent less time the cost per seat-mile will be about the same for both buses of large and small capacity. This higher speed is of real sales value. In San Antonio, it is said, complaints are now being received from automobile drivers that buses travel so fast they cannot be passed.

Comments were also made relative to the high cost of replacement parts for some types of units used on buses, of the necessity for providing greater accessibility of parts for proper maintenance and more simplicity in body construction in order to lower maintenance costs.

Claims Luncheon

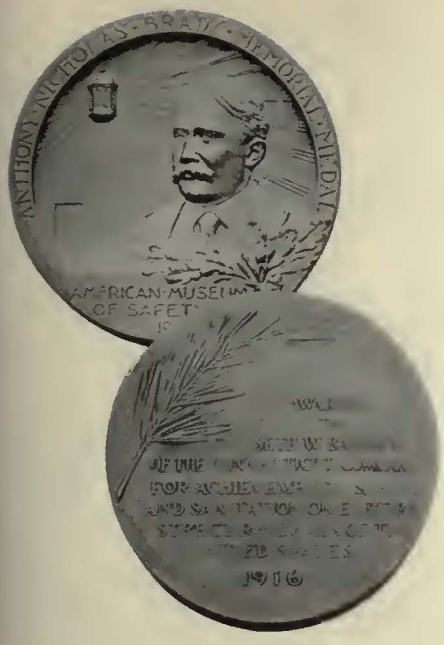
MATTERS involving the handling of claims were discussed in detail at this conference, in charge of B. F. Boynton, advisory claim agent of the Northwest Public Service Corporation, and president of the Pacific Claim Agents Association. Most of the discussion concerned the ambulance-chasing evil which is now so prevalent throughout the country. This subject has been before the Claims men in the past in a notable series of presentations, and evidence of real progress toward curbing the evil was furnished. In New York particularly has success attended efforts to curb the "shyster."

A feature of the luncheon was a paper on "The Psychology of Accident Prevention," read by L. H. Rodebaugh, Sacramento Northern.

Among those who participated in the discussion were W. H. Renaud, Jr., New Orleans Public Service, Inc.; J. H. Dennis, Seattle Municipal Railway; L. H. Butterworth, Boston Elevated Railway; Ray Taylor, Municipal Railway of San Francisco; Earl E. Grover, Columbus Railway, Power & Light Company; Paul W. Klabunde, Milwaukee Electric Railway & Light Company, and S. A. Bishop, Pacific Electric Railway.

Temple Square, Salt Lake City

Mormon Temple and Tabernacle where delegates on Red Special Train listened to daily organ recital



Brady Awards

Won by

Duluth, Colorado Springs, and Lethbridge Railways

Contest based on accident statistics for 1929 submitted on the association's standard report form. Records of more than 200 companies considered

ANNOUNCEMENT of the winners of the 1929 Anthony N. Brady Awards and the presentation of medals and certificates were made at the convention of the American Electric Railway Association held in San Francisco, June 23-26, 1930. The Class A prize was won by the Duluth Street Railway, Duluth, Minn., with honorable mention going to the Ottawa Electric Railway, Ottawa, Canada. In this class, 54 companies operating 5,000,000 or more car and bus-miles annually, submitted their accident statistic reports, which were analyzed for this contest. In Class B, including companies operating from 1,000,000 to 5,000,000 car and bus-miles annually, the first prize was awarded to the Colorado Springs & Interurban Railway, Colorado Springs, Col., with honorable mention to the Calgary Municipal Railway, Calgary, Alta., Canada. Seventy-nine companies competed for this prize. In Class C, including companies operating less than 1,000,000 car and bus-miles annually, the Lethbridge Municipal Street Railway, Lethbridge, Canada, and the Montana Power Company, Missoula, Mont., won the first award and honorable mention respectively. Sixty-eight companies were represented in this class.

Members of the American Museum of Safety and the American Electric Railway Association formed a joint committee to select the winners of these awards. They were Lewis Gawtry, president of the Bank for Savings, chairman; Colonel A. B. Barber, manager of transportation and communication department, U. S. Chamber of Commerce; James H. McGraw, chairman of the board, McGraw-Hill Publishing Company, Inc., and Charles Gordon, managing director, American Electric Railway Association. The awards are a memorial to the late Anthony N. Brady, and are presented each year for the best records of safety made by electric railways in the United States or Canada.

Contest winners this year were determined on a different basis than those of previous years. Heretofore, the actual accident record of the contestant was considered as only 50 per cent of the total scoring. Other factors making up the remaining 50 per cent included: success in gaining good will through efforts or improved safety conditions; open-mindedness in applying original ideas and new developments, originating with others, as to safer operating methods and equipment; reduced maintenance or greater reliability of service resulting from improvements in safety practice; co-operation between management and employees in safety promotion; outstanding accomplishments in measures to promote sanitation and health. Briefs setting forth these factors of accomplishments and the methods by which they were obtained were required from the contestants.

In order to have more companies represented in the contest, the committee decided to change the basis on which the awards would be made. This year the companies submitting their accident statistics were rated according to the number of injuries and number of fatalities reported for the year 1929, the relative rating being 2 to 1—that is, each fatality counted twice as heavily against the company as an injury. The reports used for the committee's analysis were those submitted by the railways on the forms of the American Electric Railway Association. Companies were also invited to submit briefs during the year's contest, so that in case of a tie the briefs might be referred to for further data.

Analysis of the 200 accident statistics reports, which represent a large portion of the electric railway industry, impressed the committee with the degree to which the practice of safety has been developed by the electric railways of the country. How many lives have been saved by this intensive safety work it is impossible to estimate, but undoubtedly the number is very large.

Some idea of it may be gained from the fact that while the volume of traffic handled by street railway companies was about the same in 1929 as in 1920, the number of electric railway fatalities has been reduced from 2,124 to 1,600. This is the more striking in view of the 187 per cent increase in motor vehicle registrations during that period, with its consequent increase in street and highway congestion and an increase in all

street and highway fatalities from 17,055 in 1920 to 33,060 in 1929. The electric railway record is one of the few bright spots in the discouraging story of constantly increasing traffic accidents.

The electric railway figures quoted above cover all electric railway fatalities including pedestrians, occupants of automobiles, employees, passengers and others. When the figures on passenger fatalities are examined—fatalities to the people who trust their safety to the street railways—the record is remarkable. The statistics show that only one passenger out of each 300,000,000 carried is killed. That means that the equivalent of more than two and one-half times the population of the United States is regularly transported on the street cars of the country with the loss of only one life.

For the Class A award, the Duluth Street Railway and the Ottawa Electric Railway ran a very close race. Their properties are similar in that each operates both city and interurban service. The Duluth company operates 111 cars and eleven buses, a total of 122 vehicles, while the Ottawa company operates 115 cars and ten buses, a total of 125 vehicles. In Duluth a total of 5,461,671 miles were operated, of which 4,716,050 were car-miles and 745,621 were bus-miles. As compared to this, Ottawa Electric Railway operated 5,149,246 miles, of which 4,716,490 were car-miles and 432,756 were bus-miles.

The accident record submitted by these two companies and the scoring of points against each, as explained above, is as follows:

	Duluth St. Ry. Duluth, Minn.	Ottawa Electric Ry. Ottawa, Canada
Number of fatalities, 1929		
Railway	2	3
Bus	0	0
Total	2	3
Number of injuries, 1929		
Railway	124	100
Bus	12	13
Total	136	113
Number of fatalities per 1,000,000 miles		
Railway	0.42	0.64
Bus	0.00	0.00
Total	0.37	0.59
Number of injuries per 100,000 miles		
Railway	2.63	2.12
Bus	1.61	3.00
Total	2.49	2.19
Score for fatalities		
Railway	6.72	10.24
Bus	0.00	0.00
Total	5.80	9.38
Score of injuries		
Railway	21.04	16.96
Bus	12.88	24.00
Total	19.93	17.55
Total score	25.73	26.93

	Colorado Springs & Interurban Ry. Co. Colorado Springs, Col.	Calgary Municipal Ry. Calgary Alta., Canada
Number of fatalities		
Railway	0	0
Bus	0	0
Total	0	0
Number of injuries, 1929		
Railway	4	16
Bus	0	..
Total	4	16
Number of fatalities per 1,000,000 miles		
Railway	0	0
Bus	0	..
Total	0	0
Number of injuries per 100,000 miles		
Railway	0.30	0.52
Bus	0	..
Total	0.27	0.52
Score for fatalities		
Railway	0	0
Bus	0	..
Total	0	0
Score for injuries		
Railway	2.40	4.16
Bus	0	..
Total	2.16	4.16
Total score	2.16	4.16

Class B contestants, those operating from 1,000,000 to 5,000,000 car and bus-miles annually, were led by the Colorado Springs & Interurban Railway, a company operating city and interurban service, while the Calgary Municipal Railway received honorable mention. The Calgary company operates only city service. A comparison of equipment and miles operated between these two companies is as follows: Colorado Springs company operates twenty cars and three buses, while the Calgary company operates 81 cars and no buses. In Colorado Springs, a total of 1,493,024 vehicle-miles were operated during 1929, of which 1,341,137 were car-miles and 151,887 were bus-miles. The Calgary Municipal Railway oprated 3,070,251 car-miles. The accident records with respect to injuries and fatalities together with the corresponding score for place, are as set forth in detail in the table at the left.

In the third group, or Class C, the Lethbridge Municipal Street Railway operates city service only, while the Montana Power Company operates city and interurban service. In Lethbridge five cars operated 253,064 miles during 1929 while the Montana Power Company operated nine cars over 440,663 miles. Their statistics and ratings are shown in the following table:

	Lethbridge Municipal St. Ry., Lethbridge, Canada	Montana Power Co., Miasoula, Mont.
Number of fatalities, 1929	0	0
Number of injuries, 1929	0	1
Number of fatalities per 1,000,000 miles	0	0
Number of injuries per 100,000 miles	0	0.23
Score for fatalities	0	0
Score for injuries	0	1.84
Total score	0	1.84

Colorado Springs and Pike's Peak

The delegates on the Red Special had an opportunity to see the Peak and inspect the property of the Colorado Springs & Interurban Railway

T. & T. Studies

Industry's Fundamental Problems

THREE interesting meetings were held by the American Electric Railway Transportation and Traffic Association at the San Francisco convention. They were attended by a large group which participated actively in the program with discussions, both prepared and extemporaneous. Consideration was given to five committee reports—the transportation employee, movement of the vehicle, operating economics, the passenger and equipment. The sixth report, on small city operation, was read at a luncheon conference.

In the absence of Samuel Riddle of the Louisville Railway, president of the association, Paul E. Wilson of the Cleveland Railway, first vice-president of the association, took charge of the meetings.

The presidential address of Mr. Riddle was presented at the opening of the first meeting by George B. Anderson of the Los Angeles Railway. Mr. Riddle referred to the interesting early history of the T. & T. Association and pointed to the progressive steps it has taken leading up to the present.

"The Transportation and Traffic Association," Mr. Riddle stated, "while the youngest of the affiliated bodies of the A.E.R.A., has made valuable contributions to the industry through the study, research and deliberations of its many committees. The industry's very life depends on the major problem that confronts us today, the diminishing number of riders. We are scarcely maintaining the number of passengers heretofore carried economically and are not receiving the benefits that might be expected to accrue from constantly increasing population. Our plants generally have been estimated to keep pace with the improvements in the arts and sciences, but we do not find a proportionately augmented demand for the service we are capable of rendering. We are challenged today by more private automobiles than ever before. The result of their existence not only is a decrease in the use of mass transportation and an ever-increasing traffic congestion, but our service also is made less attractive to our patrons because we are unable to attain the highest rates of speed possible through the use of modern equipment."

Samuel Riddle
President

Mr. Riddle commented on the subjects selected for committee study during the past year and praised the work of the selected groups.

The report of the transportation employee committee, of which Clinton D. Smith, Cleveland Railway, was chairman, was presented by Jeff L. Alexander, Houston Electric Company. Special attention was given to an analysis of the transportation job with the correlated subsequent supervisory and employee training and a study of proneness to accidents. Each of these subjects was broken down in the report and the individual parts thoroughly analyzed.

Comments upon the report submitted by Prof. Henry H. Norris of the Boston Elevated Railway were read by the chairman. Professor Norris listed six fundamental considerations with respect to the employee. Intrusting the selection to the highest possible type of men, stressing the quality of the contact man, instilling the sales instinct in the men and discouraging snap judgment, analyzing the mental and personal qualifications, and applying psychology. He commented on the advantages in psychological study for the reduction of accidents and indorsed the usefulness of the supervisory conference plan for supplemental training. He also referred to the early work of the association in solving this problem, and pointed out that increasing benefits are accruing from continued research.

A. T. Mercier, Pacific Electric Railway, pointed out that although the present policy of studying past records of employees and then improving them is necessary, more attention should be paid to the proper selection of candidates for positions. He recommended the use of efficiency tests for the classification of employees into groups according to their weaknesses and paying especial attention to each class. "Leadership, discipline, rewards, and remedies," stated Mr. Mercier, "are necessary for developing the most efficient type of personnel."

In support of Mr. Mercier's comments, R. B. Hill, Los Angeles Railway, further emphasized the need for finding competent men. He urged that more money be spent to select men and that the electric railways make their working conditions attractive to the proper type of men. He also pointed out that care should be taken in selecting and training men for departments other than the transportation department. In concluding, he advised that department heads gain the confidence and support of their men through frequent, personal contacting.

An interesting comparison was made by Leslie Vickers, economist of the association, of the sales possibilities for the electric railways and the other public utilities. He pointed out that in the case of the telephone, electric lights and gas, a favorable impression is made upon the public through physical equipment. In contrast to this, he said, the product of the electric railway is dispensed solely by the men on the vehicles. Therefore, their contacts vitally influence the impression of the public. "The transportation employee," Mr. Vickers

stated, "needs to know, first, his job; second, the product that he is selling; and third, the people to whom this ride is sold." In analyzing this third point he suggested that employees make a study of patrons, since it is to human beings that the service is being sold.

The second report of the day, movement of the vehicle, of which C. W. Wilson, Pittsburgh Railways, was chairman, was presented by E. J. McIlraith, Chicago Surface Lines. Mr. McIlraith analyzed all of the important sections of the report and commented extensively on those phases which he considered were of greatest interest to the association. Four subjects were covered in the report: the private automobile, the parking problem, signals and traffic control, and equipment.

Mr. McIlraith, in reviewing the parking problem section, restated the general principles that first, parking is a privilege and not a right; second, parking may be tolerated and should be permitted where it does not interfere with the right of the general public to use public ways for travel purposes; third, where parking is permitted it should be regulated in such a manner as to promote safety, a minimum of interference with travel uses, and an equitable distribution of curb space available among operators of vehicles who desire to park; and fourth, where parking interferes with essential travel uses the privilege should be modified, or if necessary, withdrawn.

Some valuable points on making traffic studies were added by Mr. McIlraith in discussing the subject of traffic signals and control. He urged the proper application of signals, following detailed analysis of the requirements, and differentiated between speed and recklessness, in connection with the accident hazard. On the subject of equipment, he read the principal features of existing equipment which are most readily susceptible of improvement, and pointed out that with good equipment the most in the way of speed can be obtained through proper schedules.

A. J. Lundberg, Key System Transit Company, suggested the solving of the traffic problem on the basis of facts. He differed with an opinion in the report that "it is too early in the development of the automobile and facts are too inadequate to draw definite conclusions with respect to the ultimate competitive effects of the private automobile on collective transportation," stating that sufficient knowledge of the automobile's effects in cities of all population classes is available to make analyses of the problem and remedies. He urged that the railways take every possible step to meet the competition of the private vehicle and to rid themselves of a "bankruptcy complex" by keeping the physical plant in the neatest, brightest appearing condition. In concluding, Mr. Lundberg commented on the number of vehicles passing through a given intersection necessary to justify the installation of a traffic signal.

Following the president's address at the opening of the session, the reports of the executive committee and the secretary-treasurer were accepted. In the last report the procedure of the small city committee through the past year was outlined.

Officers for the ensuing term, as selected by the nominating committee, were approved by the association. They are:

President—Paul E. Wilson, vice-president and secretary Cleveland Railway.

First Vice-President—George B. Anderson, director of personnel Los Angeles Railway.

Second Vice-President—R. N. Graham, manager of railways Pennsylvania-Ohio Public Service Corporation.

Third Vice-President—F. L. Butler, vice-president, Georgia Power Company.

Secretary-Treasurer—Guy C. Hecker, general secretary American Electric Railway Association, New York.

Executive Committee—The officers and Adrian Hughes, Jr., superintendent of bus transportation United Railways & Electric Company of Baltimore; D. L. Fennell, general superintendent of transportation Kansas City Public Service Company; C. H. Evenson, superintendent of transportation Chicago Surface Lines; and William W. Holden, manager traction department San Antonio Public Service Company.

Wednesday Session

THE report of the committee on operating economics occupied the entire second session, held on Wednesday. The report, prepared under the chairmanship of Joe R. Ong, Cincinnati Street Railway, was presented by J. B. Stewart, Jr., of the same company. Mr. Stewart selected a number of the most interesting parts and concentrated on these. Five subjects were covered by the committee during the year, those operating practices which have resulted in an increase in gross revenue and those decreasing the cost for operation and maintenance, one-man cars, bus substitution, business-getting and fares. Under the first subdivision a number of practices beneficial to the railway were described.

Comments of the chairman, Joe R. Ong, were submitted by letter and read by Frederick C. J. Dell of the association. Mr. Ong confined his comments to appendices A and B, dealing with proposed methods of cost distribution to routes and classes of bus and electric railway service. He made a number of suggestions for the use of proper units in these proposed methods for the distribution of costs.

Stress was laid by C. L. Van Auken, Electric Traction, on the need of proceeding in this work on an analytical basis. He pointed out that added economies could be secured from further study and that increased revenue could be obtained with intensive research. He also spoke of the need for a scientific fare structure.

At this point, Carl W. Stocks, editor of *Bus Transportation*, was called upon to give observations of his trip by bus from New York to San Francisco. He gave some very interesting details of the 3,400-mile trip and outlined practices with regard to schedules, maintenance and terminal facilities of the long distance bus companies. He spoke favorably of the systematic maintenance and care of these vehicles, reflected by the fact that no serious trouble developed at any time.

"Co-operate with the accounting department in making a cost analysis," was the plea of H. E. Jordan, Los Angeles Railway. He stated that electric railways are handicapped greatly by the lack of satisfactory cost accounting systems and compared the railways as manufacturers of rides, to other large successful manufacturers having comprehensive accounting systems. He further pointed out the possibilities of improving the service and estimating the life of equipment through the securing of accurate and complete data and analyzing these intelligently.

Lester J. Turley, Los Angeles Railway, commended the report on operating economics, particularly the new ideas advanced in it. He told of the use of a manual of operating methods by his railway and told of the results obtained. He also spoke of making a passenger origin survey in Los Angeles and the employees' welfare work of his company.

Comments of A. T. Mercier, Pa-

cific Electric Railway, were read by F. E. Geibel of the same company. He stressed the need for comprehensive analyses of practices and costs and stated that the possibilities with existing equipment should be studied first. Concluding, he suggested use of talking movies for advertising.

In answer to inquiries of how the Cleveland Railway adjusted its operating expenses following changes in the fares set-up, Paul E. Wilson explained the type of franchise under which the Cleveland Railway is operating and told of how the accounts are handled. He pointed out that in Cleveland the expenses force the adjustment of fares.

L. R. Nash, Stone & Webster Service Corporation, speaking on the subject of cost analyses, showed the need for a real study of costs so that new classes of business can be developed.

An interesting reflection on the public's reaction to the proposed substitution of trolley buses for gasoline buses was given by E. F. Thayer, St. Louis Public Service Company. He stated that much opposition was voiced to the change in St. Louis and concluded that, from the public's standpoint, the trolley bus occupied a midway position between the street car and gasoline bus.

Thursday Session

At the final meeting of the T. & T. Association, two committee reports were presented, those on the passenger and on equipment. The first was given by William W. Holden, San Antonio Public Service Company. Mr. Holden spoke of the high points of the report, explained the purposes of entering a new phase of study and outlined the procedure to be followed in making market analyses of certain properties. Briefly, the plan is to have Dr. W. J. Reilly, selected for this work, visit the properties for a short period and instruct the personnel in methods of making and analyzing a market survey. Certain parts of this work have been completed, but the plan has not advanced to a point where definite conclusions could be included. The purpose, as explained by Mr. Holden, is to obtain a real knowledge of the desires of the people as a whole for public transportation.

W. H. Lines, Pacific Northwest Public Service Company, spoke of the good results bound to result from market analyses and pointed out the many possibilities of such a survey in learning the attitude of the public, stimulating business and effecting service improvements. He compared the plan to similar efforts of successful manufacturers who produce a good product, develop suitable markets and then inaugurate intensive sales campaigns. Mr. Lines also touched on the franchise situation in Portland and the outlook of transportation in that city.

"Uniform market analyses," stated J. P. Potter, Key System Transit Company, "would be of real benefit to all carriers in the industry." He pointed out that surveys of this kind would show the managements what is lacking in equipment and service and would enable them to get the public and civic authorities interested in transportation. He also told of a house-to-house canvass, made by his company in Alameda, to determine what the people thought of the company and its service.

"Merchandising," stated O. A. Smith, Pacific Electric Railway, "is the basic principle of any business. The railways must recognize this if they are to increase their revenue." Determine what the public wants and then satisfy these desires, was the advice of Mr. Smith. He spoke at some length on the results of fare changes in Glendale and Pasadena, and indicated that by making surveys the results of these and other changes could be forecast.

Some interesting facts which were developed by the market survey made in Roanoke, Va., were related by Walter Jackson, consultant of Mount Vernon, N. Y. He analyzed the relative uses of the pass in the different hours of the day in two districts, one of these being a higher class district. He also spoke of the effect of the telephone and radio, as well as other factors which had an effect on the riding statistics secured in the survey.

The report of the committee on equipment, of which L. C. Datz of the St. Louis Public Service Company was chairman, was presented by F. L. Butler, Georgia Power Company.

In commenting on the report, C. E. Morgan, Cincinnati Car Corporation, stated that along with placing new equipment in service the railways must determine their markets and the needs of the people. He cited the experiences in Brooklyn of interviewing riders relative to new cars and how vital information which influenced future car design was obtained.

F. E. Geibel, Pacific Electric Railway, told of making several changes in car design and the results of these on the riding public. "All elements of car design," he said, "must be considered from the standpoint of rider appeal." He also spoke of the effect of new equipment in developing the interest of employees.

At the official closing of the convention, C. E. Morgan praised the work of President Samuel Riddle throughout the previous year and welcomed the new president, Paul E. Wilson, in behalf of the association.

Transportation Problem Outlined to Electrical Men

SPEAKING at a luncheon meeting of the San Francisco Electrical Development League at the Palace Hotel on Monday, Charles Gordon, managing director A.E.R.A., presented an outline of the local transportation problem and its relationship to general business. He pointed out that it would be physically impossible to provide individual transportation in congested districts for everyone who wishes to ride. In fact, it was the congestion caused by the use of individual vehicles more than 200 years ago in the streets of London that resulted in the inauguration of the first public transportation service. Today a tendency exists to think of the transportation problem in terms of vehicles rather than people. Such an approach to the problem is wrong, he said, as it is people, not vehicles, who do business. He pointed out that one four-track rapid transit line will carry more people than 25 express boulevards, and one double-track street railway line will carry more people than four express boulevards. It is essential that the relative carrying capacities of these different facilities be correctly appraised by the public if an effective solution is to be found for the local transportation problem.

Economics, Methods and New Designs

Studied by Engineers

APPLICATION of engineering practices to all phases of railway activity, with the aim of increasing the number of riders and catering to their comfort and convenience, was the principal subject of papers and discussions at the three general meetings of the Engineering Association in San Francisco. Contrary to the practice which has been adopted at the past several conventions, separate sessions were not held by the divisions of this association. Reports of the various committees were presented at the second meeting. At the third session, held on Thursday morning, the following officers were elected for the coming year:

President—L. D. Bale, superintendent of power Cleveland Railway.

First Vice-President—Charles H. Jones, general manager Chicago, South Shore & South Bend Railroad, Michigan City, Ind.

Second Vice-President—P. V. C. See, superintendent of equipment, department of railways, Northern Ohio Power & Light Company, Akron, Ohio.

Third Vice-President—E. M. T. Ryder, way engineer Third Avenue Railway System, New York.

Secretary-Treasurer—Guy C. Hecker, general secretary American Electric Railway Association, New York.

Executive Committee—The officers and W. W. Wysor, junior past-president, chief engineer United Railways & Electric Company, Baltimore, Md.; Howard H. George, superintendent of way Cleveland Railway; A. T. Clark, superintendent of rolling stock and shops United Railways & Electric Company, Baltimore, Md.; W. E. Bryan, superintendent of power St. Louis Public Service Company; and J. Fleming, purchasing agent Capital Traction Company, Washington, D. C.

President W. W. Wysor, of the Engineering Association, in his address urged the engineers to realize the responsibility which rested on them in all departments of the railway. He said in part: "We were faced during the war with a crisis no other major industry was called upon to bear—100 per cent increased operating expenses with little or no increase in fare. The engineers' answer was greater efficiency accomplished through numerous economies and the use of labor-saving machinery, as well as building better and more lasting structures. Machinery which was not used when labor was cheap was pressed into service with increased efficiency and better work.

W. W. Wysor
President

"With the economic limit of rate of fare already reached in many cases the question arises as to how we are to meet a keenly competitive situation which has now arisen and still keep our properties solvent. We must seek still further economies, more efficient methods and ways and means of increasing the number of riders. We must cater to that class of people to whom the difference between 10 cents and $1 means much; to the man who is becoming tired of the eternal pursuit of a parking space; to the mid-day shopper; to the person who is seeking just a little more in the way of speed, comfort and convenience. We must seek further relief from the burdens of taxation, which are unreasonable and unjust. We must seek for reduction in street congestion, especially unreasonable parking of private automobiles. In the hands of the engineer rests the secret of the solution of many of these problems."

Following the president's address a paper on "Electric Railway Special Trackwork" was presented by B. P. Legaré, engineer of maintenance-of-way and construction Market Street Railway, San Francisco. He reviewed the development of special track construction during the past 25 years and discussed in detail the modern construction of special work employing manganese and chrome nickel. "The problem of crossing design," said the speaker, "should be approached both from the engineering and foundry viewpoint, making full-size samples of numerous designs of crossing intersections and then subjecting them to destruction tests. The engineer must determine the direction of the forces acting upon the structure and then design a theoretical structure capable of withstanding those forces. The foundryman must examine the engineer's design and determine whether the theoretically designed sections can be made solid and without defects of other natures, for unless the metal sections are sound they cannot possess the properties ascribed to them by the engineer."

Regarding the question of what type of special work should be used by a company, Mr. Legaré said that there is no hard and fast rule. All kinds of conditions enter into the subject; the main ones being the amount of traffic, the cost, and in some locations pavement alone decides the type." Following the paper a discussion by members of the association brought out a comparison of the various advantages and disadvantages of manganese and chrome nickel steel structures.

Frank M. Harris, chief of the bureau of specifications and estimates, department of engineering, Pacific Gas & Electric Company, San Francisco, presented an interesting study on "The Relationship of Purchasing and Engineering."

"The Engineer and His Valued Influence in Western Development," was the subject of an address by A. T. DeForest, vice-president United States Steel Products Company, San Francisco. The speaker paid tribute to the engineers of the electric railway industry, as well as to other engineers and their work in developing the resources, transportation and general progress of the West.

A paper on the "London Omnibus and Other Forms of Passenger

B. P. Legaré

Transportation" was presented by George J. Shave, operating manager and chief engineer London General Omnibus Company, Ltd., London, England.

Mr. Shave made no attempt to compare conditions in London to those in our American cities when he advocated the general use of the bus rather than the street car. He pointed out how narrow streets, traffic congestion and short turns would be a handicap to successful electric railway operations in London. He stated that the 50-passenger double-deck, four-wheel bus seemed to be the solution of the transportation problem in that city. Mr. Shave told about the research work his company is carrying on with the heavy oil compression ignition type of engine. He stated that he believed an engine of this type will come into general use in the very near future. At present the London General Omnibus Company is operating about 100 buses in which Diesel engines have been installed.

The final paper of the first session, on the subject of "Economies of High-Speed Street Car Motor and Drive," was presented by C. Bethel, manager railway motor engineering department, Westinghouse Electric & Manufacturing Company. This paper was received with a great amount of interest by the delegates and brought forth some interesting discussions and questions. During the discussion, H. H. Adams, superintendent of shops and equipment Chicago Surface Lines, gave a valuable supplement to this paper by informing the meeting of the results so far obtained on his property with high-speed motors and drives. He confirmed Mr. Bethel's contention that the high-speed motor was here to stay and that its further development would be of great value to the industry.

Committe Work Reviewed in Two Sessions

Reports of the various committees of the Engineering Association occupied the greater part of the second and third sessions held on Wednesday afternoon and Thursday morning. For the most part, abstracts of the different reports were read before the sessions and, in a number of cases, were followed by active discussions. Particularly interesting discussions were held on several of the power committee reports and on the report which dealt with rail corrugation. On the latter subject a number of delegates told of their experiences with corrugation under various conditions and of the practice, which is becoming quite general, of grinding new rail immediately after it is laid.

The only paper to be presented at the second session was given by Lester S. Ready, consulting engineer of San Francisco. The subject of his paper was "Engineering Challenges of the West." Mr. Ready did not deal with engineering problems of the street railway, but very completely and interestingly gave the delegates a picture of California and the West in general from an engineering standpoint. He described the number of engineering problems which had been met during the development of California and also of projects which are planned for the near future. He dealt specifically with distribution of water, power transmission, and highway construction.

L. S. Ready

During the third and final session, a paper on the elimination of waste, prepared by A. S. Duncan, assistant director of finished stocks, Westinghouse Electric & Manufacturing Company, was read to the association. An abstract of this paper is published elsewhere in this issue. A second paper presented at this session, "Modern Vehicles and Equipment for Urban Transportation," was prepared by C. A. Burleson, transportation engineering department, General Electric Company, and read by L. Larson, San Francisco representative for the General Electric Company.

The closing acts of this association were to elect the officers for the coming year and to induct them into office.

Engineering Influence in Western Developments

Speaking before the Engineering Association, the author credited the engineer and the electric railways with the foresight that broadened areas of agriculture and industrial operations

By A. T. De FOREST
Vice-President United States Steel Products Company
San Francisco, Cal.

SINCE the days of '49 and the several succeeding years, during which immense wealth was taken from the mines and streams of California, rapid strides have been made in the direction of improved means of transportation and communication, also in the development of agriculture, industries, and transportation by both railroads and

steamships. Railroads have been constructed and extended, and extensive highways provided for vehicular traffic to reach what were far distant and inaccessible sections, and there is more to follow. Along these developed lines of transportation, local improvements, communities and new industries have arisen.

In the development of manufacturing industries, the question of power was the important one. No coal of high quality was to be found, and the discovery of oil was yet to come. Therefore, the power in our mountain streams furnished a subject of study. With the long distance existing between the points of possible production of hydro-electric power, and the desired points of utilization of the same, it required able engineers to conceive, and bold promoters to finance, the projects to meet these conditions in the West. The first long-distance high-voltage transmission line in the world was constructed in 1891 in southern California by Prof. C. G. Baldwin. This engineering, constructing and financial genius laid the foundation for our great electric public utilities.

A. T. DeForest

The increase of population brought an urban and interurban transportation requirement, and the growth and breadth in agricultural development produced a like requirement. These needs came to be provided for, in a large measure, by electric railways, made possible by the abundance or cheap electric power. These electric railways have tended to further broaden the areas of agriculture and industrial operations, and build up many communities distant from our metropolitan centers. They brought comforts to the people, and, naturally, increased realty values. Many of them replaced unremunerative service of steam railroads so that they were welcome even to their competitors.

Relations of Purchasing and Engineering

The speaker, before the Engineering Association, pointed out the necessity for engineering advice and responsibility in present-day purchasing

By FRANK M. HARRIS

Chief of Bureau of Specifications and Estimates
Department of Engineering, Pacific Gas & Electric Company
San Francisco, Cal.

BOTH purchasing and engineering have been evolving rapidly during the past two generations. Forty years ago purchasing embraced a knowledge of prices and their seasonal and cyclical trends, where and when to buy, and in what quantities, for maximum economy. During the past twenty years, however, the purchasing agent has been confronted with new factors involving the economies of production and distribution in his markets, coupled with fundamental advances in scientific research and in technical engineering.

The old time purchasing agent with his sound business ability and his trading sense came to talk a new language in which chemistry, mechanical reliability, economies of performance, and technical suitability for a given use are discussed. Steel was no longer just steel; it must satisfy one of the many standards of the national technical societies, in which carbon, phosphorus, and sulphur are specified to one-hundredths of one per cent. Paint was no longer just paint; it must contain certain vehicles and certain proportions of pigments of certain specified ingredients and must pass certain specified tests before and after application. The purchase of all of the common materials of industry was thus complicated by fine technical requirements and standardized specifications, which seriously handicapped the old time purchasing agent buying on price alone.

In parallel with the growth in the complexity of purchasing, an equally distinct transition was apparent in the engineering profession. The engineer of 40 years ago was a specialist in name only. He designed, bought materials, contracted labor and supervised construction, supposedly with equal skill, even when he was not called upon to lend a hand with the financing of the project upon which he was retained. With the entry of specialization into his profession, the engineer was confronted with the necessity for skilled assistance in purchasing, in the person of a specialist who knew markets, materials and vendors, and who could buy wisely.

Frank M. Harris

No feature of purchasing is more important than that of the inspection and testing of materials and equipment. Shall the purchasing agent or the engineer be charged with that? Who shall control the research and development work in the industry concerned? Who shall have the approval of performance bonds, payments on contracts and guarantees? Who shall accept completed work?

Where these technical decisions are being made by engineers attached to the staff of the purchasing agent, the purchasing department is to that extent becoming an engineering department and to precisely that extent is weakening the authority of the engineer, without relieving him, in the slightest degree, of his responsibility.

If this authority - responsibility measuring stick be applied, fairly and fearlessly to co-ordination problems, the division of duties will be such that none can complain and the millennium will have come.

Economies of

High-Speed Motor and Drive

In this address before the Engineering Association, Mr. Bethel shows how high speed affects operation and design

By C. BETHEL

Manager Railway Motor Engineering Department
Westinghouse Electric & Manufacturing Company

ECONOMIES and advantages of high-speed electrical apparatus design are now well established. The operating speeds of turbines, generators, rotaries and heavy traction motors have all been increased in order to obtain reduced weight for the same rating. Why not take advantage of speed in street railway motor design? In the past this could not be done, except to a limited extent, because of the limitations of single reduction gearing. These limitations have been removed. Inherent economies in power, schedule speeds and maintenance have been shown.

Operation over a period has given a clearer picture of the problem of correlating the motor, drive and truck design, and has brought out the necessity of doing so to get the greatest benefit from the new design.

A more consistent and determined effort on the part of both designers and operators has probably been directed toward the reduction of weight than toward any other one feature of the street car. The original single reduction motor, which was rated at 30 hp., weighed, complete with gears and gearcase, 2,750 lb. The latest axle hung motor rates 35 hp. and weighs 1,475 lb. complete with gears and gearcase. This reduction in the motor weight was brought about by developments in both the motor and in high-speed gearing. The high-speed motors now in common use have a rated speed of about 2,000 r.p.m., in the 35 hp. size, and weigh about 560 lb. or 1,060 lb. complete with gears. These weights in the 50 hp. size are 830 and 1,325 lb.

The high-speed motor need not differ fundamentally from the conventional type. It can be built for 600-volt operation along the lines of its very much larger predecessor. However, it is so small that better

C. Bethel

performance will be obtained if a 300-volt design is used. The reason for this is that, with the small commutator, the distance between brushholders becomes so short that the motor is too sensitive to flashing when it operates on 600 volts. With 300 volts on the commutator, however, the volts per inch of periphery are cut in half and the motor becomes much more stable. The voltage to be commutated is also less in the case of the 300-volt motor. There is a further practical gain in the stability of this motor due to its spring suspension, which results in the brushes riding the commutator better. The 300-volt motor is, of course, insulated for 600 volts.

In bringing out the 300-volt motor, the only possible exception to the superiority of 300 volts over 600 volts was the question of the effect on wheel slippage. However, after a service of over one and a half million car-miles with 300-volt motors under all operating conditions of snow, ice, leaves and slippery rails, not one case of wheel slippage due to the use of this voltage has been reported. In other words, the use of 300 volts has been a prominent factor in the development of the high-speed motor.

In order to use this high-speed motor, some form of high-speed gearing with a high gear ratio had to be provided. The problem is to secure a gear ratio up to about 10:1, to eliminate gear noise, to obtain a long gear life, and to obtain a good overall truck design. The worm gear meets the first two requirements of the problem entirely. Ratios even greater than 10:1 may be built quite successfully. The worm gear is inherently the quietest form of gearing, and it never becomes noisy. There is a further advantage inherent in the worm gear in that, with it, it is possible to obtain a large ratio with a minimum of parts.

The principal disadvantage of the worm gear is that it is less efficient than the other types of gears and requires that the motor be placed in the truck with its axis perpendicular to the axle.

The simplest form of gearing is the spur type. While the conventional type of spur gears is somewhat noisy the development of the self-contained gear unit of the double reduction type has virtually eliminated all gear noise. The primary reasons for this are: Bearings on each side of the gears and pinions prevent shaft deflections and assure correct alignment of the gear teeth; roller bearings assure permanently correct gear centers; bearings of large thrust capacity permit the use of gears of large helix angles; running the gears in a bath of clean oil maintains the gears in their original condition for a long period.

With these two tools—the high-speed motor and the gear reduction unit—we have the basis of practically all of the new street car drives. Two fundamental types of drives have been developed so far in this country—parallel and right-angle.

The forerunner of the present type of parallel drive was placed in service in Wheeling, W. Va., in 1925. This was a modification of a standard 35-hp. motor driving a single reduction gear unit through one coupling. At the end of the test, after 80,000 miles of operation, these conclusions were reached: (1) The feasibility of connecting the gear unit and motor through one coupling was established; (2) to take full advantage of the benefits that were established by this drive requires a lightweight high-speed motor. These features were incorporated in 1927 in the high-speed 300-volt motor and WN drive.

The first application of the right-angle drive was made in Springfield, Mass., in 1927. This drive incorporated a number of features then untried in street railway service. The more important of these are: worm drive; differential; provisions for transmitting traction to the axle through semi-elliptic springs; high-speed 300-volt motor.

A number of developments have followed these, but the differences have been in detail and in arrangement. The principal features now being incorporated in the various drives are: (1) the high speed motor; (2) both parallel and right-angle types of drives; (3) trucks with inside and outside journals, with the semi-elliptic spring type of side frame and with the rigid type side frame. Except in fairly minor variations in detail, all of the new type high-speed motor drive designs embody some combination of these features.

One of the chief virtues of the high-speed motor is that its size is such that a material reduction in wheel size and floor height can be made. The WN drive is designed to operate on 22-in. wheels, with 1 in. greater clearance than is obtained with standard motors on 26-in. wheels. It was thought at one time that there might be a slight increase in the wheel and track maintenance due to the use of 22-in. wheels, but experience indicates a decrease.

Modern Vehicles and Equipment for Urban Transportation

Features of modern street cars, trolley buses and gas buses were described by Mr. Burleson before the Engineering Association

By C. A. BURLESON
Transportation Engineering Department
General Electric Company

TRANSPORTATION companies nowadays have so many types of vehicles and varieties of equipment to choose from that it is difficult to know which type of vehicle to select and what equipment to use. Many things besides the economics of the question affect the operator's decision.

In Chicago we find 99 heavy duty, 60-passenger, two-man single-end cars weighing 44,000 lb. and equipped with four 50-hp. motors, PCM-18 point control and straight air brakes with quick application and release valves. These cars with seated load have an initial acceleration of 3 m.p.h.p.s. and will reach 20 m.p.h. in 9.5 seconds. They have a free running or balancing speed of approximately 31 m.p.h. on 560 volts.

In Baltimore some very interesting work has been done. A car has been equipped with 26-in. wheel trucks, GE-301 motors, and PCM control arranged for field shunting. The motors have bottom brush holders for easy inspection and adjustment. An automatic self-lapping valve is used and the regular air brakes are supplemented with track brakes. This experimental car has an unusually fast getaway, being able to make 30 m.p.h in 600 ft. from rest.

C. A. Burleson

The United Traction Company at Albany is operating a modern lightweight, single-end, 44-passenger, front-entrance, center-exit car, equipped with four GE-265, 35-hp. motors. It has foot operated PCM control, foot operated air brakes and air operated magnetic track brakes. Considerable aluminum alloy was used in the body to reduce weight. The complete car weighs 32,000 lb.

With the four-wheel brake becoming general, street car operators must seriously consider the use of the magnetic track brake to increase braking rates, particularly in emergency, so that they not only can keep up with the procession, but also stop with it. Certainly we cannot make maximum use of our higher-powered cars with higher free-running speeds if we do not take full advantage of this extra power for fear we cannot stop as quickly as the next fellow. Any other form of braking is limited by the adhesion between the rail and the wheels. This is not enough to compete with present forms of transportation and should be supplemented especially for emergency. The magnetic track brake adds 25 to 30 per cent additional braking retardation, and this is particularly necessary with a slippery rail.

Trolley buses have been in successful operation for five or six years but it was only recently that the modern trolley bus was put on the map in this country by the Utah Light & Traction Company.

Chicago has recently put 41 trolley buses in operation as feeders to their street car lines. These buses seat 40, weigh about 17,000 lb., are equipped with 40-in. tires and worm ratio of 10.25:1. Two 50-hp. motors, automatic control and four-wheel brakes make a fast, smooth operating vehicle with a balancing speed of about 32 m.p.h. on 560 volts. In Knoxville, four 43-passenger trolley buses with two GE-298 motors and PCM control have recently been put in operation.

The third vehicle to be considered is the gas-propelled bus. Electric drive is now available for 21-passenger vehicles up to double-deck buses seating 67. Larger and more powerful engines are the talk of the day. The Public Service Railway of New Jersey has recently placed in service 170 high powered gas-electric buses which weigh about 18,500 lb., have a 240-in. wheelbase, seat 40 passengers, are equipped with 40-in. tires and a gear ratio of 9.25:1. The engine has a rated horsepower of 150. Direct connected to this engine is a DT-1121 generator which furnishes power to two motors which, in turn, drive the rear axles. On account of the increased size of the engine a new motor known as the GE-1151 was developed. Each of these motors rates 45 hp., continuously.

Elimination of Waste

Waste elimination, effected through efforts of supervision, was the subject of this address before the Engineering Association

By A. S. DUNCAN
Assistant Director of Finished Stocks
Westinghouse Electric & Manufacturing Company

THAT we are a wasteful nation has long been known, but the extent to which the industries are involved should be studied because recent investigations show that over 50 per cent of the responsibility for waste can be placed at the door of management, and less than 25 per cent at the door of labor, while the amount chargeable to outside contacts, such as the buying public, trade relationships, etc., is least of all.

Since by far the greater percentage of the responsibility rests with management, it stands to reason that to overcome the evils which tend toward waste through carelessness it must be approached from the angle of supervision.

One of the greatest profit consumers in any line of business is unproductive labor. By eliminating this, or at least reducing it to the smallest possible amount, it will often be the means of transferring many a business from red to black entries. While it is recognized that overhead, or unproductive labor, even of the least skilled type, is possibly necessary to some extent, yet there are often ways and means whereby this can be placed on the same basis as productive labor and get the maximum amount of efficiency at the minimum cost by using incentive methods.

The elimination of material waste can be carried to the same extreme as elimination of excess labor waste. For example, take the classification of iron and steel scrap on just two grades alone—what is known as the "No. 2 Steel" and the "Heavy Melting Steel." The former has a higher value than the latter, and, by installing a pair of shears in the majority of the locations, this can be turned into a very profitable proposition, securing about 60 per cent increase in price for this scrap.

It is always desirable to have master keys and go through the workmen's desks or lockers where they usually store material used in their line of operations. This, however,

A. S. Duncan

should be done in their presence, and any material in excess of a two days' supply needed for the task they are actually working on at that time should be returned to stores and credited.

What quantity production is to the successful manufacturers — quantity purchase is to the utilities. Where material is sold on quantity discounts, a vital mistake is made in trying to measure successful operation by turnover to the detriment of economy in purchasing. In many instances it is economy to purchase in quantities ranging as high as a year's supply at one time, providing the discounts warrant it and the possibilities of obsolescence through disuse are reduced to a minimum, and arrangements may be made for protracted deliveries. At this point, co-ordination among engineering, purchasing and storekeeping is positively imperative.

Successful business follows an iron-clad rule of writing off each year, into the depreciation account, a certain percentage of the original costs of buildings, tools, equipment, etc., naturally reducing overhead profits to a certain extent, but at the same time paying taxes on only the actual worth of the investment. The same rule may be followed just as conscientiously in the handling of your frozen investment, regardless of what it may be. In following any rule on frozen investment for the first time, the totals, naturally, will be extremely high and, as such, one fears criticism for what apparently seems to be an error in judgment in ordering material, but after this has been in vogue two or more years, the results will compensate for the anguish expended. I don't know where it is possible to save more money, particularly where the investment is large, than by moving material that has reached the slow moving, inactive, or obsolescent stage to a quick turnover basis.

Slovenly housekeeping, more than any other single factor, is the cause of waste. A motor car manufacturer, having purchased a steam railroad, has been quoted as saying that he paid a very substantial dividend on the total money invested by cleaning up and salvaging material found on the right-of-way. Be that as it may, there is no question but that all of us, regardless of lines of business, are extremely careless in wasting material.

Try this. Go through your own storerooms. Notice how the material is piled and protected. Then go to the department that uses this same material and see how they handle it and if they properly protect it before and during its use. From there go to your salvaging or scrap department. You will no doubt find material there that, instead of being sent back into stock after the day's work or completion of the job, has gone into the day's waste and is on the road to the incinerator, or being accumulated for selling to the scrap dealer.

Also, if you have different storerooms, form a committee among your men and let them visit storerooms other than their own and give constructive criticism on methods of cleanliness, piling, and taking care of material. By this method, you will find that you will be able to secure some startling results. Regardless of the experience of the supervisors, men employed handling material, if interested, often will see things that those in authority, as a rule, will pass over. The principal thing, however, is to drill into them cleanliness and neatness. Keeping material fresh, neat and clean should be one of the principal determining factors for efficiency.

Great progress has been made, and we can go still further by remembering the principles of waste elimination, and the definition of the word "waste" as thoughtless or idle expenditure without hope of return.

Claims Men Discuss

WITNESS STATEMENTS

and Related Subjects

W. E. Foley
President

IN THE absence of President W. E. Foley, the sessions of the Claims Association were presided over by J. H. Handlon, claim agent of the Market Street Railway, San Francisco, a past-president of the Association.

"The coming together each year at these conventions affords to the claim agent and members of his department a splendid opportunity to exchange ideas with other claims men from various sections of the country," said Mr. Foley, in his address, which was read to the gathering. "It also enables him to keep abreast of the times, which, in my opinion, is one of the essential factors in the claim agent's work. We are all aware of the value of personal acquaintance in the exchange of business courtesies. Time and again in our work there will arise a situation demanding investigation of witnesses or the settlement of claims in distant cities. It is gratifying to know, when such an occasion arises, that a telephone call or a telegram to a fellow member will bring the desired result." Mr. Foley also made a plea for a wider support from the membership of the work in which the Claims Association is engaged.

The report of the executive committee was read by A. E. Nicoletti, assistant claim agent Key System Transit Company, Oakland, Cal., following which the report of the nominating committee was read. The entire ticket was elected, as follows:

President—C. E. Redfern, United Electric Railways, Providence, R. I.

First Vice-President—J. W. Giltner, Northern Ohio Power & Light Company, Akron, Ohio.

Second Vice-President—L. H. Butterworth, Boston Elevated Railway, Boston, Mass.

Third Vice-President—E. S. Nelson, Pacific Northwest Public Service Company, Portland, Ore.

Secretary-Treasurer—Guy C. Hecker, American Electric Railway Association, New York City.

Executive Committee—Officers and Bert C. Wood, S. A. Bishop, E. J. Paige, and G. T. Hellmuth.

Following the official business of the session, the meeting was turned over to B. F. Boynton, president of the Pacific Claim Agents Association, and a joint meeting was held with that body.

Papers were read on "Bus Accidents—Their Causes and Prevention," by S. A. Bishop, general claim agent Pacific Electric Railway, Los Angeles, and W. R. Sherman, general claim agent, Spokane, Portland & Seattle Railway, Portland, Ore. "With my property, 60 per cent of all mishaps are so-called traffic accidents," said Mr. Bishop. "They are responsible for the major part of the work of the investigation personnel, although their costs are only 26 per cent of the total claim costs. They cannot be prevented wholesale unless perhaps by more thorough training of employees and the stricter application of the rules. The best way I know to get definite results is to investigate each accident, go over the facts with the employee involved, point out to him his responsibility, administer commensurate discipline, demand improvement, and follow up with removal from service if the employee is unresponsive or imcompetent."

In the discussion that followed, P. W. Klabunde, of Milwaukee, described the training road which has been built by his property for the instruction of drivers. W. H. Moore, San Diego, spoke briefly of experiences in that city. Mr. Bishop expressed himself in favor of insuring high-speed buses against accidents and carrying the risk on slow-speed city buses. A. E. Nicoletti, assistant claim agent Key System Transit, Oakland, Cal., stated that his company is working to establish the negligence of automobile drivers in many of the accidents which occur. This relieves the company of responsibility. In some instances it has been found possible to bring suit against the automobile driver as the third party where he was at fault in causing an accident in which a patron of the company or an outside person was injured.

Methods of impressing employees with the importance of obtaining all available witnesses and gathering material facts at the time of the accident was the subject of a paper by Mr. Nicoletti.

He stressed the necessity of securing as many competent witnesses as could be obtained, and particularly of getting the names of persons who, although they might not have been eyewitnesses of accidents, were present.

Another paper on the same subject was presented by J. E. McClain, claim agent Austin Street Railway, Austin, Tex. His paper is given in abstract elsewhere in this issue. In the discussion, Mr. Klabunde stressed the necessity of getting facts as soon as possible after the accident occurs.

People passing by on the street are often better witnesses than passengers, since they may have been able to see the entire occurrence, while those on the vehicle might have had a limited view. People who state to the operator that their testimony would be no good as it would be against the company often prove the most valuable witnesses, he said, and should not be neglected. Distances of the various elements involved are impor-

tant. They should be obtained at the time of the accident, as marks on the pavement are obliterated soon afterward, particularly if the traffic is heavy. E. E. Grover, Columbus, Ohio, is opposed to the method described for obtaining witnesses. He feels that if the operators are told they must turn in a large number of names, they may not be particular about whom the people are. Mr. Bishop, on the other hand, does not believe in allowing the trainmen to use any discretion, but advises getting as many names as possible and sending out questionnaires to them. This view was held by a number of other speakers.

"The Value of Motion Pictures in Claims Work" was the subject of a paper by C. M. McRoberts, Los Angeles. Mr. McRoberts demonstrated the effectiveness of motion pictures in establishing facts regarding accidents by showing a number of films which he had taken.

Wednesday Session

The second session of the Claims Association, held on Wednesday afternoon, opened with a report of the committee on uniform negligence law which pointed out that in the opinion of those who drafted a sample bill for the consideration of state legislatures the act would prove constitutional if put before the courts and, if passed, would do away with much unpleasant litigation.

In a paper dealing with the subject of whether the company surgeon should call on the injured immediately after the accident or wait until the liability is determined, M. C. Chapman, Jr., concluded that no hard and fast rule could be adopted. Discussion brought out a majority opinion that where the company is obviously liable, the staff surgeon can prove a valuable emissary of the claims department by calling on the injured as soon as possible. Also the value of taking X-ray photographs at the time was stressed. Such records often prove invaluable at some later date.

The subject of blind accidents and how to handle them was covered in papers by G. T. Hellmuth and J. W. Giltner, abstracted elsewhere.

Two papers dealing with legislation affecting guests of motorists who are injured in accidents were followed by lengthy discussion. There is a strong tendency in most states to absolve the driver of a car from liability when carrying gratuitous passengers. Several states now have laws absolving the operator of a motor vehicle of claims in case of accident except in cases of gross or willful negligence. Oregon is the only state to have passed a law absolving the driver of *all* risk but this act has been declared unconstitutional. It was the opinion of the authors of the papers, as well as several who participated in the discussion, that state legislative bodies are in a receptive frame of mind to pass laws which will to some extent define negligence in such cases. Also the belief was expressed that the time is near at hand when jurors will not be permitted to measure negligence by a flexible yardstick but will have this vital point defined by a commission.

Painstaking Investigation Reduces Fraudulent Claims

Eternal vigilance is the price of protection in dealing with blind or fraudulent claims, according to a statement made before the Claims Association

By G. T. HELLMUTH

Claims Attorney Chicago, North Shore & Milwaukee Railroad, Chicago, Ill.

G. T. Hellmuth

BLIND accidents include accidents that really occur and those that are fraudulent. But in either case intensive work by the claim department is imperatively necessary, and especially so in the fraudulent type of claim.

There lies at the root of this evil of blind accidents a ready cure afforded by training all employees to report any and every accident, no matter how trivial it may appear and no matter how disconnected the company may seem to be from the actual occurrence. It is unfair to the company for any employee to allow an accident to be unreported.

As to the handling of fraudulent claims which so often are based upon "blind" accidents, my company has made it a policy for the past eighteen months to prosecute dishonest claimants wherever we could establish such dishonesty, and we have been successful in jailing some ten or twelve of them in the past year and a half.

In Chicago an index bureau is maintained by the insurance companies and supported by most of the carriers. All members report to the bureau the claimant's name and address, and full records are kept, not only alphabetically by name, but also numerically by street number. The bureau does not rely solely on the reports of its members, but indexes as well personal injury plaintiffs and all law suits commenced in Cook County. Through the help of the index bureau, it has been possible time and again to catch a claimant who is in the habit of making frequent fraudulent claims.

I am a firm believer in the policy of painstaking, thorough and complete preparation of any litigated matter, and in my judgment we can hardly go too far in going into every angle and detail. I feel, also, that haste is liable to make waste, if we are too precipitate in paying a "blind" claim. If it is not yet in the shape of a law suit, I think it ought not to be paid until we have turned the strong searchlight of investigation upon it, and if it is sued upon, we should leave no stone unturned in investigating the facts from every possible angle.

Securing the Facts Is the Basis of Accident Investigation

By J. E. McCLAIN
Claim Agent, Austin Street Railway
Austin, Tex.

That unfavorable evidence can be as valuable as that which directly favors the company was the substance of an address delivered before the Claims Association

I AM a firm believer in the great importance of the education and proper instruction of our employees. No operator or other employee of a corporation who has not been instructed in, and taught the fundamental principles of his organization, can render the same efficient service as one who has had the proper instruction and training. The first and most important of these principles which should be conveyed to persons entering the service of a corporation is the principle of elemental facts.

They should be taught that in all cases their first duty to their employer is to gather and present through the proper channels all known facts concerning each particular case, and should supplement this by any other information pertinent to the issue. These facts should be obtained as soon as possible after an accident, and should include evidence unfavorable, as well as that favorable to the company. Failure on the part of the trainman to secure the name of one witness, even, may result in the claim agent of his company making a wrong decision in the case, thereby causing the company the loss of a large sum of money.

Trainmen should be given special instructions in the gathering of evidence at the scene of an accident. Details must be secured at the scene of the accident and immediately after it occurs. A few minutes of delay and at the most, a few hours under ordinary traffic conditions, will tend to erase all traces of the accident on the pavement.

In getting these instructions over to the personnel of an organization in an impressive manner, I know of no better way than for the claim agent to appear before them in person; particularly is this true when there are only a few men to contact. When you get a trainman, who has fallen short in handling his accidents, face to face, and go over the case with him in a friendly and co-operative manner, I feel sure that a great deal more good would result than from any other method which might be used.

When all has been said and done concerning the best methods of impressing employees with the importance of obtaining all available witnesses and gathering material facts at the time an accident happens, the whole thing resolves itself into the matter of education. Give the trainman the proper instruction in the matter of obtaining and presenting all facts pertaining to each and every accident, and we have taken a long stride toward reducing the amount of claims paid because of lack of facts to substantiate our rejection of them.

Blind Accidents and How to Handle Them

By J. W. GILTNER
Chief Claim Agent, Northern Ohio Power & Light Company
Akron, Ohio

Methods of investigating and dealing with the unreported accident are set forth in detail in paper read before the Claims Association

BLIND accidents — sometimes called "no-report accidents"— are those about which we receive our first information from an outside source. It may be advice from an attorney who represents the claimant; it may be a telephone call from the claimant or some neighbor, friend or relative acting for him; it may be a call from the doctor in attendance, the favor and co-operation of whose fraternity we have always tried to merit; occasionally the information is relayed through one of the operators of a following car or bus, and now and then a claimant comes to our office and presents the matter in person.

In all cases except those reported by attorneys, it seems to me the course of our procedure is obvious. The injured person must be interviewed at once, in his home if possible, where, surrounded by his household goods, his family and neighbors assembled, a more accurate estimate of his honesty and reliability is possible.

In this first interview the investigator will go into the claimant's past history and watch intently for previous accidents, injuries, sicknesses and for doctors and lawyers used by himself and intimates. He will learn his places of residence, his employers, his acquaintanceship with attorneys, his experience in law suits, his church and lodge affiliations, the names of insurance companies with which he has carried accident insurance coverage, and will be on the lookout for evidence of a connection between this claimant and other claimants in shady cases handled previously.

Coming closer to the case in point, the investigator has the claimant detail his movements and associates for several hours preceding the accident. Thus a fund of information is secured—much of it possibly is of no value—but no one can tell what can safely be ignored. In it is found all available material for the investigation. In a second interview the correctness of the data given can be checked in the manner referred to previously.

In the case of a blind accident reported by an attorney, it is our practice to recognize and respect all the rights of an attorney to bring his client and supporting witnesses to our office for an interview. In such cases no further discussion is necessary, for the course pursued is identical with that outlined above.

Accountants Give Attention to

Budgetary Control

E. H. Reed
President

THAT the era of consolidations and mergers which are constantly taking place in the utility field has created new opportunities as well as new problems for the accountant was emphasized by E. H. Reed in his opening address before the accountants' association. The new obligations imposed upon the profession, according to Mr. Reed, call for a full perspective of the science of accounts to enable one to visualize the enormous transactions which are taking place in the present-day business world.

Perhaps the most important feature of the past year's work of the accountant's group has been the work of the committee on budget control, which has devoted itself to the preparation of a model budget in detail which, when completed, should be of great value to operating managements.

Mr. Reed paid tribute to the committees having in charge the subjects of standard classification of accounts, bus accounting, stores accounting, fare classification, and freight accounting, reports on all of which were submitted at the meeting.

"The Capital Structure of Public Utilities" was the subject of a paper presented by John F. Forbes, resident partner Haskins & Sells, San Francisco. An abstract of his paper appears elsewhere in this issue.

Reports were received from the committee on standard classification of accounts and from the sub-committee on bus accounting. These reports are abstracted elsewhere.

Among those taking part in the discussion were C. C. Vargas, Key System Transit Company, Oakland; P. S. Young, Public Service Coordinated Transport, Newark, N. J.; W. H. Scott, Municipal Railway of San Francisco, and A. G. Neal Washington Railway & Electric Company.

How the auditor can most effectively aid his company by becoming an analyst rather than a mere recorder of figures was brought out in a paper presented by Leslie Vickers, economist, A.E.R.A., at the second session of the Accountants' Association. An abstract of this paper appears elsewhere in this issue. Following the presentation of his paper, Mr. Vickers gave an interesting explanation of the attitude and plans of the Interstate Commerce Commission in the matter of cost accounting. It was brought out by Mr. Vickers and also by John F. Moran, Boston Elevated Railway, that the subject of obsolescence has a very important bearing on depreciation accounting. In the absence of the chairman, the report of the committee on budgetary control was presented by C. E. Yost, Delaware Electric Power Company. This report is abstracted elsewhere.

Resolutions were presented on the death of three members of the association, W. G. Ross, F. R. Henry and F. E. Webster.

The report of the committee on nominations was then presented. Officers named for the coming year were:

President—C. E. Yost, treasurer and assistant secretary, Delaware Electric Power Company, Wilmington, Del.

First Vice-President—J. E. Heberle, assistant to president Capital Traction Company, Washington, D. C.

Second Vice-President—E. A. Tuson, general auditor Public Service Co-ordinated Transport, Newark, N. J.

Third Vice-President—C. R. Mahan, comptroller Chicago, North Shore & Milwaukee Railroad, Chicago, Ill.

Members of the Executive Committee—L. T. Hixson, secretary and treasurer, Indianapolis Street Railway Company, Indianapolis, Ind.; R. A. Weston, special accountant the Connecticut Company, New Haven, Conn.; R. L. Crowe, vice-president Los Angeles Railway, Los Angeles, Cal., and J. D. Evans, general auditor St. Louis Public Service Company, St. Louis, Mo.

These officers were unanimously elected and Mr. Yost was installed in the chair. A resolution was passed thanking the retiring president, E. H. Reed, for his services during the past year, and the badge of past-president was presented by O. H. Bernd.

Accountants' Luncheon

DISCUSSIONS of capital charges formed the principal topic at the Accountant's luncheon, which was presided over by President E. H. Reed. Those present took up in considerable detail the subject of cost analysis in connection with construction of track. The procedure necessary in taking up the old track and putting down new track in its place was gone over. In the discussions, methods of segregating charges to capital and to operating expenses were considered.

Fare box collection was another topic discussed. It was told that on one property experts showed methods by which the fare box could be rifled. Due to the analysis made, the manufacturer was able to revamp his design and produce a new fare box which would be theft-proof.

Another subject discussed was checking of material and supplies in connection with orders. The case was cited of an order for major repairs to a group of cars. Material was purchased when, had a check been made with the storekeeper, it would have been possible to use the supply of material already on hand and which has been standing idle for some time.

Those taking part in the discussion were E. H. Yost, Delaware Electric Power Company, Wilmington; E. C. Jolley, San Antonio Public Service Company; W. H. Scott, Municipal Railway of San Francisco; J. W. Glendenning, Commonwealth & Southern Corporation, New York; and others.

The Auditor as an ANALYST

Opportunities to do work of great importance and value are outlined in this address before the accountants association

By **LESLIE VICKERS**
Economist
American Electric Railway Association

THE greatest need of our industry today is analysis. You may talk about our need for new cars, for rehabilitated tracks, for new fare structures, for relief from paving and taxation burdens, for traffic regulation and increased public understanding of our business. All of these are necessary and worthy of the stress that is being laid on them, but to discuss them intelligently as applied to any individual property, we need first, the kind of financial analysis that should be made within the auditor's office. It does not necessarily follow that he is the individual who should do it. But he and his associates in the accounting department are the main cog wheels in the machine that can accomplish it. As a matter of fact, there is no one on an electric railway property who can afford not to be an analyst and it is partly because so many of us have accepted things as they are that our industry is in the condition in which we find it today. With certain exceptions, our properties have not done what they should in analyzing service—in finding out what part of it is adequate, what part is inadequate and what part is unnecessary and wasteful; they have not analyzed their patronage to determine whether or not the fares they charge fit the kind of traffic for which they are intended; they have not analyzed the equipment to see if it should be retained or replaced, or whether some alternate form of service should be substituted; and they have not analyzed their operating costs by lines, by routes, by times and by seasons, their shop and track costs by units, or their operating revenues by classes of service or with relation to the new and old investments which they represent. Of course, there are some properties that are doing all of these things and they have approached reasonably close to a thoroughgoing cost accounting basis. Their auditors and accountants are able to tell with a fair degree of accuracy at any moment what the various classes of service are costing, and more than this, they are displaying, in a timely way, the red signals of danger which the operating executive may pass only at his peril. The auditor, by his careful analysis, may not have the final word, but he speaks so authoritatively that he cannot be ignored by those who do have it.

Leslie Vickers

But as an industry we stand in marked contrast with modern manufacturing industry, and indeed with some of the other public utilities as well, in lagging far behind in the matter of cost accounting. Manufacturers must know their individual costs. The time has passed when goods will sell themselves except in certain highly specialized or monopolistic lines—and money is so plentiful, and so eager to find a profitable investment that it soon rushes in to provide competition for the manufacturer who is so careless about his costs and knows so little about his unit margin of profits that he sets his selling price at an attractive point for the establishment of the very competition that will ruin him. A roll call of the industries that have established cost accounting systems and have followed them up to the degree approved by the Taylor Society is a surprising one. It includes the highly seasonal industry of the manufacturer of Christmas cards or the retail distribution of a highly perishable commodity such as milk; it includes ships and heavy machinery builders and confectioners; automobile builders and manufacturers of fly paper; steam locomotive builders and the producers of Eskimo pie. Indeed there seems to be no limit to the application of cost accounting principles, nor yet to the degree of refinement to which they may be carried.

Since I am not an accountant nor an auditor, it is fitting for me to state that I see no great difficulty in the application of very far-reaching cost accounting principles to our industry, and furthermore, I am aware that some up-to-date companies have done much in this direction. But as an industry we must do much more. We must remember that we have a service to sell and not merely to provide. Herein lies one of our weaknesses. Many of us have acted as if our commodity would sell itself, once it were provided. We began our life as a monopoly and some of us have failed to realize that we have developed into a highly competitive business in which we have to provide the kind of transportation that people want, at the time they want it, and at a price they will pay. The old solid iron-tired horse coach could not compete with the horse car on rails; the horse car on rails gave way under competition and development to the cable and then to the electric car, and that vehicle maintained its predominant position for many years until the light passenger automobile came in and demanded smooth surfaced roads, and smooth surfaced roads in turn helped to develop the pneumatic tire. The pneumatic-tired private automobile, operating over roads almost as smooth as our own steel rails, is our great competitor for service today, and we not only have to *furnish* service but we must *sell* service to meet the competition which it creates.

This is neither the time nor the place to insist on the essential nature of common transportation service.

Indeed, it is scarcely necessary to assert it at any time or in any place, for it is self-evident and readily apparent to the resident of any city.

But it is both the time and the place to assert the existence of such competition in service, comfort, convenience and price as to force us to the same careful scrutiny of services and analysis of costs as faces the manufacturer of any other competitive article. All of this involves analysis of the most patient kind.

We must all be analysts from the general manager down to the man at the bench; from the superintendent of traffic and transportation to the man on the rear platform; from the auditor to the clerks in the receiving department. But the degree of responsibility varies with the rank of the individual, and this is great in the case of the auditor because of his high standing and his comparative isolation from the routine problems of providing service. It is great because the figures in all the accounts pass before him; because it is his function to make comparisons, and because it is his final authority to pass judgment on the validity of charges and entries.

With such a responsibility and such an opportunity, how can an auditor be content to act merely as a figurer? How can he resist the role of analyst? To remain a figurer is like working in a dingy unlighted office with the grey and uninteresting procession of figures, more figures and more figures passing before his blurred vision, when the opportunity is before him to turn on the light of analysis and scrutiny, breathe life into the columns that face him and see before him an interesting landscape replete with beautiful scenes, living, breathing human beings to be served, and challenging problems to be solved. The analyst's attitude toward his job will lift it out of routine, work-a-day toil into the realm in which students work because they enjoy the search for truth; into the realm of causes rather than the realm of facts; into the realm of things dynamic and full of life and out of the realm of things static and lifeless.

Capital Structures of Public Utilities

In an address before the Accountants' Association the author outlines the various entities of which utilities are composed

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PRIMARILY the financial structure of any corporation is disclosed by its balance sheet, but there are a great many reasons why the balance sheet of a public utility while apparently similar in form and content to that of every other form of enterprise, must be considered from an entirely different point of view.

In the case of a manufacturing or trading company, for instance, the current financial position is of outstanding significance. In considering the propriety of credit extension to such enterprises, bankers emphasize the relationship between current assets and liabilities since the former normally represent the source from which repayment of loans arises. Logically, the greater the excess of current assets over current liabilities in a given instance, other things being equal, the stronger is the credit position of the borrower. If, as in the past, bankers have usually considered a current ratio of 2:1 satisfactory, a ratio of 6:1 would be proportionately more favorable.

The same method of reasoning however does not apply in the case of the public utility. Indeed the reverse might possibly be true, and for the following reasons: The current assets of any corporation consist essentially of cash, accounts receivable, and inventories, and the current liabilities consist usually of those debts which have to be paid within a twelve-months' period. In an industrial, and in many other forms of enterprise, the cash may be used immediately in the liquidation of the payables. In the normal course of business operations, the conversion of the inventories into receivables and the latter into cash provides the means of liquidating the liabilities. Ordinarily the greater these assets are in relation to the liabilities, the greater is the financial stability of the enterprise.

But in a public utility the amount of cash which may be economically carried is dependent altogether upon the financial plans of the company, and if the accounts receivable exceed the earnings of, let us say, two months, this is probably a sign that the collection department of the concern is not functioning properly or that the company is selling power or transportation, or whatever service it does purvey, in violation of the ordinary rules of business.

The inventories too are not to be converted into cash except in those few instances where appliance sales departments have been introduced into the utility. The inventories usually comprise almost entirely materials and supplies which are to be consumed in the rendering of services to consumers. And the carrying of a large inventory on the part of a public utility may be a sign of great weakness rather than one of strength, for the reason that if the material is not to be used within a reasonable period it represents so much dead investment for the cost of which the company is paying heavily in bond interest or otherwise. So, if a banker is considering the credit possibilities of a public utility, instead of considering the ratios of current assets to current liabilities, he should investigate the daily or weekly or monthly income since that is the source to which he must look for payment.

The banker ordinarily gives little consideration to the fixed assets of the industrials as security for a loan for a variety of reasons. A mill dedicated to the manufacture of cotton stockings might have little value in a silk-stocking era, and the vicissitudes of trade generally serve to render precarious risks based upon such permanent assets. And, too, so-called "capital loans" are likely to become frozen. But the permanent assets of a public utility form an infinitely better security. Even these assets may be seriously affected in their present value, as is illustrated in the effect which the automobile has had upon street car lines, but in the case of the utilities the transition of fixed assets from good to bad is slow.

American Association Committees Active During Year

ON ACCOUNT of the shortness of the Association year, due to the convention being held in June instead of October, it was not possible for the committees to complete their assignments to the extent that is done ordinarily. Many of them are engaged on projects that require a greater time than was available, and were able only to report progress. Four of the committees, those on national relations, street traffic economics, employee relations and publicity, prepared printed reports which were distributed prior to the meeting. Their reports are abstracted below. Other committees made oral reports which are mentioned in the proceedings of the sessions.

NATIONAL RELATIONS

REORGANIZATION of the Washington office was described, and the advantages accruing discussed in some detail.

The necessity for clarification of the Interstate Commerce Act with reference to electric railways was pointed out. The principal development during the year was the Supreme Court decision on the Piedmont & Northern case. This has merely thrown the case back into the lower courts without a decision as to its merits. Since the case involves the entire matter of jurisdiction of the Interstate Commerce Commission, including issue of securities, it is of vital importance to find a solution of the problem presented by it.

The bill to control motor buses in interstate commerce is not yet adopted, and certain modifications are necessary to make it desirable after its amendment by the Senate. Certain other legislation proposed is reported on by the committee.

STREET TRAFFIC ECONOMICS

FOUR principal subjects were studied by the Committee on Street Traffic Economics: (1) Possibilities of signal design; (2) parking in neighborhood business centers; (3) use of the public streets, and (4) taxicab operation. The need for proper engineering treatment of traffic problems is growing more acute, states the committee, and railway managements must take the leadership in directing the development of proper traffic control. Public officials and business men will not develop so great an interest in producing freedom of movement on the streets as the alert management of the transportation system. Competent engineering analysis should be undertaken and careful development by concerted planning with the business groups and public officials should be carried out.

On the subject of traffic control and signaling, the increasing accidents in cities are held to be mute evidence of the ineffectiveness of signals and traffic control as now operated. Transit speeds and riding habit have steadily declined in most cities until the industry is now faced with the problem of street speeds of 4 to 6 m.p.h. or even less through business arteries, and even 6 to 8 m.p.h. on long stretches of trunk arteries. Private transport is equally handicapped.

While the relative numbers of riders and pedestrians vary widely in different parts of a city, rarely are different selective methods adopted to meet these situations. Excessive delays have added to freight delivery costs as well as those of city passenger transport.

The committee believes it is quite clear that the total riding habit or demand for transport is increasing steadily with population growth, as indicated by the necessity riding. Far more intensive study of their problems should be given by both city administrations and operating companies.

Specifically, it is necessary to study the street system and main thoroughfare plan with the object of securing the most appropriate classification for various uses, easing bottlenecks, providing by-passes and releasing full traffic capacity of main arteries pending the development of new ones. Complicated intersections should be given individual study. Signal systems already installed, if not of high efficiency, should be replanned to develop full traffic capacity of thoroughfares under control.

The net effectiveness of present traffic enforcement facilities demands study. This has entirely escaped attention, the committee feels. Transit routing and methods should be examined to discover the best means of expediting progressive movements, promoting short-haul riding facilities, simplifying terminal district layouts and releasing the congested districts from unnecessary turning obstructions.

Study should be given to the joint effect of city and state regulations on transport operations; first, physical regulation over city streets and traffic; and second, economic regulation of the state commissions.

It would appear essential that transport companies participate far more actively in this survey and planning work than they have done in the past, for their own good and protection. Co-operative planning should bring quick and positive results.

Considerable space in the report is devoted to a survey of recent experience and effects of city traffic signaling. While the trend is definitely toward the full flexible progressive system, progress is considered slow and piecemeal, with all too little evidence of signaling conceived as a system on a broad master plan. Examples of city systems are cited, and it is held that only two or three of them approached this ideal. The synchronized system, generally inflexible and with too long cycles, reduces street capacity and speeds to almost half pre-signal values. There also is an increase reported in peak power loads.

Some important points in design are taken up in considerable detail. The necessary information to be secured and methods of analyzing it are discussed. Studies of turning movements and of full street filling are deemed desirable. The cycle length and split-timing allotted must be sufficient to pass the traffic.

Advantages of the skip signal progressive system, with only the main crossings of a traffic artery

signaled, 1,000 to 2,000 ft. apart, are not believed to be fully understood. With through-street stop signs on the cross streets at intermediate locations there is reasonable freedom of movement. Along with skip stops trunk transit lines show possibilities of increases of speed of 20 to 25 per cent.

Pedestrians will not wait for long cycles in crossing streets, judging from observations of 60,000 instances. More than two-thirds disobeyed the red signal on a 125-second wait and only one-fourth on a 55-second wait. The short cycle gives both high efficiency and pedestrian protection.

Several pages of the report are devoted to a discussion of results of signal surveys in several cities. The synchronous type of signals gave very poor results, slowing down speeds greatly both in rush and non-rush hours. Street car speeds were reduced 25 to 40 per cent. The effect on the crews has been to discourage them.

Parking also was studied in detail. Elimination of parking would not affect business adversely and would facilitate all vehicle movement. Public transportation should be such as to encourage the use of public carriers.

Taxicabs are considered necessary without question, but the committee did not feel ready to make definite recommendations regarding them. Taxicab stands were discussed, and the results in Chicago, Philadelphia and Brooklyn were cited. It was found that the taxicab traffic constitutes from 3 to 8 per cent of all traffic in the congested area and cannot, therefore, be an important factor in causing traffic congestion.

EMPLOYEE RELATIONS

THIS year the committee on employee relations paid particular attention to the personnel side of the industry. It believes that the conference method of training is the most promising avenue of improved public relations and employee inspiration, and the conclusion was reached that the most important business of the committee is to convince the industry that this work must be done. The present committee and its predecessors have tried to prove that education and training of employees are necessary to secure the best results, and to suggest ways in which the education and training can be given.

For several years it has been urged that the principal value of work of this class lies in two fields: the foreman conference for all supervisory officials, and the employee conference on customer contacts or service betterment. At conventions, demonstration foreman conferences have been given and training courses for leaders of such conferences have been conducted. This year the location of the convention and the short time have made it difficult to continue along the same lines, but it has been arranged to provide a demonstration of an employee conference before a group of men especially interested in this method.

For next year it is recommended that the work be divided among a number of subcommittees, each of which takes a phase of the relations of the worker. It also was suggested that instead of continuing the annual training course in connection with the convention, several series of conferences be held at central points in various sections of the country at convenient times. The exact character of these conferences was not determined, but it was suggested that one group be for training leaders for foreman conferences and another for training leaders for salesmanship, public contact or service-improvement conferences of car men and other employees not of supervisory rank.

The appendix of the report contains an article by M. B. Lambert on "Selling the Executive on the Importance of Employee Relations Work." Another appendix gives a complete list of books and articles which have appeared recently on topics bearing directly or indirectly on employee relations. This list was compiled by Henry H. Norris of the committee and Lewis A. Armistead, librarian, Boston Elevated Railway.

Chairmen of American Association Committees

1. J. P. Barnes, Nominations.
2. W. E. Wood, Publications.
3. L. S. Storrs, Resolution on Death of N. F. Brady; Subjects and Meetings; National Relations.
4. C. S. Hawley, Manufacturers' Advisory.
5. H. L. Geisse, Taxation.
6. Paul Shoup, Chas. A. Coffin Foundation Prize.
7. H. B. Potter, Insurance.
8. J. H. Alexander, Membership.
9. J. H. Hanna, Policy.
10. Edward Dana, Employee Relations.
11. T. Fitzgerald, Electric Traction Speed Contest.
12. F. W. Doolittle, Finance.
13. G. A. Richardson, Street Traffic Economics.
14. E. F. Wickwire, Manufacturer's Contact.
15. F. R. Coates, Co-operation with State and Sectional Associations.
16. Dr. Thomas Conway, Jr., National Relations Subcommittee on Depreciation.
17. Barron Collier, Publicity.
18. R. R. Bradley, Interurban Legal.

PUBLICITY

TRAFFIC congestion relief has been the subject on which this year's committee on publicity concentrated. The outstanding feature of this work was the inauguration and regular distribution of a news service entitled "National Traffic Notes." About 1,500 words are sent out about every ten days to all member companies. This is a national summary of traffic congestion relief news obtained through reading prominent newspapers throughout the country and other sources of information.

Supplementing this news service

has been a series of posters dealing with traffic congestion which have emphasized the point that public transportation vehicles are the most economical users of street space. Samples of posters are shown in the report. One series includes "stop" and "go" signals with a few pointed suggestions to prospective riders pointing out the advantages of street car service. Another series takes up traffic congestion and shows the futility of blocking the streets with parked automobiles. Other posters have been prepared on special topics for various purposes, including appeals to trainmen.

In order to combat misinformation which has been circulated about the country, the committee prepared a leaflet entitled "The Truth About Electric Railway Abandonments." This leaflet told briefly and truthfully the abandonment situation and also emphasized the unfairness of some newspapers in stressing small town abandonments as being of major importance.

A number of other campaigns were carried on during the year, including the reprinting of a number of addresses which have been made before the American Electric Railway Association and other bodies, and the 10-to-4 shopping campaign. Several new series of advertisements have been prepared for use by electric railways during the year, motion picture films have been distributed and there are now about 30 reels available covering seven subjects. New scenarios are now being prepared.

Resolutions on the Death of

Nicholas F. Brady

YOUR committee appointed to draft a memorial to the late Nicholas F. Brady presents, with recommendation for its adoption, the following:

Men in the utility field and in public life were greatly affected at the news of the death on March 27 of Nicholas F. Brady. In his death there passed a national figure—a man of outstanding business attainments, one wise in his benefactions, a devoted churchman, wide in his sympathies and considerate by his tolerance. As for the utility industry, his death removed one of its stanchest adherents. Modest in demeanor, Mr. Brady worked unceasingly to the attainment of corporate projects, but he never lost sight of the human factor upon which they depend for success. Aside from the part that he played directly in the electric railway industry through his various directorships and as an active participant in the affairs of this association, notably as a member of the Advisory Council from its inception, he contributed liberally to the promotion of the humanitarian side through his sponsorship of the Brady Awards, authorized early in 1914 by the family of the late Anthony N. Brady, but subsequently modified to make them more inclusive and revived by him after the wartime period.

Lasting in their impress are these awards made annually by the American Museum of Safety of a gold medal, a silver medal, and a bronze medal to those electric railways which for the year of the awards were judged to have done the most in their respective classes to conserve the safety and health of the public and the employees.

But keen as was his interest in these awards, it was only one of the man's many activities. Never did he lose sight of the complementary aspects of capital and labor. And nowhere was his appreciation of the responsibility of his stewardship better illustrated than the work he did with the National Civic Federation. High corporate, civic and spiritual honors were his because he built up character as well as riches. His corporate work, his benefactions and his humanitarianism proclaimed the man. In his death the American Electric Railway Association lost a wise counselor. It desires now publicly to acknowledge its debt to a benefactor by entering this resolution on its records and directing that a copy of it be sent to his family.

Respectfully submitted,
LUCIUS S. STORRS, *Chairman.*
F. R. COATES,
GEORGE J. MACMURRAY,
Committee on Resolutions.

The Pacific Coast Offers Splendid Beach Recreation

Bathing beaches near Los Angeles visited by A.E.R.A. delegates on their trip to southern California

Many Engineering Committees Prepare Reports

COMMITTEE work of the Engineering Association has been proceeding steadily. Much of it has been in progress over a period of several years and thus it was possible to prepare reports for presentation at the convention. The following brief abstracts give a condensed summary of the work accomplished.

Chairmen of Engineering Association Committees

1. L. C. Winship, Heavy Electric Traction.
2. E. M. T. Ryder, Editing of Proceedings.
3. L. D. Bale, Engineering Manual; Subjects.
4. C. A. Smith, Electric Railway Journal Maintenance Contest.
5. F. H. Miller, Nominations; Program.

Heavy Electric Traction

FROM a review of manual section D 100-14, it appears that existing standards for pantograph trolley clearances have been materially outgrown. It is planned to make a study in co-operation with the American Railway Association leading to a revision of this manual section. A specification was submitted for stud terminal rail bonds, which was prepared jointly with a subcommittee of the electrical section of the A.R.A., and which has been approved by the principal manufacturers. The welding of third rails, together with the use of other substitutes for copper bonding, has received consideration and will be developed during the coming year.

Considerable comparative information on oil-electric locomotives has been collected. It also is hoped to prepare a tabulation of operating statistics for these locomotives, and material is now being collected. Further information has been collected on the subject of articulated train operation, and the data sheet giving information on the subject has been revised. This year the locomotive tabulation was given only for machines which were not incorporated in last year's report. It is the plan of the committee now to prepare a complete report on electric locomotives every fifth year only.

Power Division

Power Division Committee Chairmen

1. H. F. Brown, Ferrous and Non-Ferrous Materials.
2. A. J. Klatte, Trolley Voltage Surveys.
3. W. E. Bryan, Power.
4. H. W. Codding, Mercury Power Rectifiers.
5. J. F. Neild, Power Supply for General Purposes.
6. R. H. Rice, Power Contracts.
7. D. L. Smith, Catenary Specifications.
8. H. S. Murphy, Trolley Wire Wear.
9. J. W. Allen, Manual Review.
10. A. Schlesinger, Lightning Protection.
John Leisenring, Distribution System.
L. R. Wagner, Trolley Construction Specifications.

Manual Review—Several of the specifications of this division were reviewed and recommended for revision. An appendix gives considerable information on the subject of trackless trolley.

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Power Rectifiers—Further operating experience was tabulated and summarized, using the standard log sheet published in the 1928 report. Additions to the bibliography were made, bringing it up to date. It is stated that the installed capacity in rectifiers for the eight months from May 1 to Dec. 31, 1929, was 165,475 kw.

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Power Contracts—During the year the committee has given its attention to checking details of contracts obtained and preparing from outlines of what a power contract should be. Such an outline is presented as an appendix.

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Power Supply for General Purposes—Use of trolley voltage supply versus commercial current circuits for general illumination of electric railway properties, operation of shop tools, and miscellaneous requirements was studied. The lighting and motor application as used by various properties was reviewed. Data on lamps and lighting practice were submitted by lamp manufacturers and other information was obtained from tests conducted by operating companies. The committee concluded that from an engineering and operating viewpoint the use of commercial current circuits is desirable, while from an economic viewpoint it may be cheaper to use trolley voltage supply, although this should be balanced against the

greater efficiency and flexibility of the utilization of commercial circuits.

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Catenary Specifications—Proposed revisions of manual section D 102-29, specifications for overhead line material, were included, as were preliminary reports on the study of alloy and composite messenger cables and insulators for catenary construction. A revised tabulation of catenary installations using copper alloy and composite messengers was given showing details of construction used.

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Trolley Wire Wear—The study of trolley wire wear and breaks, with special reference to breaks due to causes other than normal wear, was continued. It was treated in detail and constitutes the body of the report. Statistical data relative to trolley breaks are brought up to date by including 1929 operating results, and a number of new comparisons covering the period 1922-1929. The committee recommended adoption as standard of the revised specifications for hard bronze trolley wire.

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Specifications for 600-Volt Overhead Trolley Construction—A progress report only was made. This committee is preparing a revision of manual section D 101-16, which it is planned to bring in conformity with the fourth edition of the National Electrical Safety Code.

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Lightning Protection—Revision of manual section D 204-15 covering lightning protection for car equipment, stations and line was proposed, as was a revision of manual section E 207-24, in so far as it relates to the same subject.

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Distribution Systems—Investigation of the comparative cost and reliability of overhead and underground direct current distribution systems was made. The report presents a tabulation which gives some interesting data on the subject. The advantages and disadvantages of the two methods of distribution are gone into in some detail.

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Ferrous and Non-Ferrous Materials—This report covers principally ferrous and non-ferrous materials used for overhead construction. An analysis was made of the various methods used for protecting ferrous materials, such as coating with other metals, painting, electroplating, and chemical treatment.

Rolling Stock Division

Rolling Stock Division Committee Chairmen

1. H. H. Adams, Car Design.
2. H. S. Williams, Noise Reduction.
3. T. H. Nicholl, Rolling Stock.
4. P. V. C. See, Motor Coaches.
5. Hugh Savage, Current Collecting Devices.
6. W. T. Vivian, Limits of Wear.
7. R. W. Cost, Lighting.
8. J. H. Lucas, Lubrication.
9. E. J. Jonas, Fire Hazards in Shop Practices.

W. C. Bolt, Manual Review.

Motor Coaches—Due to the rapid changes of the industry the committee made no effort to standardize coach design. It did, however, draw up a code for making static tests of bus bodies, which is included as an appendix. It is also working on the determination of how frequently buses should be overhauled. Specifications for motor coach lubricating oils were proposed. Maximum possible rates of retardation were studied, and a tabulation showing the length of life obtained with various brake linings by the Cleveland Railway was included as an appendix.

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Car Design—A study of car equipment with special reference to appearance, comfort, ventilation and convenience was continued. Particular interest centered around the tests of several types of car trucks. These tests, which were begun more than a year ago, were continued. Charts showing the results up to the present are incorporated in the report.

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Lighting—Studies on the subject were continued during the year. Investigations were made on the use of dash illuminating headlights. Recommendations were given on interior color finishes for cars, burning position of lamps and the prevention of reflections on the windshield of the car due to the interior lighting. Recommendations were also made on the installation of lighting fixtures under interior baggage racks of motor coaches.

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Lubrication—Four reports of experimental work being done in connection with the use of light viscosity oils have been received by the committee. Since there was considerable variance of opinion, the committee has presented a report of progress only and has not made public the data received.

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Fire Hazards in Shop Practice—Study of fire prevention with special reference to spraying nitrocellulose lacquer and other inflammable finishing materials used in railway car painting was continued. It was pointed out that certain of the rules of the N.F.P.A. are inconsistent.

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Noise Reduction—Further tests were made on a new type of cushion car wheel and comparisons made with a standard car wheel. These showed the improvements as regards noise obtained by use of the cushioned wheel. Tests were also made to show the value of celotex as a soundproofing medium compared with felt.

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Limits of Wear—An effort was made to arrive at some reasonable limits of wear on car journals, journal boxes, bearings and pedestal guides, both from the standpoint of the operator and from calculations. Maximum allowances have been selected which would not permit trucks and axles to rotate through a sufficiently large angle to allow the wheel flanges to drag on the rail. Definite limits of wear for railway motors and truck parts were recommended.

Way and Structures Division

Way and Structures Division Committee Chairmen

1. C. L. Hawkins, Track Construction.
2. E. M. T. Ryder, Special Trackwork.
3. C. A. Smith, Way and Structures; Wood Preservation.
4. C. H. Clark, Track Gage.
5. C. F. Gailor, Arc Welding.
6. S. C. Baker, Pavement.
7. H. S. Williams, Rail Corrugation.
8. C. A. Alden, Rails.
9. W. R. Dunham, Jr., Manuel Review.
10. M. W. Rew, Motor Bus Garage Design.
J. I. Catherman, Weed Elimination.
P. A. Kerwin, Alloy Steels for Special Trackwork.
P. J. Mitten, Wheel and Rail Contours.
W. A. Underwood, Foundations for Special Trackwork.

Manual Review — Recommendations were made to bring manual section W 25-23, specification for steel track spikes, in line with the latest specifications of the A.S.T.M. on the same subject. A change of manual section W 11-21, standard dimensions in switches and mates, was also recommended.

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Special Trackwork—Study of the design of tongue switches was continued. Designs were submitted with the report for a 75-ft. lateral, a 100-ft. equilateral, and for 9 in. deep work. A design for expansion joints and girder rail to be used in paved track was worked out but was not submitted as the committee desired also to work out a design for use in open track before reporting.

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Wheel and Rail Contours—A study of cylindrical wheel treads versus conical wheel treads in conjunction with flat head versus curved head rails was taken up. The committee has attempted to determine the reason for the use of a conical tread, to locate properties where a cylindrical tread has been tried, and to obtain information as to the results of such trials. The history of the conical tread was traced from the earliest days of railroads. While only one American electric railway property was located on which cylindrical treads are used, there are several in Europe.

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Wood Preservation — Specifications for the maintenance of pole timber and structures were presented. Further studies of the actual economies obtained through the use of treated timber were reported on. The study of wood preservatives other than creosote and zinc chloride is becoming more important, and it was continued. Possibilities of a combination preservative and fire preventive treatment for timber was given consideration. It is believed by the committee that with increased use, the relatively high cost of the fire-proofing treatment can be reduced. Preservative treatment for timber for use in car construction and maintenance was discussed.

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Arc Welding—Studies were made of various types of welding rods. A report was submitted giving proposed rules and instructions for training welding personnel. The committee also has given considerable thought to the collection of all available welding information which would be of any interest or use to electric railway employees.

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Alloy Steels for Special Trackwork—A group of tests was undertaken on surface welding of the three types of alloy steels now in use in special trackwork and to complete the work started last year in the investigation of thermit welding of chrome-nickel steel. A detailed description of the tests and the results obtained is given. The results of the several tests on surface welding of alloy steel were averaged and tabulated so that a comparison may be made conveniently and conclusions drawn. Another subcommittee developed a method for making wear measurements on individual pieces of special trackwork installations, so that all wear data should be recorded on a comparable basis. On the subject of heat-treated rail and intermediate manganese rail, it is stated that these materials offer interesting possibilities along the line of increased hardness, wearing qualities and resistance to rail corrugation.

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Pavement—It is believed that in view of the large expenditures for paving and of the increasing demands of vehicular traffic and increased cost of this part of the track structure, up-to-date information should be secured and made available to way engineers.

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Motor Bus Garage Design—A proposed outline of operating bus garage layouts was made, so that the operator may determine from it the various elements that are necessary in producing a satisfactory garage for bus service. It was recommended that the outline be approved as recommended practice for inclusion in the Engineering Manual.

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Rail Corrugation—A voluminous report was presented. It contains a collection and study of data pertaining to deflections under load and of the computed probable vibrations resulting from these deflections. The study shows that paved track is much stiffer than open track, and that in paved track the natural period of vibration is a probable contributing cause to rail corrugation. A short study of car nosing, together with a presentation of the data which the committee has collected, was made. Indications are that the effects of nosing may momentarily increase wheel loads by as much as 50 per cent. The report also includes summaries of the work done by the Canadian and the International Association committees on the same subject.

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Rails—Branding rails was discussed, and it was recommended that the subject be continued. Manual section W 16-24, specification for carbon steel rails of standard section, was reviewed and was submitted to the association for letter ballot. The relation between rail wear on a given section of track approaching stops

and between stops was studied to develop the connection between the amount of such wear and the volume of traffic, weight of equipment, rate of speed, etc. Fishing between the association's standard 7-in., 122-lb., grooved girder rail and the standard 7-in., 140-lb., girder guard rail was investigated.

Purchases and Stores Division

Manual Review—Several revisions of the Engineering Manual sections dealing with this subject were proposed. No changes are recommended in the classification of scrap material. The committee has prepared an index for the A.E.R.E.A. classification for materials and supplies. This is submitted as an appendix.

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Investments in Materials and Supplies at Cost of Operating Stores—A study was made to determine what is included in the account of materials supplied by the various member companies, what is charged to the account of stores expenses, what is the relation of stores expenses to gross earnings and other items, and what are the physical or operating circumstances which have a special influence on the subject. A questionnaire was sent out and replies are now being received. It was not possible to draw deductions from these in time for the convention.

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Standardization and Simplification of Stock—This committee has only recently been organized and arrangements are being made to obtain information on the subject.

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Materials and Supplies Control—The importance of proper control of stocks was stressed by the committee. Recommendations were made relative to proper methods of handling stock.

1. C. A. Harris, Standardization and Simplification of Stock.
2. W. E. Scott, Unit Piling and Standard Packages.
3. A. L. Fischer, Purchases and Stores.
4. W. S. Stackpole, Stores Investment and Costs.
5. A. A. Ordway, Pricing Methods and Records.
6. J. Fleming, Manual Review.
7. E. F. Kelley, Material and Supplies Control.

Purchases and Stores Division Committee Chairmen

T. & T. Committees Active

Five committees of the American Electric Railway Transportation and Traffic Association were continued during the past year for further study, research and collaboration. The available time for study was foreshortened but all of the committees made real progress in the subjects assigned. A sixth committee, covering the subject of operating economics, was created in the belief that an assignment of this scope would be beneficial and profitable. This report, along with five others that were completed, are herewith presented.

TRANSPORTATION EMPLOYEE

ANALYSIS of the transportation job, with the correlated subsequent supervisory and employee training, and a study of proneness to accidents are the items to which special attention is given in the report of this committee. The study of accident proneness covers several factors affecting efficient operation, although it is recognized that accidents comprise the more definite unit for measuring the faults. In seeking the fundamental cause for this proneness, the committee found a need for improved selection of trainmen and coach drivers, proper choice of the supervisory employee, and better training of both.

For the subject of accident proneness the committee concludes that there is definite need for intensive supervisory training and job analysis, that training should follow job analysis, and that selection and training of employees should be given greater study.

Under selection of the transportation employees, the committee discusses the preliminary interview of applicants, high physical standards and testing applicants for proneness to inefficiencies. A good supervisory staff, according to the committee, should be made up of high-grade men, properly trained.

MOVEMENT OF THE VEHICLE

COMMUNITIES and transportation agencies are more keenly aware than ever before of the fact that increasing private automobile usage presents a great and permanent problem. In this report the committee signalizes the work of the electric railways in solving the problem and analyzes the private automobile, parking, signals and traffic control, and equipment.

Under the first subject, the private automobile, the committee concludes that the most severe aspects of automobile competition have not been felt by collective transportation facilities and that the future may show a similar distribution to that now found, with some probable shifts toward collective transportation, with increases in street congestion and with improved transportation methods.

In the section devoted to the parking problem, the committee holds that parking is a privilege that may be tolerated where it does not interfere. It should be regulated to promote safety and an equitable distribution of space.

SMALL CITY OPERATION

THE report of the committee on small city operation outlined the procedure followed in securing additional data and analyzing the individual subjects of operating methods, merchandising, competition, bus substitution, franchises, operating economies, taxation and financial structure.

Questionnaires covering these were sent out during the year and the re-

sults interpreted at a three-day session. Conclusions arrived at in this meeting formed the major part of the committee's report. Among the significant statements were: Properties where most attention has been given to prices and selling service have obtained the best results; transportation must be supplied in the form in which the public wants it and at a price which is competitive; merchandising must go farther than advertising, the entire organization must be groomed to sell the service; buses offer several advantages which must not be overlooked; results of several companies indicate it is possible to adjust operating expenses to a very low level of earnings.

"There is no magic formula for the success of the small-city transportation property," the report concludes; "Individual conditions are controlling and must be expertly analyzed. The management cannot miss a single opportunity to provide joint service, secure added economies, or improve operating conditions. The greatest need is for skilled merchandising and all that is implied by it."

OPERATING ECONOMICS

FIVE broad subjects are covered by this committee: (1) Those operating practices which have been found beneficial on one or more properties, (2) use of one-man cars, (3) substitution of buses for street cars, (4) business-getting, and (5) fares.

In analyzing operating practices the committee sets forth those applications of modern methods and practices which will, first, increase the gross revenue of the operating company, and second, decrease the operation of maintenance costs.

Some companies have succeeded in stopping the annual decline, and in several outstanding examples have actually increased their riding and revenue during the past few years. The ways and means of accomplishing this satisfactorily are listed.

The operating practices which have resulted in decreased cost for operation and maintenance, as listed in the report, are those which, because of the fact that the individual saving may be relatively small when expressed as a percentage of gross revenue, are frequently overlooked but which, taken as a whole, represent a substantial saving to the industry.

On the subject of one-man cars, the committee expresses the opinion that the substitution of one-man cars for two-man cars has become more than a trend and that there are very few, if any, street car lines, except perhaps in the very largest cities, that cannot be successfully operated with one-man cars.

Chairmen of Transportation and Traffic Association Committees

1. C. W. Wilson, Movement of the Vehicle.
2. W. H. Boyce, Nominations.
3. C. A. Smith, Way and Structures; Wood
4. J. R. Ong, Operating Economics.
5. A. C. Spurr, Small City Operation.
6. L. C. Datz, The Equipment.
7. C. D. Smith, Transportation Employee.

W. W. Holden, The Passenger.

For the purpose of its study of the economics of bus substitution for street cars, the committee cautions against the comparison of modern buses and old-fashioned street cars, and suggests that an estimate be made of what savings in operating costs could be made by the use of modern cars.

To determine the extent to which aggressive merchandising methods are now being employed, a questionnaire letter was sent out. A decided declaration was made by many of the companies that a high quality of service must be maintained before results can be obtained from merchandising methods.

The study of fares was confined to an examination of the trend in revenue passengers in eight cities of the United States, each with more than 500,000 population, from 1926 to and including 1929. The results are presented graphically and analyzed in some detail.

THE PASSENGER

DETERMINING the education of the public in general as well as the patrons of public transportation toward the service which electric railways are rendering was considered a necessary field of investigation by this committee. Accordingly it organized and started a plan of research to find out why people use or do not use public transportation. This might be termed a quantitative or market analysis.

To establish a scientific and uniform method of making market analyses the electric railways selected a man with considerable experience in this work, Dr. W. J. Reilly, to visit a number of different properties and to assist and instruct them in the making of such an analysis. The plan is for Dr. Reilly to spend a period of from two to four days in instructing the local men in the methods of securing information and analyzing results. A sufficient number of companies accepted the plan to assure its accomplishment, but the work had not progressed sufficiently at the time of the report to present the final results.

EQUIPMENT

THE effect on revenues and operating expenses of new and rehabilitated cars; the size, type and character of units most suitable for various classes of service, and the accessories necessary for the safe and convenient operation of buses and trolley buses, are the individual subjects covered by the committee on equipment.

The first subject is divided into two parts, the effect on revenue, and the effect on the maintenance and operation accounts.

The facts developed by a study of individual cases where new cars were substituted for older equipment, together with the general comparison of 81 companies, 41 of which had new cars, admits of but one conclusion—new cars or cars that have been modernized increase passenger revenue by an appreciable per cent.

It is claimed that (1) operation of light-weight, modern cars shows a saving in power; (2) new cars increase schedule speed; (3) operation of modern cars reduces platform costs; (4) maintenance of modern cars is not only less for the first few years but also remains lower than for the old type of cars; (5) lighter cars show a saving in maintenance-of-way; and (6) safety features of new cars result in fewer accidents.

The recommendation is made on bus equipment that standard heating and ventilating systems and standard accessories be developed as parts of body design.

ACCOUNTANTS' and CLAIMS Associations Active in Committee Work

BOTH the Accountants' Association and the Claims Association committees prepared useful reports during the year. The former association completed several investigations which could not be finished in time for the Atlantic City convention last fall, at which time only reports of progress were made. The Claims Association continued with the same committees which have been functioning for some time.

Abstracts of the reports made public are published in the following paragraphs.

STANDARD CLASSIFICATION OF ACCOUNTS

DURING the past few years several interpretations of interest have been issued by the bureau of accounts of the Interstate Commerce Commission, and as these interpretations have not been published, the committee's report consisted principally of an appendix in which these rulings were set forth in detail. In the matter of the "unit of property," it has been ruled that the term should be restricted to property items the cost of which are ordinarily recorded separately in the property accounts. An important section of a continuous structure should include all of the elements of that particular structure and should not be applied to only one factor of the same. For instance, the complete electric motive equipment of a car should be considered a unit. Rails and paving are but factors of a continuous structure, and the accounting pertaining to the replacement thereof, where betterment is involved, is specifically provided for in the interpretations. The report of the committee, together with the appendix, should do much to clarify many disputed points in accounting procedure.

With a view to ascertaining the extent to which its recommendations had been adopted, the subcommittee on bus accounting had circularized the industry with the aid of the association's headquarters staff. From the replies received it would appear that the classification, slightly modified, is being adopted by a great majority of member companies, as well as by a considerable number of state regulatory bodies. The returns indicate that there is a heavy preponderance of opinion in favor of setting up a separate group of accounts for retirement expenses, but opinion on rentals was about evenly divided. Preliminary discussions have been held with the bureau of accounts of the Interstate Commerce Commission looking toward the promulgation of a classification for motor bus operating companies by that body. A mutually satisfactory understanding appears to have been arrived at, and a classification has been tentatively framed which will be in harmony with the committee's standard classification, as well as with that adopted by the National Association of Railroad and Utilities Commissioners.

Chairmen of Accountants' Association Committees

1. Walter Shroyer, Freight Accounting.
2. T. P. Kilfoyle, Nominations.
3. M. W. Glover, Standard Classification of Accounts.
4. H. R. Bowie, Stores Accounting.
5. R. G. Smith, Budgetary Control.
6. W. L. Davis, Representative at Accountants' Association at Annual Convention of National Association of Railroad and Utilities Commissioners.
7. E. A. Tuson, Bus Accounting Subcommittee of Standard Classification of Accounts; Fare Collections.
R. O. Crowe, Subjects.

BUDGETARY CONTROL

THE purpose of the budgetary control committee has been to determine the extent to which budget systems are now being used by member companies, and to devise a standard form of budget procedure in case there should appear to be any need for it. A widely circulated questionnaire was responded to by comparatively few companies, but the replies received indicated that a considerable number of properties already have budget control of revenues, operating expenses, cash requirements, taxes, and construction expenditures. The general impression gained from the replies returned was that the companies making use of the budget system find it extremely helpful and have experienced no disadvantage other than the expense of maintaining the necessary records. It is, perhaps, significant that only two companies discontinued budget systems after they had once been established.

Of the 93 companies replying to the questionnaire, 54 indicated that a further detailed study by the committee should be recommended. Reference was also made in a considerable number of replies to the excellent work of a similar committee of the National Electric Light Association, with the recommendation that if further study is to be carried on by the committee, the work of the N.E.L.A. committee should be carefully studied.

BUS ACCOUNTING

SINCE reporting to the last convention, the committee has undertaken the circularization of the country, first, to obtain accurate information as to the use of the association's bus classification; second, the extent of its official adoption by regulatory bodies; and, third, the attitude of bus operating companies toward the changes proposed in the classification as to rentals and retirement expenses

in the committee's reports to the last two conventions.

Information has been received from all but three states, and it has been found that the committee's classification, slightly modified in some instances, has been adopted by Maryland, New Jersey, Missouri, Vermont, Georgia, Oklahoma, Alabama, Florida, Wisconsin, Tennessee and the District of Columbia. Minnesota also accepts reports filed upon the basis of this classification as well as another classification promulgated by the state.

Of the other states, only Pennsylvania and California have adopted classifications designed to cover major bus operations, although eleven other states have classifications for the use of small operators. Three states, Texas, Iowa and Wyoming, were not heard from, twenty have no standard classification, and Delaware has no state regulatory body.

The committee finds further that of the member companies circularized nearly all use its classification except the Pennsylvania and California companies.

The response to the inquiry for opinions on the proposed changes in the classification resulted in a heavy preponderance in favor of setting up a separate group of accounts for retirement expenses. The vote on rentals was evenly divided.

Preliminary discussions have been held with the bureau of accounts of the Interstate Commerce Commission looking toward the promulgation of a classification for motor bus operating companies by that body. A mutually satisfactory understanding seems to have been arrived at and a classification has been tentatively framed. This classification will be in harmony with the standard classification, which has already been adopted by the National Association of Railroad and Utilities Commissioners.

SAFETY

IN PRESENTING its report wherein it was recommended that the safety committee of the Claims Association be discontinued, the committee took the view that the interest of the Claims representatives in the subject of safety arise only after the occurrence of accidents, and that accident work is usually in the hands of specialists, in consequence of which there was no need for a safety committee organization within their association. Those members of the association who are taking an active interest in accident prevention work upon their properties, according to the report, attain success only where managements and other operating departments give wholehearted co-operation in such efforts. The committee held, further, that there can be no success in any accident prevention work without the co-operation of managements and other operating departments.

The committee made the further recommendation, however, that a safety committee be appointed by the American Association, with a membership to be composed of representatives of managements and the several operating departments, including the claims departments. Such a committee, according to the report, would limit its activities to actual safety matters, such as legislation in the interest of safety, dissemination of information regarding safety devices, standardizing protection for crossing and train operation, etc., omitting further consideration of such matters as uniform classification, uniform accounting, chargeable and non-chargeable accident definitions, and other such matters not actually concerned in real accident prevention.

CLAIMS DEPARTMENT PRACTICES

THE committee on claims department practices pointed out in its report that the non-uniformity of practice makes it impossible for properties to compare results and thereby profit by an interchange of information. A recommendation put in the form of a motion for the appointment of a representative committee to standardize all claims department reports was unanimously passed.

Considerable preliminary work was done by the committee and a questionnaire was sent out. Replies were received from a considerable number of representative companies, but it was felt that only a report of progress should be made at present.

Downtown San Francisco

Chairmen of Claims Association Committees

1. Wallace Muir, Nominations.
2. J. S. Kubu, Uniform Negligence Law.
3. J. H. Handlon, Subjects.
4. B. C. Wood, Claims Department Practices.
5. P. W. Klabunde, Safety.

UNIFORM NEGLIGENCE LAW

IN ITS report on the uniform negligence law the committee made it plain that it had confined its endeavors to an attempt to determine the constitutionality of the imputed negligence act, as drafted by a previous committee. Consultation was had with counsel, not alone in the street railway industry but from the steam railroads and the insurance companies as well. The general opinion was that the constitutionality of such a case had practically been established in a recent decision of the United States Supreme Court involving a Connecticut statute which, in effect, released owners of motor vehicles from responsibility for injuries to passengers therein. There remained, however, the question of political interference with the passage of such an ordinance, this being a debative point the committee was unable to solve.

Although commendable progress had been made in classifying procedure, the committee on claim department practices was not in position to render a final report, and asked that it be continued for another year.

How the Convention Guests

Were Entertained

Many delegates took advantage of the opportunity for golf

EXTENSIVE planning on the part of the entertainment committee provided a very complete program for the A.E.R.A. delegates and their families while in the convention city and in southern California. Interesting events were scheduled for almost every time of day, and many availed themselves of the opportunity of combining pleasure with business.

Numerous automobile trips, special concerts in the hotel lobbies, and golf were scheduled for every day of the convention. Golf privileges at the principal San Francisco Clubs were extended to registered delegates of the convention.

Automobile trips were made on Sunday afternoon and Wednesday to interesting points in the metropolitan area of San Francisco. The Wednesday trip, planned especially for the ladies, included Taits-at-the-Beach where the party had luncheon. Leaving this interesting spot, the party followed the Skyline Boulevard down the Peninsula to Stanford University, where the famous Stanford Memorial Chapel, the home of President Hoover and the University's huge stadium were viewed. From here the group went to the beautiful Los Altos estate of Mr. and Mrs. Paul Shoup, where tea was served.

On Monday afternoon an informal reception and tea for the ladies was given at the Laurel Court of the Fairmont under the sponsorship of the hostess committee, headed by Mrs. Paul Shoup. In the evening the Advisory Council banquet was held.

Tuesday morning was set aside for shopping tours for the ladies of the convention. Many took advantage of this opportunity to visit some of San Francisco's leading shops, including those in Chinatown. In the afternoon two interesting features were enjoyed, an inspection of the 600-ft. California relief map on the second floor of the Ferry Building, and a boat trip on the San Francisco Bay, extended through the courtesy of E. H. Maggard, vice-president and general manager of Southern Pacific-Golden Gate Ferries, Ltd.

One of the outstanding social events of the convention was held Tuesday evening in the Venetian Terrace of the Fairmont Hotel, portraying "A Night in Hawaii." Nothing was left undone to place the guests in this atmosphere. The feature of the evening was the entertaining by Johnny Nobles' Orchestra from the Royal Hawaiian Hotel at Honolulu and the Hawaiian Girls' Glee Club, featuring Lani Ruttmann, hula dancer in "White Shadows of the South Seas."

An atmosphere of the days of Old California just before and during the discovery of gold in 1849, was provided at the grand ball, held at the Fairmont Hotel Wednesday evening. The decorations were particularly novel and fitting for the occasion and lent much to the effectiveness and enjoyment of this event. During the evening a number of special dances were given, including the tango, a cakewalk, a Spanish waltz, and a spirited adagio. Music for both the Grand Ball and a "Night in Hawaii," was furnished by Anson Weeks' Orchestra of the Hotel Mark Hopkins.

Mention should also be made of the entertainment provided for the delegates en route. The White Special, leaving Chicago on the evening of June 17, made stops at St. Paul and Portland. Many availed themselves of the opportunity to see the Twin Cities in a bus ride from St. Paul to Minneapolis. At Portland, the party was royally entertained for a full day by the Pacific Northwest Public Service Company. A 200-mile automobile trip along the Columbia River scenic highway to Hood River occupied most of the day. On the return, the party stopped at Eagle Creek for a mountain trout barbecue.

The Red Special party was entertained at St. Louis, Kansas City, Colorado Springs, and Salt Lake City. At the first city, the delegates were taken to inspect the Lindbergh trophies and to hear part of the Municipal Opera program. At Kansas City the delegates were given a breakfast at the Kansas City Athletic Club and shown the points of interest in the city.

Near-by spots of scenic beauty were visited at Colorado Springs via automobile. A five-hour stop was made at Salt Lake City, permitting the party to inspect the trolley bus system there and view several interesting places. The Blue Special was scheduled for making the trip in a minimum of time and had no stopovers.

Friday found a number of delegates at Del Monte for the A.E.R.A. Pebble Beach eighteen-hole medal handicap golf tournament. Ephraim Brown, Ohio Brass Company, won with 79. Others spent the day at the Yosemite Valley.

Almost 300 enjoyed the tour of Los Angeles and vicinity on Saturday. Among the places visited in the morning were the city hall, Elysian Park, Luna Zoo, San Gabriel Mission, Pasadena residential districts and Glendale. At noon members of the party were entertained at Fryman Rancho with an old fashioned Spanish barbecue. Individual buses then went to the motion picture studios where the party saw how sound films are made by Metro-Goldwyn-Mayer, First-National, Warner Brothers and Pathé. The trip was concluded with a visit to the beaches, to Beverly Hills and to the outlying residential suburbs.

That evening there was a farewell reunion in the nature of a dinner dance at Brandstatter's famous cafe, Montmartre, Hollywood, participated in by 34 members of the party.

Monthly and Other Financial Reports

	Operating Revenue $	Operating Expenses $	Taxes $	Gross Income $	Net Income $
Market Street Railway, San Francisco, Cal.					
April, 1930	798,970	637,121*a*	.....	131,849	76,480
April, 1929	829,328	697,827	.....	131,501	68,908
12 mo. end. Apr., 1930	9,571,797	7,997,225*a*	.....	1,574,572	883,163
12 mo. end. Apr., 1929	9,632,131	8,256,047	.....	1,376,084	757,843
May, 1930	792,536	675,407	.....	117,129	61,527
May, 1929	819,405	683,499	.....	135,906	77,101
12 mo. end. May, 1930	9,544,929	7,989,134	.....	1,553,795	867,590
12 mo. end. May, 1929	9,610,060	8,229,538	.....	1,380,522	646,735
Northwestern Pacific R.R., San Francisco, Cal.					
April, 1930	434,145	446,367	35,854	*48,076*	*55,856e*
April, 1929	432,399	462,699	38,236	*68,540*	*68,419e*
5 mo. end. Apr., 1930	1,580,812	1,728,614	145,002	*292,947*	*310,242e*
5 mo. end. Apr., 1929	1,653,842	1,773,673	152,945	*272,828*	*282,470e*
Capital Traction Company, Washington, D. C.					
April, 1930	375,237	260,692	29,868	87,396	57,675
April, 1929	380,996	254,470	31,691	99,196	68,451
4 mo. end. Apr., 1930	1,415,143	1,018,405	109,344	294,350	174,221
4 mo. end. Apr., 1929	1,452,391	1,011,768	114,096	335,619	216,386
May, 1930	369,413	256,036	29,934	83,746	53,985
May, 1929	389,304	263,059	32,076	94,727	64,814
4 mo. end. May, 1930	1,784,556	1,274,441	139,278	378,097	228,206
4 mo. end. May, 1929	1,841,695	1,274,828	146,172	430,347	281,200
Jacksonville Traction Co., Jacksonville, Fla.					
April, 1930	91,163	71,000	9,115	10,415	.....
April, 1929	97,394	77,495	9,153	10,268	.....
12 mo. end. Apr., 1930	1,115,767	910,325	107,314	91,721	*65,138*
12 mo. end. Apr., 1929	1,183,310	955,306	106,735	114,758	*46,707*
Honolulu Rapid Transit Company, Honolulu, T. H.					
April, 1930	85,064	46,271	8,819	29,974	18,295
April, 1929	87,658	51,783	10,616	25,259	15,054
4 mo. end. Apr., 1930	344,390	206,351	35,277	107,086	58,688
4 mo. end. Apr., 1929	354,598	203,715	42,464	113,007	68,114
May, 1930	88,437	50,810	8,819	31,008	19,704
May, 1929	88,382	51,892	7,932	29,569	18,346
5 mo. end. May, 1930	432,827	257,161	44,096	138,095	78,392
5 mo. end. May, 1929	442,981	255,608	50,395	142,578	86,461
Chicago Surface Lines, Chicago, Ill.					
May, 1930	5,012,190	3,986,513*a*	.....	1,025,677	831,499*d*
May, 1929	5,354,248	4,157,362*a*	.....	1,196,885	902,826*d*
United Railways & Electric Co., Baltimore, Md.					
April, 1930	1,449,416	974,816	143,143	341,249	67,093
April, 1929	1,423,427	969,800	134,569	332,099	43,876
4 mo. end. Apr., 1930	5,706,277	3,892,272	563,994	1,296,243	190,549
4 mo. end. Apr., 1929	5,558,852	3,827,834	553,037	1,233,594	97,222
May, 1930	1,457,181	982,696	142,669	341,491	73,214
May, 1929	1,463,365	998,615	132,666	346,656	64,753
5 mo. end. May, 1930	7,163,458	4,874,969	706,664	1,637,734	263,763
5 mo. end. May, 1929	7,022,217	4,826,449	685,703	1,580,251	161,976
Boston Elevated Railway, Boston, Mass.					
April, 1930	2,813,083	1,934,394	139,186	757,504	54,281
April, 1929	2,916,473	1,946,699	147,017	837,141	140,667
May, 1930	2,824,945	1,949,483	135,225	882,986	45,824
May, 1929	2,978,446	1,990,084	147,965	992,630	148,719
Eastern Massachusetts Street Railway, Boston, Mass.					
April, 1930	651,636	418,236	28,046	216,229	47,051
April, 1929	716,162	427,669	32,766	280,222	100,085
4 mo. end. Apr., 1930	2,806,526	1,734,076	125,478	986,637	264,167
4 mo. end. Apr., 1929	3,031,473	1,805,468	137,665	1,160,612	387,889
May, 1930	663,941	422,804	29,137	222,305	53,076
May, 1929	720,540	460,195	31,258	246,558	80,660
5 mo. end. May, 1930	3,470,467	2,156,881	154,616	1,208,942	317,243
5 mo. end. May, 1929	3,752,014	2,265,663	168,923	1,407,170	468,550
Boston, Worcester & New York Street Ry., Framingham, Mass.					
3 mo. end. Mar., 1930	163,752	148,672	4,875	11,341	3,151
3 mo. end. Mar., 1929	160,945	153,471	4,875	3,184	*1,225*
Department of Street Railways, Detroit, Mich.					
April, 1930	1,994,861	1,662,884	65,090	281,656	138,595
April, 1929	2,342,050	1,911,641	62,504	376,592	250,140
12 mo. end. Apr., 1930	25,125,914	20,083,004	761,208	4,395,767	2,670,144
12 mo. end. Apr., 1929	25,845,185	20,461,626	763,748	4,826,434	3,050,218
May, 1930	1,974,359	1,543,263	65,090	390,505	243,875
May, 1929	2,355,752	1,894,548	62,504	407,659	272,651
12 mo. end. May, 1930	24,744,522	19,731,719	763,794	4,378,613	2,641,368
12 mo. end. May, 1929	26,133,685	20,751,617	759,288	4,815,578	3,065,729
Kansas City Public Service Co., Kansas City, Mo.					
April, 1930	715,707	560,356	41,675	113,675	39,101
April, 1929	752,188	.....	.....	.....	62,052
4 mo. end. Apr., 1930	2,903,432	2,254,213	166,700	482,318	182,759
4 mo. end. Apr., 1929	3,046,990	.....	.....	.....	286,723
May, 1930	719,705	552,389	41,675	125,640	45,132
5 mo. end. May, 1930	3,622,938	2,806,603	208,375	607,958	227,891
Illinois Terminal Co., St. Louis, Mo.					
April, 1930	590,334	399,704	24,000	166,553	131,438*e*
April, 1929	599,678	429,009	21,262	149,407	110,337*e*
4 mo. end. Apr., 1930	2,271,906	1,601,240	96,000	574,589	409,296*e*
4 mo. end. Apr., 1929	2,383,240	1,710,053	85,048	588,015	428,056*e*
Fonda, Johnstown & Gloversville R.R., Gloversville, N. Y.					
April, 1930	71,000	61,116	4,800	10,298	*21,343*
April, 1929	82,255	61,939	7,840	13,981	*17,833*
4 mo. end. Apr., 1930	332,725	256,466	19,200	78,204	*46,260*
4 mo. end. Apr., 1929	345,804	250,936	31,360	72,455	*54,288*
Kingston Consolidated Railroad, Kingston, N. Y.					
3 mo. end. Mar., 1930	21,852	21,665	1,249	*225*	*14,242*
3 mo. end. Mar., 1929	24,077	22,398	1,364	1,170	*6,184*

	Operating Revenue $	Operating Expenses $	Taxes $	Gross Income $	Net Income $
Brooklyn-Manhattan Transit System, New York, N. Y.					
May, 1920	5,229,829	3,250,525	350,512	1,696,873	929,201
May, 1929	4,298,360	2,649,404	290,064	1,427,548	686,447
11 mo. end. May, 1930	55,630,953	36,554,791	3,641,508	16,230,339	7,717,543
11 mo. end. May, 1929	44,418,548	28,515,519	3,091,001	13,726,948	5,914,850
Brooklyn & Queens Transit System, New York, N. Y.					
May, 1930	2,030,966	1,499,813	115,841	434,594	310,865
May, 1929	2,130,026	1,634,626	108,102	409,838	282,503
11 mo. end. May, 1930	21,620,942	16,908,036	1,263,702	3,683,981	2,306,064
11 mo. end. May, 1929	22,082,832	18,190,140	1,178,751	2,952,984	1,542,559
Hudson & Manhattan R.R., New York, N. Y.					
May, 1930	1,039,637	509,707*a*	.....	529,929	194,759
May, 1929	1,069,375	525,763*a*	.....	543,612	206,781
5 mo. end. May, 1930	5,262,626	2,606,139*a*	.....	2,656,487	982,850
5 mo. end. May, 1929	5,279,986	2,653,651*a*	.....	2,626,334	946,164
Interborough Rapid Transit Co., New York, N. Y.					
April, 1930	6,276,781	3,893,075	216,482	2,167,223	*161,201c*
April, 1929	6,151,493	3,545,832	203,597	2,402,064	607,614
10 mo. end. Apr., 1930	60,628,687	37,706,793	2,093,907	20,827,986	*1,791,551c*
10 mo. end. Apr., 1929	57,748,164	35,335,159	2,011,315	20,401,688	2,411,531
May, 1930	6,287,149	3,879,238	216,201	2,191,708	*144,798*
May, 1929	6,261,572	3,556,702	192,693	2,512,178	645,131
11 mo. end. May, 1930	66,915,835	41,586,031	2,310,109	23,019,694	*1,936,350*
11 mo. end. May, 1929	64,009,737	38,891,861	2,204,009	22,913,867	3,056,662
Long Island Railroad, New York, N. Y.					
April, 1930	3,123,136	2,247,085	202,560	673,273	523,097*e*
April, 1929	3,230,773	2,260,399	187,022	781,986	621,641*e*
4 mo. end. Apr., 1930	11,778,043	9,104,775	529,505	2,141,594	1,570,685*e*
4 mo. end. Apr., 1929	11,937,030	8,941,750	488,888	2,495,927	1,929,832*e*
New York, Westchester & Boston Railway, New York, N. Y.					
April, 1930	214,672	116,322	25,071	73,852	*158,947*
April, 1929	203,585	127,361	23,350	53,558	*160,516*
4 mo. end. Apr., 1930	824,224	463,478	98,918	264,659	*654,733*
4 mo. end. Apr., 1929	767,041	495,413	81,655	182,707	*660,284*
May, 1930	230,781	123,922	.....	81,510	*148,178*
May, 1929	223,109	121,624	.....	78,409	*137,370*
5 mo. end. May, 1930	1,055,005	587,400	.....	346,170	*802,897*
5 mo. end. May, 1929	990,151	627,037	.....	261,116	*797,605*
Staten Island Rapid Transit Co., New York, N. Y.					
April, 1930	198,184	152,662	17,000	28,492	34,026*e*
April, 1929	218,841	173,812	17,000	28,026	*9,035e*
4 mo. end. Apr., 1930	762,095	599,381	69,500	91,642	70,755*e*
4 mo. end. Apr., 1929	907,371	685,394	72,000	149,966	3,237*e*
Third Avenue Railway System, New York, N. Y.					
April, 1930	1,236,554	932,377	94,071	227,886	12,657
April, 1929	1,317,640	993,551	83,031	260,523	811
10 mo. end. Apr., 1930	12,553,690	9,670,687	894,454	2,180,946	*802,676*
10 mo. end. Apr., 1929	12,888,649	9,929,938	899,763	2,247,246	*813,670*
May, 1930	1,291,409	956,965	86,589	265,649	58,138
May, 1929	1,387,522	1,039,778	88,035	278,698	31,551
11 mo. end. May, 1930	13,845,300	10,627,653	981,043	2,446,596	*244,537*
11 mo. end. May, 1929	14,276,172	10,969,717	987,798	2,525,944	*281,618*
Philadelphia & Western Railway, Norristown, Pa.					
April, 1930	58,701	51,519*b*	.....	.....	7,182
April, 1929	68,301	53,813*b*	.....	.....	14,488
4 mo. end. Apr., 1930	233,640	208,121*b*	.....	.....	25,528
4 mo. end. Apr., 1929	259,795	213,618*b*	.....	.....	46,177
May, 1930	61,065	.....	.....	.....	8,504
May, 1929	69,139	.....	.....	.....	14,047
5 mo. end. May, 1930	294,713	.....	.....	.....	32,033
5 mo. end. May, 1929	328,933	.....	.....	.....	58,226
United Electric Railways, Providence, R. I.					
April, 1930	563,595	475,039	34,687	53,867	2,838
April, 1929	611,247	478,169	34,906	98,171	47,143
4 mo. end. Apr., 1930	2,339,923	1,971,707	138,833	229,382	24,089
4 mo. end. Apr., 1929	2,495,407	2,008,484	139,627	347,495	143,687
Galveston-Houston Electric Co., Houston, Texas					
April, 1930	41,348	24,809	2,608	13,929	.....
April, 1929	47,074	27,891	2,569	16,613	.....
12 mo. end. Apr., 1930	559,805	319,833	32,557	207,606	*61,938*
12 mo. end. Apr., 1929	622,577	340,155	31,684	240,741	*29,998*
Houston Electric Co., Houston, Texas					
April, 1930	261,403	165,549	22,485	73,369	.....
April, 1929	280,506	170,401	24,712	85,391	.....
12 mo. end. Apr., 1930	3,317,103	2,064,935	264,811	1,005,982	615,008
12 mo. end. Apr., 1929	3,378,329	2,088,813	287,696	1,001,818	594,874
Pacific Northwest Traction Co., Seattle, Wash.					
April, 1930	76,713	55,727	5,298	15,686	.....
April, 1929	69,201	56,981	4,944	7,274	.....
12 mo. end. Apr., 1930	991,308	718,416	55,317	227,572	112,694
12 mo. end. Apr., 1929	884,826	747,440	52,372	85,012	*46,098*
Edmonton Radial Railway, Edmonton, Alta.					
April, 1930	66,384	45,298	.....	21,086	*1,641*
April, 1929	72,172	45,226	.....	26,945	1,097
4 mo. end. Apr., 1930	304,775	191,710	.....	113,064	5,996
4 mo. end. Apr., 1929	306,222	180,369	.....	125,852	14,960
May, 1930	63,775	46,729	.....	17,046	*2,681*
May, 1929	65,923	44,079	.....	21,844	996
5 mo. end. May, 1930	368,550	238,439	.....	130,111	3,315
5 mo. end. May, 1929	372,146	224,449	.....	147,697	15,956

a Includes taxes. *b* Includes operating expenses, taxes and income deductions. *c* Amount by which full 5 per cent Manhattan dividend rental was not earned. *d* Residue receipts after taxes and city's share. *e* Net after rents.

NEWS *of the Industry*

LATE NEWS

Cleveland, Ohio—Opening of through railroad service at Cleveland's new Union Terminals, a $200,000,000 development, was celebrated June 28.

✦

Seattle, Wash.—The Board of Public Works will call for bids for five trackwork layouts for the municipal railway department to cost about $60,000.

✦

East St. Louis, Ill.—Following a hearing on June 17, the Illinois Commerce Commission has under advisement the application of the East St. Louis Railway for a straight 10-cent car and bus fare. Under the new fare the company hopes to get $85,000 a year additional revenue. This would enable it to earn 4½ per cent on its valuation. The city opposed the application.

✦

Paterson, N. J.—The Public Service Commission has approved substitution of buses for trolleys on the run of Public Service Co-ordinated Transport between Paterson and Haledon.

✦

Detroit, Mich.—The proposal to build street cars in its own shops so that employees in the shops of the Municipal Railway may get more than four days' work a week has been rejected by the Detroit Street Railway Commission.

✦

Philadelphia, Pa.—The City Council committee on transportation has approved construction of a $29,000,000 extension of the Market Street subway from Twentieth Street to 46th Street. The measure calls for two tubes under the Schuylkill to replace elevated structure. The committee also has approved the construction of a high-speed line under Locust Street, from Eighth to Eighteenth Streets.

✦

St. Louis, Mo.—The recent survey of downtown traffic conditions made by the St. Louis Public Service Company has revealed widespread violations of the parking laws in the congested districts.

✦

Danbury, Conn. — The Danbury Power & Transportation Company has purchased the White Line Bus Corporation, Inc., Bridgeport, Conn., and has petitioned the Public Utilities Commission for permission to discontinue trolley service between Wentworth Street and Bethany Chapel. A hearing on a petition providing for service by bus over that part of North Main Street was set for June 30. A 10-cent fare is asked.

✦

New York, N. Y.—Bids were opened June 28 by the Board of Transportation for construction of the seventh section of the new city subway system in the Bronx. The low bidder, at $2,691,028, was Di Marco & Reimann.

Voters Approve New Chicago Unification Franchise

$200,000,000 Must Be Spent Within Ten Years and $65,000,000 Within Three Years. 1,700 New Cars and 300 Buses on Program

CITIZENS of Chicago, by a majority of approximately five to one, on July 1, voted for the transportation ordinance, planned to relieve the congestion in the downtown districts, provide rapid transit to far outlying points and furnish transportation to districts heretofore practically isolated.

The ordinance provides for a merger of the elevated and surface lines and various feeder buses. Construction of two subways, through which the surface and elevated lines will enter the downtown district, will go far toward relieving the present undesirable congestion.

Seventeen hundred new cars, elevated and surface, and 300 feeder buses are also included in the program.

The ordinance requires the transportation companies to expend $200,000,000 in extensions and improvements in the next ten years, $65,000,000 of which must be spent in the first three years after its adoption and acceptance. Financial experts who assisted the city aldermen and lawyers in the framing of the ordinance, have stated that in their opinion the necessary money can be raised, as the financial setup is on a sound basis.

Chicago has talked for a quarter of a century on the need for subways in the downtown district to provide additional trackage. The ordinance provides for such subways to be built and owned by the city and operated by the transportation companies. As one commentator put it:

"Rapid transit is the greatest need of Chicago as the city extends its boundaries. It is essential for the people to be able to travel from one section of the city to another in the least possible time, and this service can best be rendered by consolidation of the transportation companies and the co-ordination of elevated, surface and bus lines, as provided in the ordinance."

COMING MEETINGS

July 10 — New York Railroad Club Annual Outing, up the Hudson on the Day Line steamer *Alexander Hamilton.*

July 17-18 — Central Electric Railway Association, the Breakers, Cedar Point, Sandusky, Ohio.

July 23-25 — Electric Railway Association of Equipment Men, Southern Properties, Nashville, Tenn.

July 24-25 — Central Electric Railway Accountants' Association, Cedar Point, Ohio.

Aug. 13-14—Wisconsin Utilities Association, Milwaukee, Wis.

Sept. 17-19 — Canadian Electric Railway Association, 26th annual convention, Ottawa, Canada.

Oct. 29-30—Iowa Electric Railway Association, Des Moines, Iowa.

Renewal of Toledo Grant an Issue

Six charter amendments, among them two aimed to cure defects affecting the street railway franchise renewal, will be submitted at the August primary election. If the charter amendments are carried, renewal of the Milner ordinance under which the Community Traction Company has been operating in Toledo, Ohio, for nearly ten years, will be submitted to electors in November. A provision now in the charter bars renewal of the ordinance except within a year of expiration date. The Milner plan was so drawn that, in case the grant is not renewed, it continues to govern for fifteen years, during which time the property is to be amortized. Another amendment will enable voters to give an exclusive franchise by vote. The present charter bars any exclusive franchise. Under terms of supplementary legislation, the Community Traction Company, now virtually has a monopoly of railway and bus transportation in Toledo.

Accountants to Meet at Cedar Point

Beautiful Cedar Point, near Sandusky, Ohio, will be the scene of the sixty-third meeting of the Central Electric Railway Accountants Association July 24 and 25. "The Breakers" will be the hostelry, and the session on July 25 will be held on the steamer *Chippewa* with luncheon at Put-In-Bay. There will be a dance every night and such other frivolity as golf, boating and bathing, to say nothing of the chances for hilarity at the Amusement Park. L. G. Tighe, president of the Central Electric Railway Association, will deliver the opening address. "Calendar Simplification" will be explained by M. B. Folsom, assistant treasurer of the Eastman Kodak Company, and "Freight Accounting—Your Problem and Mine" will be discussed by C. H. Sellman, auditor freight accounts, New York, Chicago & St. Louis Railway. Write the "Breakers" now for reservations!

LATE NEWS

(*Continued from Page* 486)

Oakland, Cal.—At a meeting of the directors of the Key System Transit Company on June 19, William P. St. Sure was elected a director to succeed the late B. W. Fernald. A. E. Nicoletti, assistant claims agent, has been made claim agent, to succeed Mr. Fernald. Perry Woodcock has been appointed assistant claims agent.

✦

Hartford, Conn. — The Connecticut Company has been authorized by the Public Utilities Commission to substitute service by bus for railway service between Middletown and Hartford. The buses will operate from Gold and Main Streets, Hartford, to the State Hospital for the Insane, Middletown, over a route slightly different from that proposed in the commission's order of April 22.

✦

Kansas City, Mo.—The Kansas City Public Service Company has passed the dividend on the $7 preferred stock due at this time.

✦

Watertown, N. Y.—The Public Service Commission has granted the petition of the Black River Traction Company to abandon 6.33 miles of its 11.33 miles of route in Watertown and the villages of Glen Park, Brownville and Dexter. It is probable that the company would have operated its line outside of the city for some time were it not for the plans of the State Highway Department to construct a state highway that would require the company to move its poles and tracks and to pave between the tracks at a cost of $77,932, an expenditure the company felt unwarrented.

✦

Glendale, Cal.—Application has been made to the Railroad Commission by the Glendale & Montrose Railway for authority to abandon operation of freight and passenger service between Verdugo Road on the south end, La Crescenta on the north, Eagle Rock City on the east, and Brand Boulevard, Glendale, on the west, and to cancel its contract for operation with Los Angeles & Salt Lake Railroad. Competition has made it no longer possible to operate profitably.

✦

Salt Lake City, Utah—Armed with a consent granted by the City Commission, the Utah Light & Traction Company has asked the Public Utilities Commission for a permit to install trackless trolley service on its Warm Springs line. Street cars will be operated as required to the present terminus of the Centerville line, and railway service will be continued to Warm Springs by way of the Center Street line.

✦

Tucson, Ariz.—Preparatory to asking a new franchise from the city, the Tucson Rapid Transit Company has filed for record an amendment to its articles of incorporation extending its corporate life for another 25 years. The company now operates railway lines to the university and through the southern part of the city in addition to bus service started in 1925 under a separate fifteen-year franchise from the city.

✦

Niagara Falls, N. Y.—Justice Ackerman in the Supreme Court at Buffalo has dismissed the application of Niagara Falls taxpayers for an injunction restraining the Public Service Commission from proceeding to fix fares on local lines of the International Railway, Niagara Falls, in connection with the recent contract between the city and the company providing for an 8-cent fare. Justice Ackerman ruled that the judicial district at Buffalo has no jurisdiction in the case. The commission now has the application of the railway for a higher fare here under consideration.

✦

Los Angeles, Cal.—The Pacific Electric Railway has applied to the Railroad Commission for permission to discontinue passenger service on its line between Santa Ana and Orange, stating that service by applicant and Motor Transit Company imposes unnecessary expense, especially as Pacific Electric Railway operations are conducted at a loss.

✦

Binghamton, N. Y.—The Public Service Commission on June 26 authorized the Triple Cities Traction Company to substitute buses for street cars on its Clinton Street lines in Binghamton and Dickinson. Buses to be installed, each carrying 25 passengers, will operate on the same schedule as the street cars. Approximately 3 miles of track will be removed under the substitution plan.

✦

Louisville, Ky.—As a result of sale of all power and substation operations by the Louisville Railway to the Louisville Gas & Electric Company, and entry of a 20-year contract whereby the railway will buy its power, 140 employees of Louisville Railway on July 1 automatically became employees of the Louisville Gas & Electric Company. A farewell dinner to all company power department workers was arranged by the railway on June 28, one group being dined at noon and the other in the evening. James P. Barnes, president of the company; Frank H. Miller, vice-president and general manager; Neil W. Funk, safety director, and Alfred Selligman, attorney, were among the speakers.

✦

Trenton, N. J.—The Public Utility Commission on June 28 ordered suspension for three months from July 15 of a proposed schedule of fares asked by the Public Service Co-ordinated Transport. The company, which is now charging a 10-cent cash fare and selling ten tokens for 50 cents, good on buses or trolleys, seeks to reduce the number of tokens to four for 25 cents. The board announces that time is desired to inquire into the reasonableness of such a rate.

✦

New York, N. Y.—The Transit Commission has postponed until Sept. 4 a hearing on the proposed removal of the Sixth Avenue Elevated line. The delay was granted at the request of Arthur Peacock, of counsel for the Interborough Rapid Transit Company, operator of the line and opponent of the removal.

✦

New York, N. Y.—The Union Motor Coach Terminal, successor to the Waldorf-Astoria terminal and managed by Fifth Avenue Coach Company, has been opened at 59-61 West 36th Street. Motor coach operating companies using the terminal are Gray Line Motor Tours, Inc., Fifth Avenue Coach subsidiary; the Greyhound Lines, the P. R. T. Lines, New England Transportation Company, and Champlain Coach Lines.

✦

Seattle, Wash.—Trackless trolleys will undoubtedly be tried in connection with the Municipal Railway. George B. Avery, utilities superintendent, is conducting an investigation and his final verdict is expected soon. An early proponent of trackless trolleys here was Roy E. Furse, railway superintendent. Councilmen Case and Laube have inspected the trackless trolley system in Salt Lake City and J. W. A. Bollong, city traffic engineer, has studied trackless trolley operation in Eastern cities, particularly the new installation in Detroit.

✦

Philadelphia, Pa.—On June 24 Deputy City Comptroller Wilson, Director Myers, of the Department of City Transit; Councilman Pommer, chairman of City Council's transportation committee, and W. K. Myers, vice-president of Mitten Management, were appointed a committee to consider and report on the method to be followed in arriving at a financial settlement for proposed municipal purchase of the Philadelphia Rapid Transit Company and its underlying systems.

✦

Erie, Pa. — The Erie Railways has asked the Public Service Commission for permission to abandon railway service in West 26th Street and the West Ridge Road. Through its bus operating subsidiary, the Erie Coach Company, the railway plans to operate buses over the route, between Perry Square and the village of Westminster, Pa.

✦

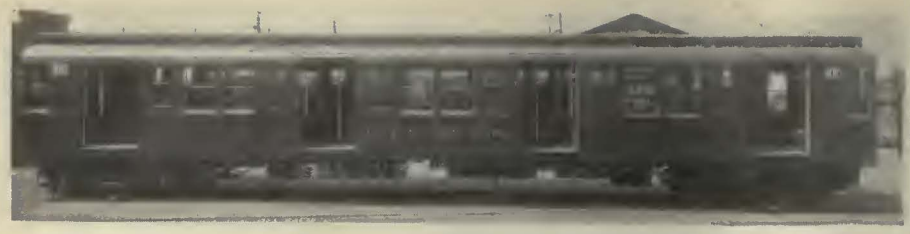
Detroit, Mich.—The Street Railway Commission has authorized Del A. Smith, general manager, to look further into a proposal through which the Frischkorn Realty Company offers to extend trackless trolley overhead construction in Plymouth Road 2 miles west of River Rouge Park, the present terminus. In return for service in the district, the company stands ready to finance the entire cost of the overhead equipment, estimated at $26,000.

✦

Toronto, Ont.—The City Council on June 15 chose the Transportation Commission, responsible for the operation of the local municipal railway and bus lines. It is to be composed of Fred Hubbard, formerly assistant general manager of the Toronto Railway; W. C. McBrien, a member of the Board of Harbor Commissioners; S. J. McMaster, whose name was rejected by Council on several occasions.

✦

Pontiac, Mich.—An ordinance to increase car fare in Pontiac from 7 to 8 cents has been passed by the local City Commission. The bus fare remains unchanged. The new fare schedule also calls for an increase in the price of tickets, from four for 25 cents and 17 for $1, to four for 30 cents and 15 for $1. A charge of 1 cent for transfers from street cars to buses also is allowed. No charge will be made for transfers from buses to street cars. The Eastern Michigan Railways operates here under a day-to-day agreement.



The four-door arrangement of New York's new subway cars is expected to expedite loading

New York Subway Cars Approach Completion

The first consignment of the 300 steel cars for use on the new subway lines of New York City will be delivered during the last week in July. The cars will be equipped with motors and other electrical apparatus at the city's new shops at 207th Street and the Harlem River. This work will cost $2,500,000, bringing the total cost of car construction and equipment up to $11,376,397, or about $38,000 for each of the 300 cars. The cars will be completed and equipped in ample time for thorough testing before they are placed in operation on the new Eighth Avenue line next year.

Four pairs of doors on each side of the car permit rapid ingress and egress in eight files, and it is believed that the time required for loading and unloading passengers can be cut 33⅓ per cent below the minimum on cars now in use here. The new cars will have no vestibules and special door-closing devices are expected not only to expedite loading and unloading but also to cut down the number of injuries to passengers. These devices make it impossible for passengers to hold up progress of a train by pushing the doors back as is now often done on Interborough cars.

Interior arrangement of subway cars provides ample standing capacity

Each of the cars will seat 60 persons and provide standing room for 220, giving a gross capacity of 280 persons for a 60-ft. car. The cars are 10 ft. wide and are expected to have 40 per cent more passenger capacity than the Interborough standard car.

Each car will have 22 electric lamps, each separately wired and not affected by mishap to any of the others. The cars will weigh 42 tons apiece, and each will contain 18,935 rivets, as well as nearly 2 miles of wiring.

Segregation of Akron Properties

In connection with the consolidation of companies in the Commonwealth & Southern group in Ohio, the Northern Ohio Power & Light Company has petitioned the Ohio Public Utilities Commission for permission to segregate its light and power business from its transportation business. This applies to its interurban as well as city lines.

Three companies, the Akron Transportation Company, the Northern Ohio Interurban Company and the Canton Traction Company, have been organized, or are in the process of organization, to take over the transportation business. All tracks, overhead distribution system, cars, buses and other transportation equipment used in furnishing railway and bus service in Akron will be conveyed to Akron Transportation Company subject to the present mortgage liens until paid or retired.

The same plan is to be carried out with reference to the interurban lines of the company and the Canton city system. In each instance Ohio Edison Company will hold the stock.

On July 1 the stockholders approved the consolidation of its power and light properties with those of the Pennsylvania-Ohio Power & Light Company, the Ohio Edison Company, the Akron Steam Heating Company, and the London Light & Power Company.

Unemployment Hurts Toledo Earnings

Operation of the Community Traction Company, Toledo, during the first five months of 1930 resulted in a net deficit of $72,890 as compared with the favorable balance of $95,284 for the similar period last year, after all charges under the Milner ordinance. Service cuts have been held to the minimum so that most of the economies have been from other sources. The drop in revenue from $1,766,995 for the first five months of 1929 to $1,435,751 for the similar period this year has been too much to absorb. Industrial unemployment has been largely responsible for the changed showing. The operating ratio this year is 78.518 per cent as against 71.323 per cent for similar period last year. Bus ratio is 83.048 per cent and railway ratio 76.741 per cent for the current year.

Conspectus of Indexes for June, 1930

Compiled for Publication in ELECTRIC RAILWAY JOURNAL by

ALBERT S. RICHEY

Electric Railway Engineer, Worcester, Mass.

	Latest	Month Ago	Year Ago	Last Five Years	
				High	Low
Street Railway Fares* 1913 = 4.84	June, 1930 **7.97**	May, 1930 **7.96**	June, 1929 **7.76**	June, 1930 **7.97**	June, 1925 **7.27**
Electric Railway Materials* 1913 = 100	June, 1930 **138.9**	May, 1930 **139.9**	June, 1929 **145.8**	Dec., 1926 **159.2**	June, 1930 **138.9**
Electric Railway Wages* 1913 = 100	June, 1930 **231.7**	May, 1930 **231.7**	June, 1929 **230.8**	April, 1930 **231.7**	June, 1925 **222.4**
Electric Ry. Construction Cost Am. Elec. Ry. Assn. 1913 = 100	June, 1930 **199.5**	May, 1930 **201.1**	June, 1929 **199.7**	Nov., 1928 **205.7**	July, 1929 **199.0**
General Construction Cost Eng'g News-Record 1913 = 100	June, 1930 **203.4**	May, 1930 **205.9**	June, 1929 **205.6**	Jan., 1927 **211.5**	Nov., 1927 **202.0**
Wholesale Commodities U. S. Bur. Lab. Stat. 1926 = 100	May, 1930 **89.1**	April, 1930 **90.7**	May, 1929 **95.8**	Nov., 1925 **104.5**	May, 1930 **89.1**
Wholesale Commodities Bradstreet 1913 = 9.21	June, 1930 **10.77**	May, 1930 **10.94**	June, 1929 **12.46**	Dec., 1925 **14.41**	June, 1930 **10.77**
Retail Food U. S. Bur. Labor Stat. 1913 = 100	May, 1930 **150.1**	April, 1930 **151.2**	May, 1929 **153.3**	Nov., 1925 **167.1**	Mar., 1930 **150.1**
Cost of Living Nat. Ind. Conf. Bd. 1914 = 100	May, 1930 **156.2**	April, 1930 **157.5**	May, 1929 **159.4**	Nov., 1925 **171.8**	May, 1930 **156.2**
Industrial Activity Elec. World, kw.-hr. used 1923-25 = 100	May, 1930 **119.0**	April, 1930 **120.2**	May, 1929 **136.9**	Feb., 1929 **140.4**	Aug., 1925 **94.3**
Bank Clearings Outside N. Y. City 1926 = 100	May, 1930 **92.1**	April, 1930 **93.4**	May, 1929 **102.5**	Oct., 1929 **111.8**	May, 1930 **92.1**
Business Failures Number	May, 1930 2083	April, 1930 1976	May, 1929 1724	July, 1929 1581	Sept., 1928 1348
Liabilities, Millions of Dollars	**57.72**	**80.71**	**44.58**	**102.09**	**23.13**

*The three index numbers marked with an asterisk are computed by Mr. Richey, as follows: Fares index is average street railway fare in all United States cities with a population of 50,000 or over except New York City, and weighted according to population. Street Railway Materials index is relative average price of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motormen, conductors and operators on 136 of the largest street and interurban railways operated in the United States, weighted according to the number of such men employed on these roads.

PERSONAL MENTION

C. F. Hirshfeld to Conduct Car Research for Industry

Detroit Edison official Selected as Engineer-Expert for Important Task by Presidents' Conference Committee of A.E.R.A.

APPOINTMENT of C. F. Hirshfeld as chief engineer of the Presidents' Conference Committee, intrusted with the work of expediting the development of the urban railway car, was announced at the meeting of the American Electric Railway Association at San Francisco. It is a most important post, but Mr. Hirshfeld has had a wealth of experience in conducting research projects.

After a thorough canvass of the problem, the committee unanimously decided that a knowledge of car building or the operation of railway properties was not a prerequisite to the position and might constitute a handicap. Rather the man needed, it was decided, was one with wide experience in handling research projects, an engineer-executive, and Mr. Hirshfeld was selected as the man who had demonstrated his ability to conduct large research problems and bring them to a successful conclusion.

As the address of Dr. Thomas Conway, Jr., abstracted elsewhere in this issue, makes plain, Mr. Hirshfeld is relying upon the active co-operation of railway master mechanics, of engineers and technicians of the car builders, of the makers of electric equipment and of braking apparatus and of other groups whose products enter into railway cars. The industry, through the association and especially through the Presidents' Conference, bespeaks full co-operation for Mr. Hirshfeld that worthwhile experiments with any new products may be so carried out as fully to determine their practical usefulness.

Mr. Hirshfeld has been chairman of the technical national section of the National Electric Light Association. He is chief of the research department of the Detroit Edison Company, with which his work has been of a varied character. In addition, Mr. Hirshfeld has conducted a general consulting engineering business. A native of San Francisco, he attended the University of California, from which he was graduated in 1902 with a B.S. in electrical engineering, three years later receiving the M.M.E. degree from Cornell University. From 1903 to 1914 he was a member of the engineering faculty of Cornell, starting as instructor in experimental engineering and ending as full professor of heat-power engineering, machine design, gas-power engineering, etc.

Mr. Hirshfeld has been extremely active in association work, having served as a member of various committees of the American Society of Mechanical Engineers and of the American Institute of Electrical Engineers, as past-chairman of the steam turbine and generator committee of the Association of Edison Illuminating Companies, and as past-chairman of the prime movers committee of the National Electric Light Association. He is the author or co-author of five books on engineering subjects.

C. F. Hirshfeld

Mr. Hirshfeld joined the Detroit Edison Company in 1913 and built up in that company the research department, of which he is chief. His work with the company has been of an extremely varied character, as problems come to the research department from practically all of the other departments of the company. He is particularly well known in the electrical field through his study on industrial electric heating, work started in 1914 and continued with interruptions ever since. He has also been active in rate controversies and in the rehabilitation and management of power plants.

Mr. Hirshfeld served during the World War as major and lieutenant colonel in the Ordnance Department of the United States Army.

Three Commercial Vice-Presidents for Westinghouse

Three new executive positions, the office of commercial vice-president, have been created by the board of directors of the Westinghouse Electric & Manufacturing Company.

C. E. Stephens has been selected to occupy the new position for the Atlantic division, with headquarters at New York City; N. G. Symonds for the central division in Chicago, and W. R. Marshall for the Pacific division at San Francisco.

All of the new commercial vice-presidents have been district managers and will continue the duties of that position, in addition to those of the new position.

W. R. Bell at Baton Rouge, H. C. Leonard in El Paso

W. R. Bell, since 1926 general superintendent of the El Paso Electric Company, El Paso, Tex., has been made general superintendent of the Baton Rouge Electric Company and the Louisiana Steam Products Company, Baton Rouge, La.

Mr. Bell will be succeeded in El Paso by H. C. Leonard, who has been in charge of the electrical department of the Virginia Electric & Power Company, Richmond, Va.

Mr. Bell has been employed by companies operating under the executive management of Stone & Webster, Inc., since 1906. He began in the accounting department of the Paducah Electric Company, working during vacations while attending college. Following his graduation from Rose Polytechnic Institute, Terre Haute, Ind., as electrical engineer, Mr. Bell accepted the position of assistant superintendent of the Baton Rouge Electric Company, later being made sales manager. Still later he was sent to Haverhill, Mass., as sales manager of the Haverhill Gas Light Company. In August, 1924, Mr. Bell was sent to El Paso as sales manager. He made a splendid record as head of the sales department and during his two years as sales manager in El Paso, the volume of appliance sales trebled, the sales floor space was doubled and the sales force was greatly enlarged.

Since becoming general superintendent in 1926, Mr. Bell has been closely identified with some of the most important developments ever undertaken by the company.

Mr. Leonard became associated with the Stone & Webster organization in 1919. He was a member of the group of engineers making an appraisal of the property of the Virginia Electric & Power Company. Upon completion of this work, Mr. Leonard was sent to the Boston office as designer. He remained in Boston only a short time until he was again sent to the Virginia Electric & Power Company, this time entering the engineering department.

Some time after his return to Virginia, Mr. Leonard was made electrical engineer in charge of design of the power station, substations and transmission lines. In 1927 he assumed charge of the electrical department of the company at Norfolk. He remained in Norfolk until early in 1930, when he was promoted and sent to Richmond, in charge of the electrical department of the company there.

Mr. Leonard is a native of Worcester, Mass. He was graduated from Worcester Polytechnic Institute with the degree of B.S. in electrical engineering. Following graduation, he entered the testing and engineering department of the General Electric Company, but he continued his studies at Union College, where he received a degree of M.S.

T. E. Thomas, traffic manager of the London County Council Tramways, London, England, has been appointed general manager to succeed J. K. Bruce, who is retiring on account of ill health. The salary is £2,000 a year, rising after four years by annual increments of £250 to £3,000. Mr. Thomas was formerly commercial superintendent of the Metropolitan District Railway and allied companies. He entered the County Council's service in 1917. He has recently been acting as general manager owing to Mr. Bruce's absence.

M. H. Frank Heads Wisconsin Association

New officers have been elected by the Wisconsin Utilities Association to serve from May 1 as follows:

President—M. H. Frank, assistant to the vice-president, Wisconsin Power & Light Company, Madison.
Vice-president—A. J. Goedjen, division manager, Wisconsin Public Service Corporation, Green Bay.
Treasurer—Ewald Haase, vice-president, Milwaukee Gas Light Company, Milwaukee.
Chairman Employees' Education Section—E. J. Steinberg, The Milwaukee Electric Railway & Light Company, Milwaukee.
Vice-chairman Employees' Education Section—R. G. Walter, Wisconsin Power & Light Company, Madison.

Other section officers are elected at separate conventions held during the year.

Mr. Frank has been manager of the Wisconsin Power & Light Company's Fond du Lac properties since 1918. After obtaining his electrical engineer's degree in 1915 he joined the Indiana & Michigan Electric Company, South Bend, Ind., as assistant construction engineer, where he built the 300-ft. Tainter gate dam and a 4,000-hp. hydro plant.

Mr. Frank remained there until 1916 as assistant engineer having charge of the operation of four hydro electric units, one steam plant and 75 miles of transmission lines. In that year, he became associated with the Galesburg Railway Lighting & Power Company, Galesburg, Ill., as operating engineer, where he laid out a 4,000-hp. steam plant and was in charge of the generation of both electricity and gas. After two years there, Mr. Frank went to Fond du Lac as manager for the former Eastern Wisconsin Electric Company, changed later to the Wisconsin Power & Light Company.

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"Bob" Harper Promoted by Virginia Electric Power

H. Holmes Harper has recently been transferred from the printing and stationery bureau of the Virginia Electric & Power Company at Richmond to the vice-president's office in Norfolk, where he is now assistant to Vice-President R. J. Throckmorton and associate editor of *The Vepcovian*. He replaces A. E. Dunn, who has been transferred to the distribution department at Norfolk.

"Bob" Harper was born near Burkeville, Va., on Nov. 4, 1906. He was graduated from Virginia Polytechnic Institute in June, 1927, with a degree of B.S. in electrical engineering. Mr. Harper joined the Vepco organization as a student engineer and was assigned to the production department at Richmond. He was later transferred to the treasurer's office, where he viewed the various operations of the company from a statistical standpoint, and in June, 1929, he became assistant supervisor in the printing and stationery bureau.

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M. M. Lloyd Retires from South Shore

M. M. Lloyd, for more than eleven years superintendent of shops and equipment for the Chicago, South Shore & South Bend Railroad, South Bend, Ind., and its predecessor companies, has retired from active service. His duties have been taken over temporarily by W. J. Freeman.

Mr. Lloyd was born in Rockford, Mich., on April 7, 1868. He went to the South Bend property in 1919 from Saginaw, Mich., where he had been master mechanic of the northwest division of the Michigan Railways. Previously he had worked as master mechanic for the Des Moines City Railway and the Interurban Railway, Des Moines, and the East St. Louis and Alton & Granite City lines in southern Illinois.

His first work was as locomotive engineer and motorman in Wichita, Kan., and then in St. Louis and in Granite City, Ill., as division foreman for the Sprague Electric Company and electrician with the American Steel Foundries.

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T. M. van der Stempel Joins General Car & Coach Company

Th. M. van der Stempel, who has been with the McGraw-Hill Publishing Company, Inc., since Jan. 1, 1929, and since April 1 of that year a member of the editorial staff of ELECTRIC RAILWAY JOURNAL, has recently resigned to accept a position with the newly organized General Car & Coach Corporation in Utica, N. Y., in charge of sales.

T. M. van der Stempel

Mr. van der Stempel has spent nearly all his time since his graduation as a mechanical and electrical engineer in 1920 in the transportation engineering field in various capacities. From August, 1924, to June, 1927, he was connected with the Chicago Motor Coach Company. There he learned the intricacies of city bus service from the ground up, starting as conductor and driver and advancing to the position of engineer in the traffic department, a post he relinguished to survey transportation facilities abroad, notably in Central America, South America and in Europe. Thus during 1927 and 1928 he studied the transportation facilities in 23 different countries.

During his work as a member of the editorial staff of ELECTRIC RAILWAY JOURNAL in charge of the new equipment, maintenance and foreign departments, he traveled widely throughout this country and increased his acquaintanceship among operators in both the electric railway and bus fields. His actual operating experience, his extensive study of railway and bus operating practices here and abroad and his work as a journalist all serve to qualify him to fill acceptably his new post in promotional work.

J. K. Bruce Resigns as London Tramway Manager

J. K. Bruce, the general manager of the London County Council's tramways, has tendered his resignation on the ground of ill health. The Council expressed deep regret. Since he became manager in 1924, the tramway undertaking instead of working at a loss as before is now making substantial profits. The change is attributed largely to the policy of Mr. Bruce in meeting competition by providing luxurious seats for tramcar passengers, raising the speed of the cars, improving the lighting, and generally making the service more attractive to the public. Mr. Bruce on retirement on June 30 became entitled to a pension of £805 and a lump sum of £2,426. In view of his great services a special grant of £2,000 is also proposed.

Mr. Bruce entered the service of the Council as a veterinary surgeon in the old horse car days of 1898. He served in turn as deputy chief officer and acting manager before he reached his present position in 1924. Statistics issued by the County Council show how under Mr. Bruce's management deficits on the working of the undertaking were changed into surpluses. Preliminary figures for the financial year ended March 31 show that after paying all expenses and debt charges (sinking fund and interest) there is a net surplus of £52,570. For the financial year now opening the estimate is that there will be a net surplus of £89,000. To recall the magnitude of the London municipal tramway undertaking, it may be mentioned that for the past financial year the receipts amounted to £4,413,450, and the working expenses including renewals to £3,638,505.

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Oren Root Resigns from Hudson & Manhattan

Oren Root, for almost eleven years president of the Hudson & Manhattan Railroad, operating under the Hudson River from New York to Newark and to Hoboken, has resigned, effective Sept. 1. The directors have not yet elected a successor.

Mr. Root resigned for personal reasons only. He is only 56 years old, and after a period of rest may re-enter business, but has no definite plans at present.

When Mr. Root took his post, the Hudson & Manhattan first lien and refunding mortgage 5s, Series A, were quoted at 57, and the adjusted mortgage income 5s were 16, while the preferred and common stocks were seldom traded in. An initial semi-annual preferred dividend of 2½ per cent was paid Aug. 15, 1923, and has been maintained to date, while an initial semi-annual common dividend was paid June 1, 1925, at the annual rate of 2½ per cent. The rate was advanced recently to $3.50 annually. The first lien 5s now sell at 99½, the adjusted mortgage 5s at 83⅜, the preferred stock at 81 and the common at 48⅝.

Mr. Root entered electric railway work in 1895 with the Metropolitan Street Railway of New York. He was schooled later in all departments of the company, working as a motorman, conductor, inspector and in other capacities. In 1903, he was appointed general manager of the Metropolitan and on Sept. 20, 1919, was elected president of the Hudson & Manhattan Railroad. He is a nephew of Elihu Root.

Many Changes on New Haven Bus and Suburban Lines

P. W. J. Smith has been made president of the New England Transportation Company, motor coach subsidiary of the New Haven, succeeding A. P. Russell, executive vice-president of the railroad. Mr. Smith, has been general superintendent of the New York, Westchester & Boston Railway and in charge of the motor coach lines of the County Transportation Company for several years. He retired from the New York, Westchester & Boston July 1. He has been connected with the New Haven or its allied lines for 42 years. He will establish headquarters for the New England Transportation Company in Providence, R. I. and will also become president of the County Transportation Company and the Sound View Transportation Company, subsidiaries of the New York, Westchester & Boston.

Leverett S. Miller has been president of the New York, Westchester & Boston Railway since May, 1909, and president of the County Transportation Company since April, 1927. He retired at his own request on July 1, after long and faithful service. For many years, prior to his connection with the New York, Westchester & Boston, he was general manager of the Central New England Railway. The office of president of the New York, Westchester & Boston will be assumed by J. J. Pelley, president of the New Haven.

W. H. Foster, general superintendent, and A. G. Baily, superintendent of the New York division of the New Haven, will act in those capacities with the New York, Westchester & Boston, which are now onerated as an integral part of the New Haven rail system.

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K. F. Sapp in New Post in Atlanta

Kenneth Finch Sapp, recently appointed assistant to the manager, public relations department, Georgia Power Company, Atlanta, Ga., was born at Ottawa, Ill., on Oct. 11, 1901. He prepared in the elementary and high schools of Ottawa and attended the University of Illinois. Since leaving college, he served as sporting editor of the *Daily Republican-Times*, Ottawa, Ill., and as reporter on the *News-Herald*, Joliet, Ill., and the *Atlanta Constitution*, Atlanta, Ga. He resigned from the *Constitution* in 1925 to become a member of the staff of the public relations department, Georgia Power Company, being appointed editor of publications in November, 1926, and assistant to the manager in May, 1930.

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E. C. Rust Eastern Massachusetts Director and Trustee

At a recent meeting of directors of the Eastern Massachusetts Street Railway, Charles W. Hubbard, Jr., resigned and Edgar C. Rust was elected a director in his place. Mr. Rust was also elected a trustee of the road, under the provision of the public control act which permits the road's directors to elect one of the three trustees from among themselves. He fills the vacancy created by the resignation of Lester Watson.

Although he has resigned as a trustee, Mr. Watson will continue to serve as a member and chairman of the board of directors. He is retiring from the board of trustees simply because the duties of membership leave him insufficient time to devote to other necessary affairs. Mr. Watson's firm, Hayden, Stone & Company, still retains the very substantial interest in the road.

Edgar C. Rust, the new trustee and director, is well known in the financial community due to his years of association with E. H. Rollins, from the presidency of which concern he retired last year.

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R. M. Heinrichs, Bendix-Westinghouse Manager

R. M. Heinrichs has been appointed general manager of the newly formed Bendix-Westinghouse Automotive Air Brake Company. Mr. Heinrichs comes to the new brake company with a broad experience in the automotive field, having formerly served the Bendix Corporation as assistant to the vice-president in charge of sales. His connection with the Bendix Corporation covers a period of five years, previous to which time he had been identified with the Goodman Manufacturing Company, Chicago. He is a graduate of the engineering school at the University of Illinois.

R. M. Heinrichs

As general manager of the new company, Mr. Heinrichs will have at his disposal the engineering and service departments of both Bendix and Westinghouse effectively to serve the automotive industry. Manufacture of the automotive air brake will continue in the plants of the Westinghouse Air Brake Company at Wilmerding.

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Irving M. Tuteur, vice-president of McJunkin Advertising Company, Chicago, was elected president of the Public Utilities Advertising Association for the year 1930-31 at the association's annual convention held recently in conjunction with the annual meeting of the Advertising Federation of America. The new president has served the association for five years as chairman and one year as vice-chairman of its "Better Copy" committee, which has been devoted to the improvement of public utility advertising throughout the country. Under the direction of this committee, four "Better Copy" portfolios of outstanding public utility advertising have been published in the last six years. The committee has also conducted two nationwide "Better Copy" contests among utility companies.

F. L. Butler Heads Commonwealth Transportation Department

Further recognition of his outstanding ability among electric railway operators of the nation was accorded Frank L. Butler, vice-president in charge of railways for the Georgia Power Company, Atlanta, Ga., in his appointment, announced recently, as head of the transportation department of the Commonwealth & Southern Corporation, supervising company for the Georgia Power Company and its associated companies.

In his new position, Mr. Butler will be on call to give advice and assistance to all companies in the Commonwealth & Southern organization on transportation problems, but will remain in Atlanta as active head of the Georgia Power Company's railways. For many years Mr. Butler has been recognized as one of the leading electric railway authorities in America and has been high in the councils of the American Electric Railway Association. He has headed many important committees for that association and has had a leading rôle in shaping its policies. He is at present a member of its executive committee.

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J. M. Pogue Elected Vice-President of Interurban

J. M. Pogue, who has been director of purchases and claims of the Cincinnati & Lake Erie Railway at Springfield, Ohio, since its organization early this year, has been elected a vice-president of the concern.

Mr. Pogue will continue to make his headquarters in the interurban building in Springfield, where he has been located for a number of years. He entered the employ of the railway system in 1907, and has served in various capacities under several managements. He acted as general manager for the receiver of the old Indiana, Columbus & Eastern system prior to its absorption by the present company.

The Cincinnati & Lake Erie Railway now is operated under the general supervision of five vice-presidents, one located in Cincinnati, one in Philadelphia, two in Dayton, and Mr. Pogue in Springfield. Its lines extend from Cincinnati to Lake Erie cities and as far east as Columbus.

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W. S. Howland Now Edits "Snap Shots"

William S. Howland, editor of *Snap Shots*, Georgia Power Company, Atlanta, was born in New York, on June 18, 1901. He was educated at Phillips Exeter Academy, Exeter, N. H., and Princeton University, being graduated in 1923 from Princeton with a degree of A.B. Since leaving college, he has served as reporter on the *Atlanta Journal* and as a reporter and city editor of the *Tennessean*, Nashville, Tenn. He resigned as city editor of the *Tennessean* in April, 1929, to join the staff of the public relations department, Georgia Power Company, being appointed editor of *Snap Shots* in January of this year. In addition to serving as city editor of the *Tennessean*, he was editor of the *American*, a house organ published by the American Banks, Nashville, Tenn., and was instructor in journalism at George Peabody College for Teachers, Nashville, Tenn., for the summer session of 1928.

H. S. Newton Retires from Utility Work

Henry S. Newton, manager of the Parkersburg-Marietta division of the Monongahela-West Penn Public Service Company for seven years and for the past five years manager of the industrial development department of the West Penn, has retired from utility work. He will take up permanent residence on the eastern shore of Chesapeake Bay, near Easton, Md.

Mr. Newton has been engaged in utility work for more than a quarter of a century. He was graduated from the Ohio State College in electrical engineering with the degree of bachelor of science. His first work was with the General Electric Company, for which he served last as superintendent of one of its plants. After leaving that company he worked in a managerial capacity for various utilities, including the Hartford & Springfield Railway, connecting Hartford, Conn., and Springfield, Mass.; the Syracuse Rapid Transit Company; the Ohio Valley Electric Railway at Huntington, and several railways in Minnesota.

He went with the Monongahela system as manager of its electric railway and power properties at Parkersburg and Marietta and remained in that position for seven years before going to Fairmont, W. Va., as manager of the industrial development department.

OBITUARY

Richard Meriwether

Richard Meriwether, vice-president and general manager of the Dallas Railway & Terminal Company and the Texas Interurban Railway, Dallas, Tex., died on May 26 on a Missouri-Kansas-Texas train at St. Louis, Mo. Mr. Meriwether had left

Richard Meriwether

Dallas for New York on a short business trip. When the train pulled into the St. Louis Union Station a porter attempted to wake Mr. Meriwether, but failing to get any response summoned aid. The doctor who responded said Mr. Meriwether had died from natural causes.

Mr. Meriwether directed one of the few systems of its kind in the country that had maintained steady earnings and a sound financial basis in the face of decreases in the business over the country. He began his management of the company in 1917 and has served continuously.

Born at Frankfort, Ky., Oct. 13, 1875, Mr. Meriwether attended grade and high schools at Louisville, Ky. He entered the Rose Polytechnic Institute, Terre Haute, Ind., where he was graduated with electrical engineering as major subject.

His career began with the Southern Railroad. He then became connected with Siemens-Halske Electric Company of Chicago and the Western Electric Company of Chicago. In 1903 he went with the Louisville Railway as assistant to the superintendent of power, in charge of transmission lines.

Three years later he became associated with the Louisville & Eastern Railroad, an interurban line running from Louisville to Beard Station, Ky. He began as mechanical superintendent and was made general superintendent in charge of operation and construction in 1908.

He accepted a position with Stone & Webster in 1911 and went to Dallas as general superintendent of the Dallas Consolidated Electric Street Railway, the Rapid Transit Railway and the Metropolitan Street Railway. These companies were consolidated in 1917 and Mr. Meriwether became general manager. He was made vice-president and general manager in the spring of 1918.

As managing head of the Texas Interurban Railway, Mr. Meriwether was responsible for the building and operation of interurban lines to Terrell and Denton.

Mr. Meriwether also was active in civic and social affairs of Dallas. He was a director of the Republic National Bank & Trust Company, the Continental & Loan Association and the Better Homes Bureau. He was past-president of the Dallas Rotary Club and the Dallas Athletic Club. He also was a member of the City Club and Brook Hollow Golf Club.

More than 200 employees of the company and other electric railway lines gathered with other friends at the funeral and drove in a mile-long procession to Grove Hill Cemetery, where the remains were interred with Masonic rites.

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G. R. Millican

George Raymond Millican, 43 years old, vice-president and general manager of the Evansville & Ohio Valley Railway, died recently at his home in Evansville, Ind.

Besides being vice-president and general manager of the railway, Mr. Millican was president of the board of deacons of the First Presbyterian Church, a member of the Rotary club, a member of the Evansville Country Club, and a member of the Purdue University chapter of the Phi Delta Theta fraternity.

Starting out with the Evansville & Ohio Valley Railway on a surveying gang during vacations from school he remained with that company until death, becoming its vice-president and general manager when barely past 30 years of ago.

He attended Purdue University and in 1907 entered the employ of the railway. In 1910 he was transferred to Owensboro, Ky., as general manager of the Owensboro City Railroad, a subsidiary.

Mr. Millican was born in Evansville on Sept. 19, 1886.

S. R. Artman

Samuel R. Artman, long active in Indiana public affairs and best known for his rulings as a member of the Indiana Public Service Commission, died recently of injuries sustained in a fall from the roof of his home in Lebanon, Ind. Mr. Artman was graduated from the Indiana state normal school at Terre Haute. He taught school for four years and then read law in Lebanon. He was elected to the Legislature and later judge of the Circuit Court at Lebanon. In 1923 he was appointed a member of the Indiana Public Service Commission, remaining in that position six years, when he then was named special assistant attorney general.

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H. A. Davis

Hiram A. Davis, who went to Nashville, Tenn., from New Orleans in 1902, to become superintendent of the railway department of the Nashville Railway & Light Company, died on May 30. He served in the one capacity for twenty-eight years.

Mr. Davis was one of the city's active civic workers, and one of the city's most aggressive sponsors of the safety movement. He applied his safety principles to

H. A. Davis

his own street cars, and as a result the company established a record for safety which national authorities declared was unsurpassed. He was an active member of the Nashville Automobile Club, and the founder of the Nashville Safety Council. That his civic work was appreciated is attested by the public recognition it received.

Mr. Davis was born in Oswego, N. Y., on April 3, 1866. He was educated in the New York schools, and entered the electric railway industry as chief engineer at the power station of the Steinway Railway, Long Island City. Shortly afterward Mr. Davis went to New Orleans as superintendent of equipment of the New Orleans & Carrollton Railway, now included in the system of the New Orleans Public Service.

For fifteen years Mr. Davis was a member of the Rotary Club; he was a Scottish Rite Mason and a Shriner; he was an active church worker, being a member of the Board of Deacons of Edgefield Baptist church; he was a member of the board of directors of the Tennessee Children's Home; a member of the board of directors of the Tennessee Hermitage National Bank.

He is survived by his brother, George H. Davis, of the firm of Ford, Bacon & Davis, New York; his wife, Mrs. Isa Outwater Davis, a daughter and a son.

Col. Timothy S. Williams

Col. Timothy S. Williams, former president of the Brooklyn Rapid Transit System, now the Brooklyn-Manhattan Transit Corporation, which he served in various capacities for more than twenty years, collapsed and died suddenly in New York City on June 3 while on a visit to the city made from his estate at Huntington, Long Island.

Colonel Williams succeeded to the presidency in Brooklyn following the retirement of Edwin W. Winter. Mr. Winter had worked like a demon to snatch the system from pending receivership when he took hold and when the work of rehabilitation, which he carried out most expeditiously, was completed he turned the system over to Colonel Williams. Soon after Colonel Williams took charge the new subway contracts were negotiated, but then came the trying experiences due to the World War and in its wake a succession of economic events that the Brooklyn Rapid Transit, as a corporate entity, did not survive. During that period the system, like so many other electric railways, was almost constantly in hot water, politically, economically and financially. Colonel Williams worked prodigiously against the current of events which had set in against the company, but finally came receivership under Lindley M. Garrison and eventually reorganization with W. S. Menden, who had worked side by side with Colonel Williams, as president in complete charge of operation.

Timothy Shaler Williams was born at Ithaca, N. Y., on Aug. 1, 1862. Following his graduation from Cornell University with the class of 1884, he came to New York and joined the staff of the old *Commercial Advertiser*, as a reporter. Later, he served that paper as Albany correspondent, Washington correspondent, city editor and editorial writer. He left newspaper work to become private secretary to Governor David B. Hill, a position he also held with Governor Roswell P. Flower. Upon the retirement of Governor Flower from office, Mr. Williams undertook to reorganize the Long Island Traction Company, out of which grew the Brooklyn Rapid Transit System of companies. In 1895 he became secretary of the reorganization committee. A few months later he was named secretary and treasurer of the Brooklyn Heights Railroad. From 1901 to 1911 he was vice-president of the Brooklyn Rapid Transit System.

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R. H. Selbie

R. H. Selbie, general manager of the Metropolitan Railway, London, England, died recently while attending a confirmation service at St. Paul's Cathedral conducted by Bishop Perrin, at which his younger son, Andrew, was one of the candidates. Mr. Selbie was 62 years of age. He had returned on May 6 from a sea voyage of three weeks, taken for the benefit of his health. Mr. Selbie was educated at Manchester Grammar School and Victoria (now Manchester) University. He joined the staff of the Lancashire & Yorkshire Railway before being appointed in 1908 general manager of the Metropolitan Railway. He was also a director of several land and development companies. He served as chairman of the Board of Trade Committee on the utilization and feeding of horses, and was controller of horse transport at the Board of Trade and a member of the Army Forage Committee during the war. For his services he was created C.B.E. Last December he was elected chairman of the General Managers' Conference.

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William Gordon Gordon

William Gordon Gordon, manager of the railway and traction engineering department of the Canadian General Electric Company, died in Toronto, May 13, from pneumonia, after a short illness. He was born at Ottawa, July 22, 1877. Mr. Gordon was educated at Winnipeg, Halifax and Cornell University, taking the degree of mechanical engineer and electrical engineer at the latter in 1899. He then entered the General Electric Company's service at Schenectady, N. Y., first in the testing department. While in its railway construction department he had charge of the installation of the first electrically operated train on Manhattan elevated railway, New York. Later he assisted in installing the first multiple-unit equipment for Northwestern Elevated Railway. Subsequently, while in the railway engineering department at Schenectady, he was associated closely with the further development of multiple-unit operation for the New York Central Lines and the Interborough Rapid Transit Company. In 1905 he went to Australia in the General Electric Company's railway interests, and was manager and engineer of North Melbourne Tramways & Lighting Company. He returned to Canada in 1913 and entered the Canadian General Electric Company's service. In 1919 he was appointed manager of the Canadian General Electric Company's railway and traction engineering department.

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M. T. Donnelly

Morgan T. Donnelly, assistant counsel to the New York State Transit Commission and former Deputy Public Service Commissioner, died on June 30. He was 47 years old. Mr. Donnelly was appointed to his position with the transit commission on Feb. 6 and soon afterward left on sick leave. He was appointed Third Deputy Public Service Commissioner on Dec. 30, 1919, by former Governor Smith and served two years under Chairmen Lewis Nixon and Alfred M. Barrett.

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J. T. Branigan

John T. Branigan, general night superintendent of the Department of Street Railways at Detroit, Mich., died on June 5. Born in County Armagh, Ireland, Mr. Branigan went to Canada with his parents at the age of nine. Thirty-seven years ago he went to Detroit, and in 1899 he became a motorman on the Trumbull Avenue lines of Detroit United Railway, now included in the municipal transportation system. Later he was employed in a similar capacity on the Baker line, and in 1924 he was made assistant superintendent, in which position he remained until 1928, when he was made general night superintendent.

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Coker F. Clarkson, lawyer and student of electrical and automobile engineering, who had been secretary and general manager of the Society of Automotive Engineers for twenty years, died on June 4 of heart disease at his home, Sleepy Hollow Farm, Scarborough-on-Hudson. He was 60 years old.

Elmer A. Sperry

Elmer A. Sperry, famous inventor, engineer and manufacturer, died on June 16. He was in his seventieth year. He was a charter member of the American Institute of Electrical Engineers and the American Electrochemical Society and one whose inventions and activities, if not all strictly in the electrical field, all tied in closely with electrophysics. At the time of his death he was chairman of the board of the Sperry Gyroscope Company, Brooklyn.

Elmer Ambrose Sperry was born in Cortland, N. Y., on Oct. 12, 1860. He was educated at the State Normal School, and attended Cornell University, Ithaca, for a short period. A natural-born machinist and inventor, he designed in 1879, while yet a youth, a device for the perfection of one of the first electric arc lamps. This device was generally adopted. In the following year he founded the Sperry Electric Company, Chicago, to manufacture arc lamps, dynamos, motors and other electrical apparatus. This was the first of a long series of enterprises employing electricity promoted by him. They covered such diverse apparatus or fields as beacon lights of many descriptions, mining machinery, electric railway cars, automobiles, airplanes, commercial chemistry, detinning processes and the production of fuse wires.

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Edwin W. Winter

Edwin W. Winter, former president of the Northern Pacific Railroad and the Brooklyn Rapid Transit Company, died on June 28 after a brief illness, while on a visit in Fall River, Mass.

Mr. Winter left the post of president of the Chicago Transfer & Clearing Company to take over the presidency and direct the rehabilitation of the Brooklyn Rapid Transit Company in 1903 when relations between the company and the public were strained. It was understood that he was to remain only a short time, but his management was so successful that his service with the company was extended from year to year, and he did not resign until January, 1911. A diminutive man but impressive in appearance, Edwin Winter threw himself into the task in Brooklyn with great zeal, building up quickly one of the most impressive organizations, so far as personnel was concerned, probably ever assembled for a work of the kind, his most able lieutenants including J. F. Calderwood, W. S. Menden, W. G. Gove, A. S. Dutton, Dow Smith, W. O. Wood and others. His work in revamping the system attracted wide attention and received public acclaim.

Mr. Winter had been a railroad man all his life. He was born in Vermont in 1845 and when a youth, entered the service of the Union Pacific Railroad in its construction department. Later he was a contractor's agent in the construction of various railroads and then for three years was claim agent of the Chicago & Northwestern Railroad. He subsequently served with the West Wisconsin Railway as general superintendent and held a similar post with the St. Paul, Minneapolis & Omaha Road, of which he became assistant to the president. In 1897, he was made president of the Northern Pacific, relinquishing that position two years later to become president of the Chicago Transfer & Clearing Company.

INDUSTRY MARKET AND TRADE NEWS

The new cars of the Cincinnati & Lake Erie Railroad are designed to make a maximum speed of 75 m.p.h.

Cincinnati & Lake Erie Railroad Receives New Cars

Delivery is now under way of the twenty passenger cars ordered last year from the Cincinnati Car Corporation for service on the reorganized Cincinnati & Lake Erie Railroad. Earlier announcements to the effect that these cars would embody many features unusual in design have served to arouse the interest of the industry and their delivery has attracted considerable attention.

Ten of the cars, which are intended for de luxe limited service, contain a lounge compartment at the rear, equipped with comfortable movable furniture, including chairs, sofas, tables and lamps. The compartment is carpeted and is provided with wide-vision windows of plate glass. Incidental equipment includes electric fans, water-operated toilet and lavatory, iced drinking water and other features. The de luxe limited cars have been equipped with Westinghouse motor and control equipment and will weigh complete about 47,700 lb. The other ten cars, which are designed for local service, are provided with General Electric motors, control and brakes. The de luxe cars will seat 38 passengers and the locals 46. Both types are designed for one-man two-men, single-end operation. During initial trials the cars are said to have attained a maximum speed of over 75 m.p.h.

Bodies are of steel construction with extensive use of aluminum. Length over all is given at 43 ft. 9 in., with length over the body posts of 33 ft. 10 in. Width over all is 8 ft. 9⅜ in., with height, rail to trolley base, of 11 ft. 4 in. Truck wheelbase is 6 ft. 2 in., with bolster centers spaced at 23 ft. 2 in. Roof is of the arch type. Other specifications are as shown elsewhere in this issue.

Northwestern Pacific Railroad Orders New Rolling Stock

Seven motor cars and two trailers for passenger service have been ordered by the Northwestern Pacific Railroad, San Francisco, Cal., from the St. Louis Car Company, delivery to be made in September. The railway, a third rail system, is associated with the Southern Pacific lines, and operates from Sausalito, in the Marin peninsula, serving Corte Madera, Fairfax, San Rafael and communities in the Mill Valley region.

The new coaches have an over-all length of 72 ft. 10½ in., and a width over the eaves of 10 ft. 6 in. The motor cars, which are equipped with Westinghouse No. 557 E motors and mounted on trucks supplied by the General Steel Castings Corp., weigh complete 110,000 lb., while the weight of the trail cars is given as 79,200 lb. Body construction is of aluminum and steel, with arch roofs. Seating capacity of the motor cars is 98 passengers and of the trail cars 103 passengers. Additional equipment details are supplied in an accompanying table.

Single-Truck Cars for Louisiana Property

The J. G. Brill Company, Philadelphia, Pa., has recently delivered four single-truck, double-end, one-man motor cars to the municipal street railway of Monroe, La. The cars were built at the plant of the American Car Company, at St. Louis.

Body construction is all steel, with arch roof. Over-all length is 28 ft., over-all width 8 ft., and height, rail to trolley base, is 9 ft. 10⅜ in. Weight is 16,000 lb.

Long Island Railroad Has 85 Steel Passenger Cars on Order

To augment its passenger-carrying equipment this year, the Long Island Railroad recently placed orders for the immediate construction of 45 multiple-unit steel cars at a cost of $1,395,000. Delivery of these cars will begin in August and be completed in September.

The type of car just ordered has a seating capacity of 69 persons and the length over all is 70½ feet. The Pressed Steel Car Company of McKees Rocks, Pa., is building 25 of them, and the American Car & Foundry Company of Berwick, Pa., is constructing the remaining twenty cars.

A special safety feature of the new cars will be a door-interlocking device, or signal light, indicating to the motorman that the doors are closed. Each car will be equipped with train control apparatus. Roller bearing trucks will make riding easier, and better distribu-

Wide aisles, improved lighting effects and leather-upholstered seats add to comfort of travel on new C. & L. E. cars

Individual chairs of rich upholstery, a carpeted floor and wide-vision windows are provided in the observation compartment

tion of lighting will be effected through the installation of additional pedestal lamps in each car and increased wattage of the lamps.

With the 40 multiple-unit cars which were delivered before June 1, the Long Island Railroad will have increased its passenger-carrying equipment in 1930 by 85 cars.

New Des Moines Cars Embody Distinctive Features

Cummings Car & Coach Company, of Chicago, has delivered 40 single-end, all steel, one-man motor cars to the Des Moines Railway for service on its city lines. In appearance the new cars follow a well-balanced design, which is attained by providing wide-vision windows, a narrow letter board and a low arched roof. Exterior painting scheme is carried out in cream above the belt rail and red below, with monogram, numbers and striping in aluminum. The interiors are finished in enamel,

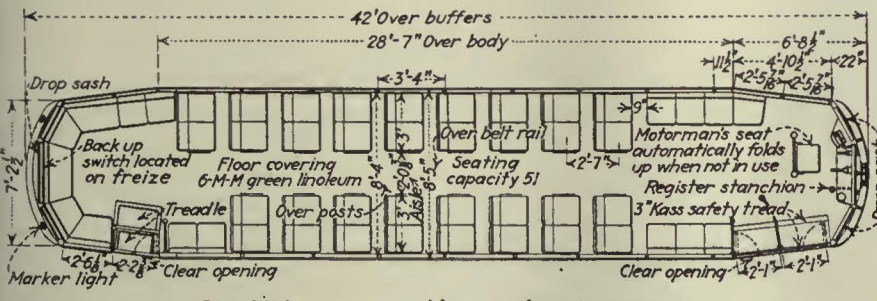
Wide aisles, upholstered seats and ample lighting effects lend a pleasing appearance to new Des Moines cars

with cream headlining. Frieze panel, post capping, sash, window capping and wainscoting are finished in three colors shading from light tan for the frieze panel to dark brown for the wainscoting, the latter matching the brown leather seats.

There are no bulkheads in the car and the headlining is continuous throughout its entire length. Illumination is provided by a large number of dome light fixtures over the center line of the seats on either side. Seats are of semi-bucket type.

Electrical equipment consists of four General Electric No. 247 motors of 40 hp. with tapped fields and K-75 control with safety features. The cars are designed for single-end operation, but are provided with back-up equipment. All doors are pneumatically operated, equipment being provided by National Pneumatic Company. Step wells are provided at front and rear. Entrance and exit doors on front vestibules are selectively controlled, with treadle control at the rear exit. Trucks are Cummings Car & Coach Company's No. 64 equalizer type with 3¾x7-in. journals.

The weight of the cars, completely equipped, is given as 35,300 lb. It is expected to attain an acceleration of 3 m.p.h.p.s., and a free running speed of 37 m.p.h. Additional details are shown elsewhere in this issue.



Des Moines cars provide seats for 51 passengers

The Okonite Company announces the appointment of Elbridge H. McNeill as manager of the power and light department of the company's Chicago branch. Mr. McNeill has had charge of certain railroad, industrial and public utility accounts for the company since 1925. Charles E. Brown, formerly manager of the power and light department of the Okonite Company, has been appointed assistant general manager of the company with headquarters in New York.

Detail Specifications Accompanying Recent Car Orders

Name of railway	Des Moines Railway	City of Monroe, La	Cincinnati & Lake Erie	Windsor, Ex. & Lake Shore	Northwestern Pacific R.R.
City and state	Des Moines, Iowa	Monroe, La	Dayton, Ohio	Windsor, Ont., Canada	San Francisco, Cal.
Number of units	40	4	20	3 motor, 1 trail	7 motor, 2 trail
Builder of car body	Cummings Car & Coach	American Car Company	Cincinnati Car Corp	Ottawa Car Mfg. Co.	St. Louis Car Company
Air brakes	General Electric	General Electric	10 Westinghouse 10 General Electric	Westinghouse	Westinghouse.
Armature bearings	Plain	Roller	Plain	Plain	Plain
Axles	3¼-in. x 7-in.	Brill "Friction"	A.E.R.E.A. Standard E-6.	A.E.R.E.A. No. E-8	U. S. Steel Products Co.
Car signal system	Cons. Car Heating Co.	Faraday	Keystone	Faraday	Westinghouse
Compressors	Chicago Pneumatic 27-B.	General Electric CP-25	D.H. 16	Westinghouse D.H. 25	Westinghouse
Conduit	Duratube	Flexible loom	Flexible	Flexible and rigid	Aluminum
Control	General Electric K-75	General Electric K-63-G.	10 G.E. PC, 10 Wes. HLF.	Westinghouse HL	Westinghouse
Couplers			Draw bar type	Tomlinson form 10	Westinghouse automatic
Curtain fixtures		National Lock Washer Co.	Curtain Supply Co.	National Lock Washer Co.	O. M. Edwards
Curtain material		Pantasote No. 86	Pantasote	Pantasote	Pantasote
Destination signs	Keystone type S	Hunter	Hunter	Hunter	
Door mechanism	National Pneumatic	National Pneumatic	National Pneumatic	National Pneumatic	National Pneumatic
Doors	Folding	Folding	Swinging	Folding	Sliding
Fare boxes		Johnson		None	Ohmer
Finish	Enamel	Paint	Duco lacquer	Lacquer	Pyroxylin lacquer
Floor covering	Linoleum	None	Linoleum	None	Flexolith
Gears and pinions	General Electric		Helical—forged steel	Nuttal helical	Westinghouse
Glass	Plate	Plate	Non-shatterable at front and rear vestibules and front bulkhead	Plate	Plate
Hand brakes	Pittsburgh No. 35	American Car Company	Peacock staffless	Peacock	W. H. Miner
Heat insulating material			Compressed cork	Cork	
Heaters	Railway Utility Co.	Railway Utility Co.	Cons. Car Heating Co.	Canadian General Electric	Railway Utility Co
Headlights	Golden Glow type SM-95.	Golden Glow type SM-95.	Ohio Brass	Ohio Brass	General Electric J-28
Headlining	¼-in. Agasote		Agasote	Agasote	
Interior trim	Enamel—light tan to br'n	Birch	Wal. fin. alum. and cherry.	Birch	Aluminum
Journal bearings	Plain	Plain	More-Jones Hi-speed	Plain	Plain, Magnus Co.
Journal boxes	Cummings Car & Coach	Brill "Friction"	Pedestal type 4½x8 in.	Cast steel	Symington
Lamp fixtures	El. Serv. Sup. dome type.	General Electric	Model T		
Motors	General Electric No. 247.	General Electric 264-A	10 G. E., 10 Westingh'se.	Westinghouse No. 548	Westinghouse 557-E
Painting scheme (color used)	Exterior—cream and red	Chrome yellow	Tuscan red	Blue and yellow	Tangerine
Registers	Ohmer No. 3		National Cash Reg. Co.	None	
Roof type	Arch	Arch	Arch	Arch	Arch
Roof material	Wood—canvas covered	Wood—canvas covered	Wood—canvas covered	Wood—canvas covered	Aluminum
Safety car devices	General Electric	General Electric	Safety Car Devices Co.	Westinghouse	
Sash fixtures	Dayton	Adams & Westlake			
Seats		Amer. Car Co. "Waylo"	Hale & Kilburn No. 900D	Heywood-Wakefield	Hale & Kilburn No. 392A
Seat spacing	31 in.	28½ in	33 in	32½ in	32 in.
Seating material	Leather	Wood and rattan	Leather	Plush and leather	Leather
Slack adjusters	Cummings Car & Coach	Brill	Anderson	Westinghouse	Westinghouse type J
Steps	Stationary	Folding	Stationary	Folding	Stationary
Step treads	Kass	Kass	Safkar		Kass
Trolley catchers	Ohio Brass	Keystone	Ohio Brass	Ohio Brass retrievers	Third rail used
Trolley base	General Electric	U. S.-20 Form A	Ohio Brass		
Trucks	Cum. Car & Coach No. 64.	Brill 79-E-1	Cin. Car Corp. ABC-740.	National Steel Car Co.	General Steel Cast's Co.
Ventilators	Railway Utility Co.	Brill "Exhaust"	Nichols-Lintern type C.	Nichols-Lintern	Globe
Wheels, type	Rolled steel, 26 in.	Cast iron, 26 in.	Rolled steel, 28 in.	Rolled steel, 33 in.	Wrought steel, 36 in.
Wheelguards or fenders	H B type	H B type	Pilot type	Steel pilots	Pilots

Bus Deliveries Continue in Steady Volume

In spite of a continued industrial inactivity in many lines, the purchase and delivery of buses and trolley buses by electric railway properties and their subsidiaries has continued at a steady level, according to advices received from manufacturers. General Motors Truck Company reports deliveries for May as the largest in the company's history, with good prospects that the record would be continued in July and August.

Among the larger deliveries reported by this manufacturer were 127 buses for city service, Type "250," to Public Service Co-ordinated Transport; ten Type U, 21-passenger city service buses to the Reading Transit Company; fourteen Type Z-225 buses to Toronto Transportation Commission; ten Type "250," 33-passenger observation parlor buses to the People's Rapid Transit Company, Philadelphia; four Type Z, 29-passenger city service buses to Washington Railway & Electric Company; one Type Z-38, city service bus to Worcester Consolidated Street Railway; and two Type "250," 33-passenger observation buses to Fort Dodge, Des Moines & Southern Transportation Company. The popularity of the Type U, 21-passenger city type bus is attested by the fact that three were delivered to Pittsburgh Motor Coach Company; two to Sioux Transit Company, Sioux Falls, S. D.; five to Georgia Power Company; two to Virginia Public Service Company, for service in Hampton; two to Central Illinois Transportation Company, Springfield, Ill.; and three to British Columbia Electric Railway.

Mack-International Motor Truck Corporation reports deliveries of four 29-passenger city type models to Durham (N. C.) Public Service Company; three of the same type to Fonda, Johnstown & Gloversville Railroad; one to Holyoke Street Railway; two to Public Service Co-ordinated Transport, and one Model BK intercity type bus to Tacoma Bus Company.

White deliveries include eight Model 65A buses to Virginia Electric & Power Company, for service in Norfolk; nine Model 54 buses to West Penn Electric Company; four Model 54A buses to Boston, Worcester & New York Street Railway, of Framingham, Mass.; seven Model 65A buses to Northern Texas Traction Company, of Fort Worth, and three Model 54 buses to Los Angeles Railway.

Among A.C.F. deliveries were five 40-passenger metropolitan type buses to Boston Elevated Railway; three 23-passenger street car type buses to Illinois Power & Light Company; one 40-passenger metropolitan bus to San Diego Electric Railway, and one 23-passenger electric drive street car type bus to Citizens' Transit Company, Oil City, Pa.

Twin Coach Corporation reports deliveries to Boston Elevated Railway of five urban type buses; seven to Schenectady Rapid Transit Company; two 24-passenger buses to El Paso Electric Company; eight 21-passenger buses for city service to Oakland, for Key System Transit Company, and six trolley buses to the Department of Street Railways, Detroit.

One-Man Double-Deck Buses for Baltimore

Baltimore Motor Coach Company, a subsidiary of the United Railways & Electric Company of that city, is to place twelve double-deck electric-drive buses in service. The units, with seating capacity for 68 passengers, will be operated in the Charles Street service, where a grade of 9 per cent must be negotiated. The twelve gas-electric buses are to replace fourteen mechanical-drive buses at present in service.

Before securing the new buses the company made an investigation of the practicability of operating a double-deck gas-electric bus with one man. After tests with a sample equipment and analysis of operating conditions in Baltimore and other cities, it was concluded that such operation was practicable.

Pacific Electric Completes Repair Layout at Long Beach

Representing an investment of $270,000, complete new quarters for the housing, repair and supplying of power to its Long Beach division have been completed by the Pacific Electric Railway. The new facilities replace structures more centrally located, which, due to the phenomenal growth in population of Long Beach, had become too valuable for the purposes used. The new layout is designed to meet not only present but future needs.

The principal structure in the group is a carhouse, which is 77x222 ft. It is substantially constructed with steel frame, corrugated transite siding and roof, steel sash and concrete floor. There are 6,621 lineal feet of trackage and 29,420 sq.ft. of oil macadam paving to serve the various structures. Facilities within the carhouse consist of locker rooms and toilets, shop, store and line department offices and the repair shop. Four car pits are provided, as well as track capacity for the storage of fourteen cars.

In addition to the necessary repair and maintenance equipment, the bus garage, which is 65x77 ft. in size, provides store room, office, locker room and oil room. Storage capacity is also provided for 6,000 gallons of gasoline. The substation unit, which is of fireproof construction, has a capacity of 1,600 kw., supplied by two motor-generator sets, one of 600-kw. and the other of 1,000-kw. capacity. Other structures include a lineman's three-car garage, a four-car concrete wash rack of special design, and a sand house.

Ample fire protection for all units has been provided by placing fire hydrants at suitable locations throughout the buildings and yard. The entire layout was designed and constructed under the direction of the company's engineering department.

New Cars Received by Canadian Property

Three double-truck, double-end motor cars for interurban service on the Windsor, Essex & Lake Shore Railroad, a division of the Hydro-Electric Power Commission of Ontario, were delivered during July by the Ottawa Car Manufacturing Company. The cars, which will seat 50 passengers, are of all steel construction, with arch roofs. Length over all is 51 ft. 2 in., with length over the body posts of 37 ft. 10 in. Over-all width is given as 8 ft. 3 in. Four Westinghouse No. 548 motors are provided, with Westinghouse H.L. control. Weight of the completed unit is given as 63,000 lb. The order also includes a trail car of the same general dimensions.

Additional equipment specifications are listed elsewhere in this issue.

Electric Railway Material Prices—July 5, 1930

Metals—New York

Copper, electrolytic, delivered, cents per lb.	12.00
Lead, cents per lb.	5.25
Nickel, cents per lb., ingot	35.00
Zinc, cents per lb.	4.50
Tin, Straits, cents per lb.	30.25
Aluminum, 98 to 99 per cent, cents per lb.	23.30
Babbitt metal, warehouse, cents per lb.:	
Commercial grade	41.00
General service	31.00

Bituminous Coal

Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$3.90
Somerset mine run, f.o.b. mines, net ton	1.75
Pittsburgh mine run, Pittsburgh, net ton	1.40
Franklin, Ill., screenings, f.o.b. mines	1.60
Central, Ill., screenings, f.o.b. mines	1.25
Kansas screenings, Kansas City	1.85

Track Materials—Pittsburgh

Standard steel rails, gross ton	$43.00
Railroad spikes, drive ⅞ in. and larger, cents per lb.	2.80
Tie plates (flat type), cents per lb.	2.08
Angles bars, cents per lb.	2.75
Rail bolts and nuts, cents per lb.	3.90
Steel bars, cents per lb.	1.80
Ties, white oak, Chicago, 6 in. x 8 in. x 8 ft.	$1.40

Hardware—Pittsburgh

Wire nails, base per keg	$2.20
Sheet iron (24 gage), cents per lb.	2.55
Sheet iron, galvanized (24 gage), cents per lb.	3.20
Galvanized barbed wire, cents per lb.	2.85
Galvanized wire, ordinary, cents per lb.	2.80

Waste—New York

Waste, wool, cents per lb.	10.00 to 15.00
Waste, cotton (100 lb. bale), cents per lb.:	
White	9.00 to 12.00
Colored	6.00 to 10.00

Paints, Putty and Glass—New York

Linseed oil (5 bbl. lots), cents per lb.	14.2
White lead in oil (100 lb. keg), cents per lb.	13.75
Turpentine (bbl. lots); per gal.	0.54
Putty, 100 lb. tins, cents per lb.	5.725

Wire—New York

Copper wire, cents per lb.	13.75
Rubber-covered wire, No. 14, per 1,000 ft.	$5.05
Weatherproof wire base, cents per lb.	14.00

Paving Materials

Paving stone, granite, 5 in., f.o.b.: New York—Grade 1, per thousand	$150.00
Wood block paving 3½, 16 lb. treatment, N. Y., per sq.yd., f.o.b.	2.70
Paving brick 3½x8½x4, N. Y., per 1,000 in carload lots, f.o.b.	50.00
Paving brick 3x8½x4, N. Y., per 1,000 in carload lots, f.o.b.	45.00
Crushed stone, ¾-in., carload lots, N. Y., per cu.yd., delivered	3.40
Cement, Chicago, in carload lots, without bags, f.o.b.	1.95
Gravel, ¾-in., cu.yd., delivered New York	3.40
Sand, cu.yd., delivered New York	2.15

Old Metals—New York and Chicago

Heavy copper, cents per lb.	9.25
Light copper, cents per lb.	8.00
Heavy yellow brass, cents per lb.	5.50
Zinc, old scrap, cents per lb.	2.00
Lead, cents per lb. (heavy)	3.75
Steel car axles, Chicago, net ton	$15.25
Cast iron car wheels, Chicago, gross ton	13.75
Rails (short), Chicago, gross ton	14.00
Rails (relaying), Chicago, gross ton (65 lb. and heavier)	28.50
Machine turnings, Chicago, gross ton	6.50

ANOTHER Convention has come and gone. Another Coffin Award has been made. And now the name—Youngstown Municipal Railway Company—has been added to the "honor roll" of the industry.

Such honor to Youngstown is deserved! The thoroughly modern aspect of its equipment and the excellence of its service is evident even to the casual visitor in Youngstown. One does not have to be a transportation expert, neither need one read the Brief submitted for the Coffin Award to know that an outstanding piece of work is being done on the local transportation service of Youngstown.

In this Ohio community, the finest modern cars and improved

methods of operation have been used to foster better public relations. This has been so successful, that this property has recently been granted a franchise generally conceded to be one of the best in the Country.

In carrying out its program of furnishing the best possible local transportation, Youngstown has not neglected its track. Rather it has handled it so as to give the best possible quiet, smooth riding, long-lived track. Naturally Thermit rail welding has been an essential part of this program. In fact Youngstown has been a regular user of the Thermit-welding process since 1916—fourteen years a satisfied user.

A major expense becomes a minor maintenance item with

CAR wheels rank fourth in the annual purchases of the average large Electric Railway System. Approximately $1575 per million car miles is spent for car wheels.* This, of course, is the average car wheel. Furthermore, it represents only the purchase price and does not include the high maintenance item of removing, re-turning and replacing car wheels.

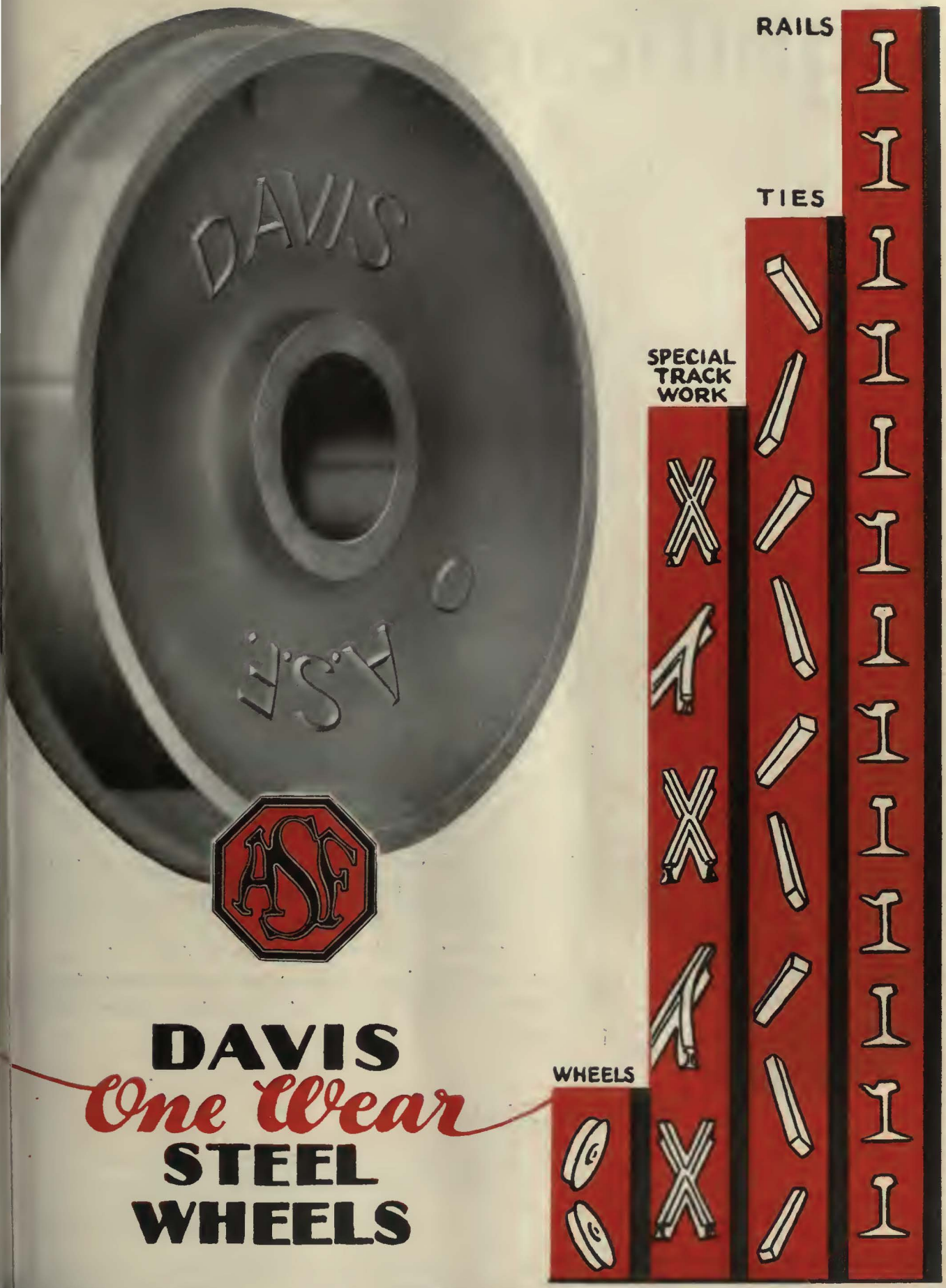
Davis "One-Wear" Steel Wheels will entirely eliminate the latter expense and at the same time materially reduce this major item of Railway operation, car wheel purchases.

One wear means one installation cost. A special composition—triple heat treated steel—provides greater mileage and longer life.

If your figures meet the average it will pay you to investigate Davis "One-Wear" Steel Wheels

*From Electric Railway Journal

AMERICAN STEEL



DAVIS
One Wear
STEEL WHEELS

FOUNDRIES NEW YORK CHICAGO ST. LOUIS

BUILT FOR HEAVY DUTY

The new Exide Motor Coach Battery is the product of 42 years' experience in building batteries for every purpose. It is constructed to function reliably, steadily and *economically* . . . and the new composition case is built to withstand mud, water, acid, hard knocks. No matter how tough the service, Exides will do their work dependably. That's why so many fleet operators standardize on Exide Motor Coach Batteries.

Exide
MOTOR COACH BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
THE WORLD'S LARGEST MANUFACTURERS OF STORAGE BATTERIES FOR EVERY PURPOSE
Exide Batteries of Canada, Limited, Toronto

BALTIMORE
Orders
CINCINNATI CARS

As part of their program of expansion and modernization

UNITED RAILWAYS & ELECTRIC COMPANY
BALTIMORE, MARYLAND
Purchased
CINCINNATI CARS

of the type illustrated above. They have proved best for Metropolitan service and mass transportation

TION····· CINCINNATI·OHIO

4 and 6 cylinder buses meet every economic need of the industry—

...increased sales prove it

Mack Model AB, now offered exclusively for city service, is the outstanding four-cylinder bus in the field today, just as it has been for the past ten years. Designed for capacity of 25 to 29 passengers.

More than 650 operators have purchased close to 3,700 AB four-cylinder buses, and 1,200 of these have each given more than 500,000 miles of profitable service.

An unprecedented volume of repeat orders is evidence that the AB means lower cost of operation and maintenance where road and load conditions are such that four-cylinder performance is adequate.

Mack

Model AB, 4-cylinder
for City Service
25 to 29 Passengers

Mack Buses are complet

Mack Model BC is the logical solution to problems confronting city and interstate operators, where routes are such that four-cylinder performance is inadequate, yet where revenue does not warrant the use of larger sixes.

The advent of Model BC, an "Intermediate Six" for city or interstate service, with power and speed to maintain difficult schedules means greater operating economy and GREATER PROFITS. Capacities for city service, 29-33 seated passengers—for interstate service, 25-29 passengers.

Mack Model BC is designed in every detail and from every standpoint of power, speed, economy and comfort to profitably fill a long-felt need in the bus industry.

Mack

Model BC, "Intermediate Six"
for City or Interstate Service
29-33 Passenger City Service
25-29 Passenger Interstate

Mack Built—Body and Chassis

Mack Model BK is the Big Six of the Mack line with a 126 hp. Mack-built engine. For mass transportation—up to 41 passengers in city service and 33 passengers with an interstate body, it is the finest bus of its type on the road today—superior in performance, unmatched for luxury, comfort and appearance. It is the result of 30 years of concentrated effort in building highway, freight and passenger-carrying commercial vehicles.

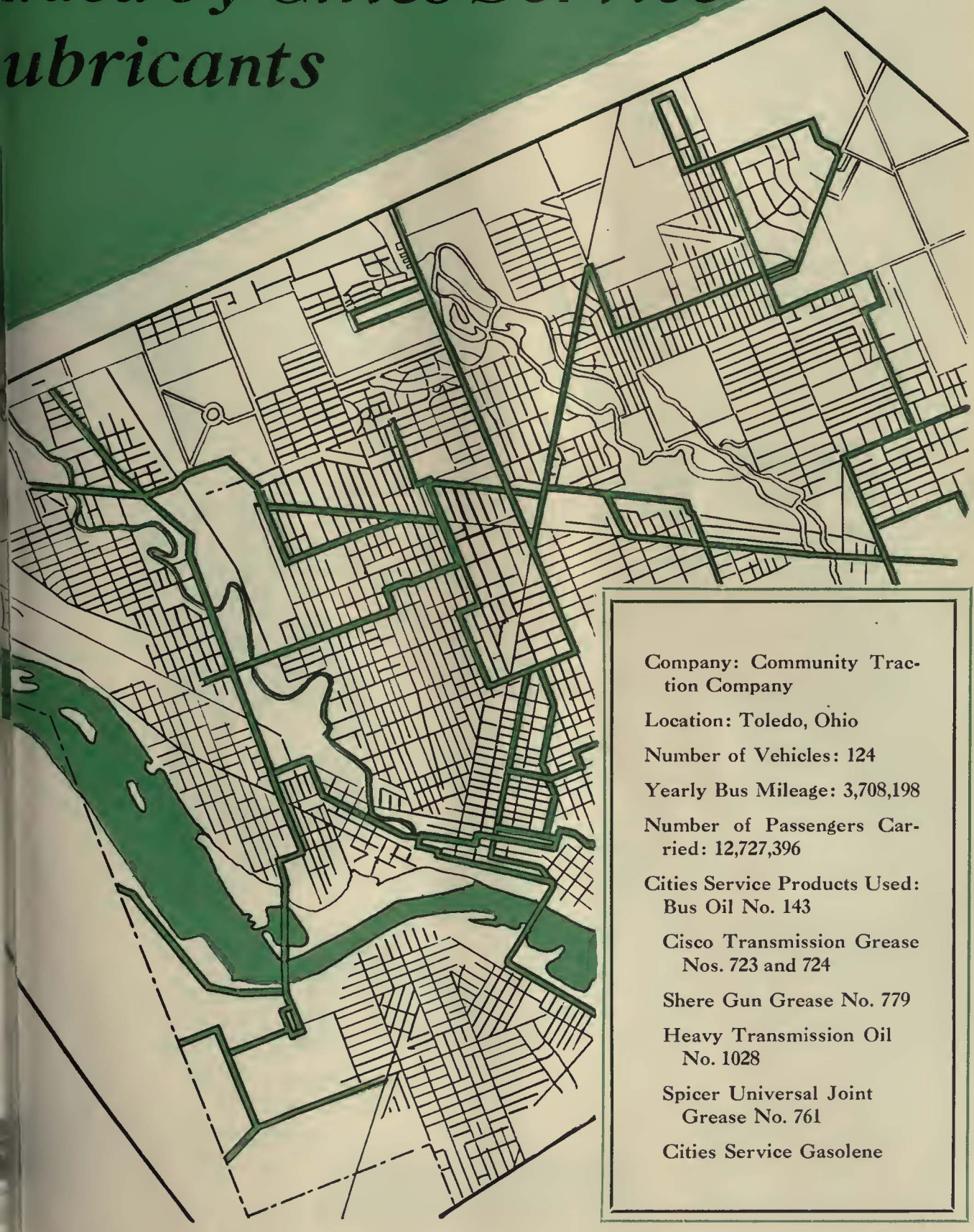
Mack Model BK heavy duty bus is especially engineered and completely Mack built—chassis and body—for the rigors of high-safe-speed service. It offers the utmost not only in passenger appeal but also in economy of operation and maintenance.

Mack

Model BK, 6-cylinder
City or Interstate Service
33 Passenger Interstate
41 Passenger City Service

Mack Buses are completely Mack Built—Body and Chassis

ers Through Toledo Traffic ided by Cities Service ubricants



Company: Community Traction Company

Location: Toledo, Ohio

Number of Vehicles: 124

Yearly Bus Mileage: 3,708,198

Number of Passengers Carried: 12,727,396

Cities Service Products Used:
Bus Oil No. 143

Cisco Transmission Grease Nos. 723 and 724

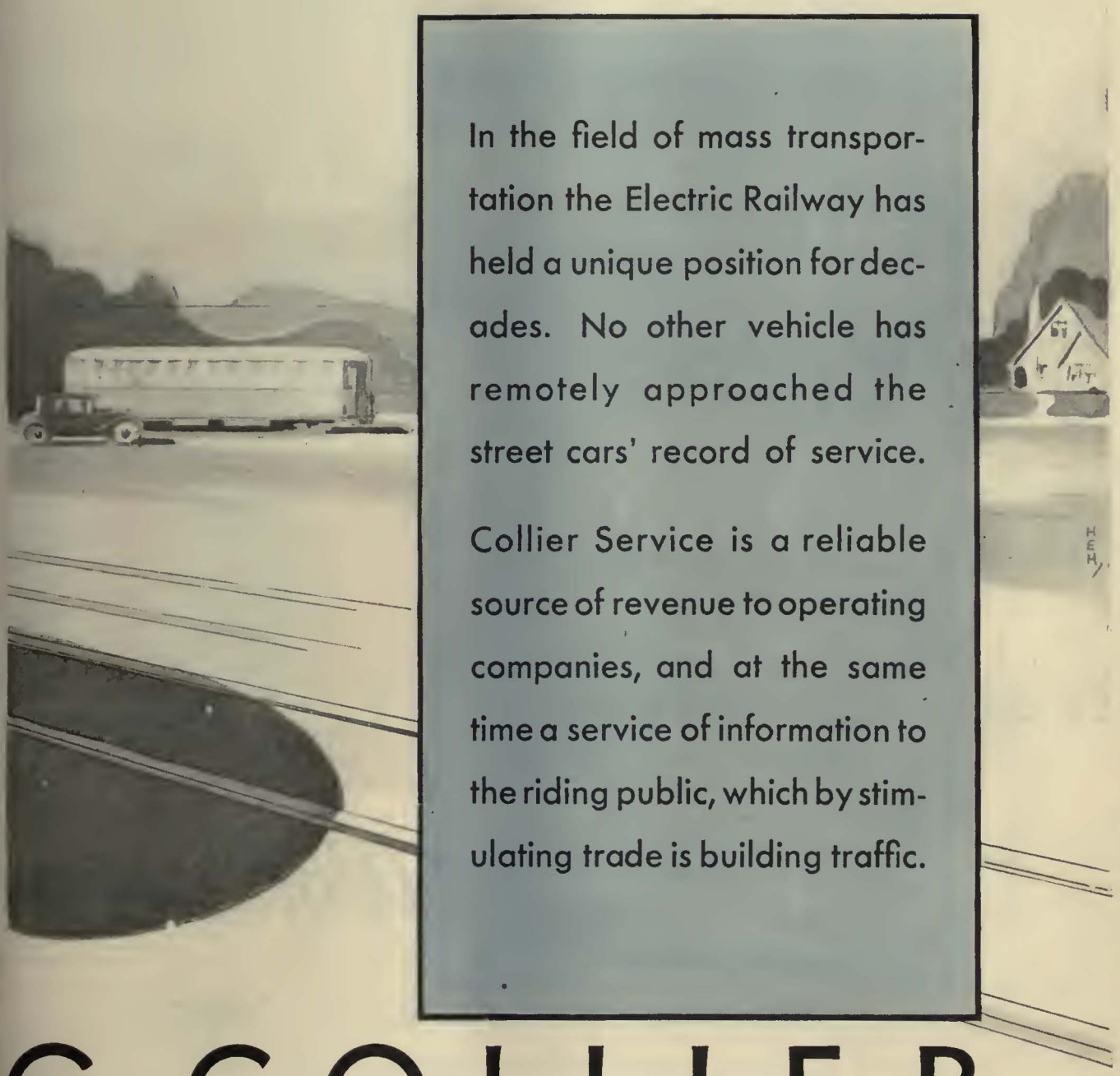
Shere Gun Grease No. 779

Heavy Transmission Oil No. 1028

Spicer Universal Joint Grease No. 761

Cities Service Gasolene

R S H I P



In the field of mass transportation the Electric Railway has held a unique position for decades. No other vehicle has remotely approached the street cars' record of service.

Collier Service is a reliable source of revenue to operating companies, and at the same time a service of information to the riding public, which by stimulating trade is building traffic.

G. COLLIER INC.

NEW YORK CITY

AXLES

DEAD silence, dependability, long life, low operating cost; proved through two decades as ideal equipment in all passenger—revenue—transportation.

AMERICAN CAR COMPANY AMERICAN CAR & FOUNDRY MOTORS COMPANY
THE CINCINNATI CAR CORPORATION ST. LOUIS CAR COMPANY
TWIN COACH CORPORATION

all these concerns build trolley-buses with Timken Front and Timken Worm Drive Axles as standard equipment.

THE TIMKEN-DETROIT AXLE CO., DETROIT, MICH.

FOR want of a nail the shoe was lost, is an old adage that particularly applies to the problem of track structure as developed in paved street practice.

With many engineers, the one problem of vibration absorption seems to hold major consideration. This, while admittedly, a most important problem, is not the whole problem by any means. The use of wood ties, therefore, while correcting to a degree one problem, has created contingent problems that largely cancel its major advantage.

With other engineers, the merit of a strong, unified structure of reinforced concrete presents an inviting picture. But while theoretically plausible, such structures automatically negate their initial strength, when they ignore the principle that vibration must be absorbed if the strength of the structure is to be maintained.

A growing number of engineers, however, are not satisfied to go half way. They realize that a track structure must meet every problem, major and minor, if any one difficulty is to be adequately solved and that no one problem can be isolated from contingent problems, without inviting a most undesirable result. To no other reason can be accredited the tremendous swing to Dayton Ties—*the only tie on the market that goes all the way—the only tie on the market that provides an answer to every problem.*

That is why Dayton Ties give longest years of life—lowest cost per mile per year and lowest first cost of construction. You engineers who have gone part of the way with wood ties, who know the importance of absorbing rail vibration. You engineers who have gone part way with other steel ties and feel the need for a steel reinforced structure, *why not go all the way with Dayton Ties* and get the advantages of both wood or steel ties without a single solitary compromise to what you consider essential. There is a nearby property where you may see for yourself what it means to go all the way. Let us tell you where it is.

The Dayton Mechanical Tie Co.
Dayton, Ohio

These are pictures of Dayton Ties after many years of service. They illustrate the rule, not the exception. Smooth—virtually maintenance free—enduring.

THE DAYTON INTEGRAL SYSTEM OF TRACK AND PAVING STRUCTURE

Costs are going Down

ELECTRIC Railway operating costs have been permanently lowered. An entirely new lubrication system has been developed and is being put into effect on many of the country's leading roads. A number of the most progressive railway companies have completely revolutionized their former lubrication practices. Very substantial savings have been effected.

■ The new system of car lubrication and new electric railway lubricant, differing in every physical quality from the lubricants in use for many years past, are offered to the industry by The Texas Company. Tests on your own lines will gladly be arranged.

■ There is no uncertainty. Unmistakable proof of the lower power costs, lower labor costs, reduced maintenance costs, remarkable reduction in waste consumption and entirely new freedom from bearing troubles is a matter of record—not on any one road alone, but on every electric railway system where the new lubrication has been adopted.

■ The Texaco System of Lubrication and Texaco Lovis Oil are rapidly displacing all other methods and all other lubricants.

Write the Texas Company for facts and figures.

TEXACO LUBRICANTS

THE TEXAS COMPANY
135 East 42nd Street, New York City

301,600 Trips in 1929

OR ALMOST

4 Million Bus Miles

TO SERVE THIS GREAT CITY AND ITS SUBURBS

The City Transit Company, serving the city of Cincinnati and its suburbs, made 301,600 trips during 1929 with loss of but 10 trips due to tire delays. True Silvertown performance!

Photo by Fairchild Aerial Surveys

MR. C. S. WARNER, President, City Transit Company, Norwood, Ohio, makes known the facts about Goodrich Tires, used 100% on their extensive bus operations.

"The City Transit Company's operation renders a comprehensive bus service in the City of Cincinnati and its suburbs. Naturally, tires and tire service are of major importance because our schedules are frequent.

"This year we have developed a remarkable record. From January 1, 1929, to December 1, 1929, out of a total of 3,784,007 miles covered, we have lost but ten trips due to tire trouble. And any delay means the loss of at least ½ trip.

"We are glad to make known these facts for we believe that such a record would have been impossible if real quality and high mileage had not been built into Goodrich Tires."

The B. F. Goodrich Rubber Company, Established 1870, Akron, Ohio. Pacific Goodrich Rubber Co., Los Angeles, Calif. In Canada: Canadian Goodrich Co., Kitchener, Ontario.

7 Superior Specifications
Built into Every Heavy Duty Silvertown

1. Heavily insulated stretch-matched cords.
2. Additional adhesion — from greater insulation between outside plies.
3. Heavy twin beads for better rim seating.
4. Extra gum fillers between plies for longer tire life.
5. Heat-resisting, interlocking cord breakers.
6. Tread designed correctly for heavy duty service.
7. The whole tire toughened by the famous Goodrich "water cure."

Goodrich HEAVY DUTY Silvertowns

• SPECIFY GOODRICH ON YOUR NEW BUSES •

THE LARGEST BUS OPERATORS *SUCH AS*–

PUBLIC SERVICE COORDINATED TRANSPORT

FIFTH AVENUE COACH

PHILADELPHIA RAPID TRANSIT

CHICAGO MOTOR COACH

N.E.T. NEW ENGLAND TRANSPORTATION

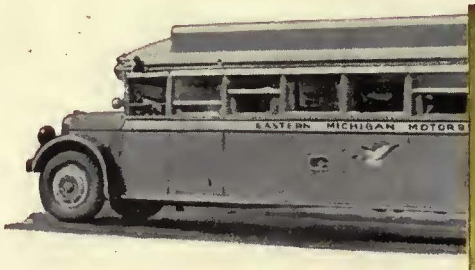
GREYHOUND Lines THE GREYHOUND LINES

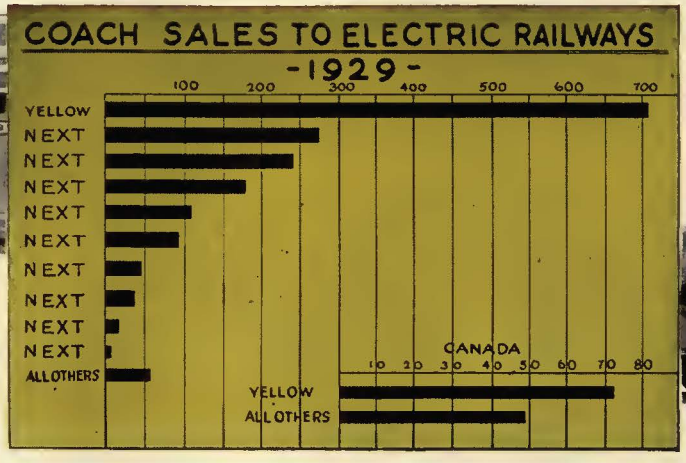
AND MANY OTHERS—

ALL AGREE ON YELLOW

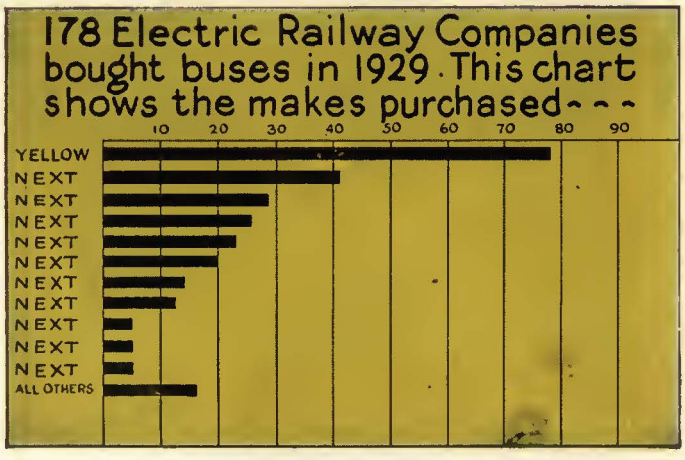
with the

ELECTRIC RAILWAY OPERATOR





Not only are far more Yellow Coaches bought by Electric Railway Operators than any other make *but*—

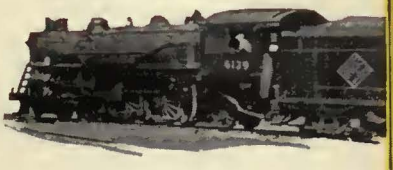


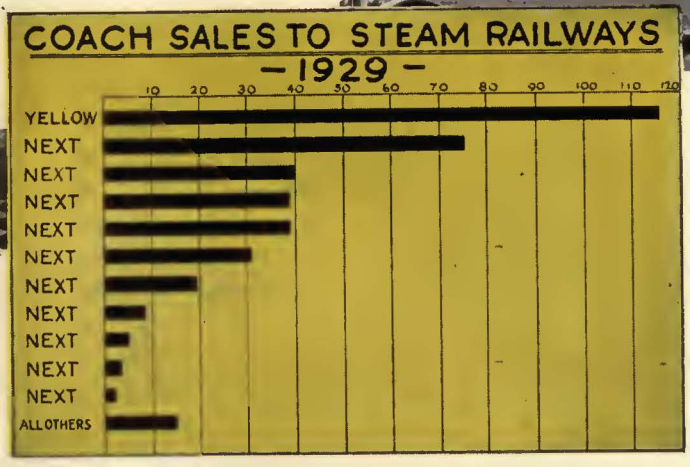
far more Electric Railway Operators buy Yellow Coaches

than any other make . .

and with the

TEAM RAILROAD OPERATORS





far more

Yellow Coaches

are bought by Steam Railways

than any other make.

YELLOW

LEADS BY A WIDE MARGIN

back of YELLOW EQUIPMENT

BILLIONS OF MILES OF OPERATING  EXPERIENCE

UNEXCELLED MANUFACTURING FACILITIES 

UNEQUALLED ENGINEERING RESEARCH AND TEST FACILITIES 

FAITH IN THE FUTURE OF  HIGHWAY TRANSPORTATION

GENERAL MOTORS TRUCK CO., PONTIAC, MICH.

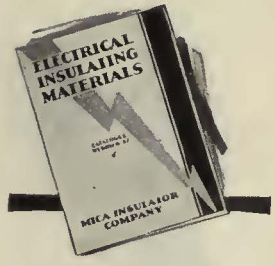
Subsidiary of Yellow Truck & Coach Manufacturing Company

Wrap it with Empire

Seamless Bias Tape... *save time and money*

You will find this new varnished cloth ideal for wrapping cable joints, for winding coils, and similar insulating jobs. It comes in long continuous lengths without sewn joints. Best of all, it costs no more than sewn bias cloth and has greater dielectric and mechanical strength.

Waste in time and insulation, that was formerly unavoidable when cutting out sewn seams was the practice, has been banished. This improved insulation is carried in stock in tape form or in rolls 36″ wide, finished black or yellow. Send for a sample.



Complete information is given in Catalog 87. Write for a copy.

MICA INSULATOR COMPANY

New York: 200 Varick St. Chicago: 542 So. Dearborn St.

Works: Schenectady, N. Y. London, England

Cleveland Pittsburgh Cincinnati Birmingham Seattle

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PERFECT MICANITE INSULATOR REG. U.S. PAT. OFF.

Electrical INSULATION

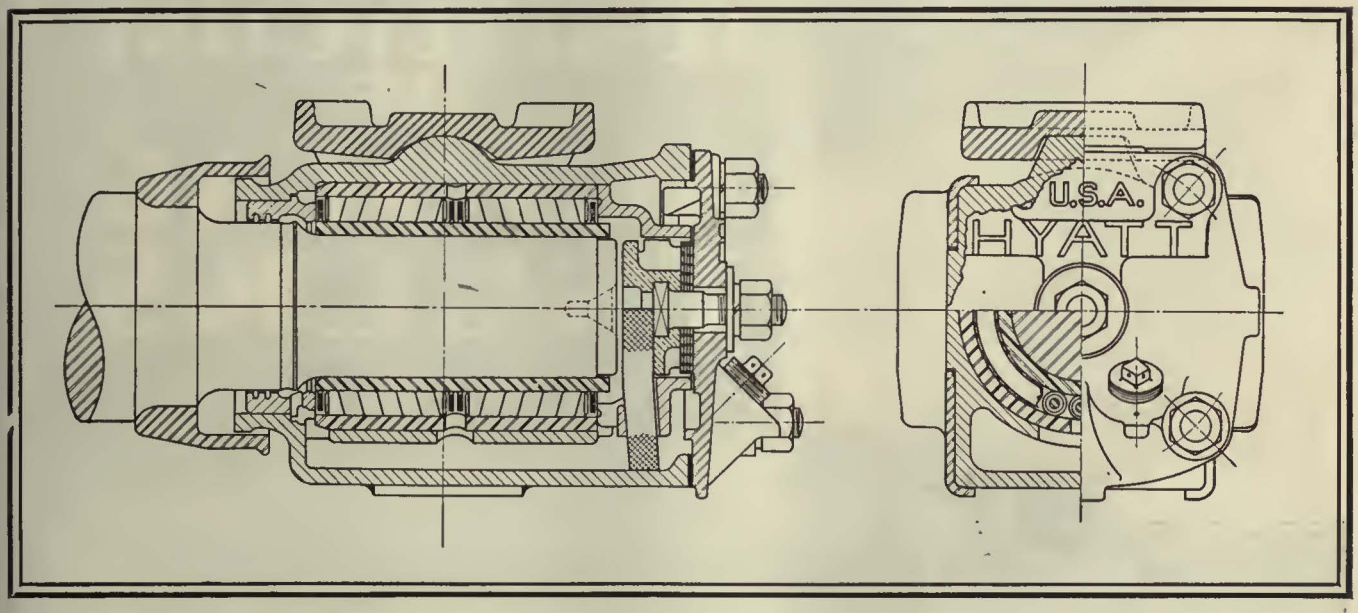
PERFECT EMPIRE INSULATOR REG. U.S. PAT. OFF

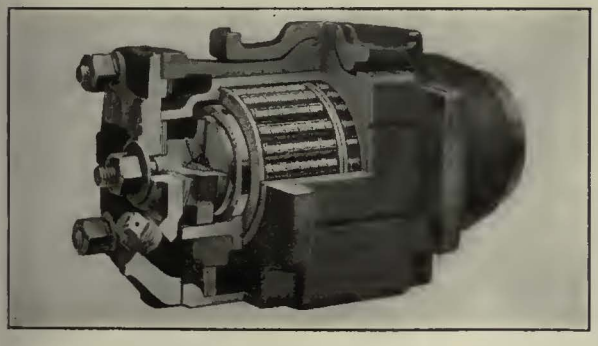
MICA INSULATION OILED CLOTH INSULATION

. . . of interest to Operating Department Executives

The profitable short-haul passenger is more easily attracted by modern Hyatt equipped cars which he knows are more comfortable and conveniently on schedule.

The regular passenger appreciates improvements in service which indicate a thoughtfulness for his comfort and a sincere desire to retain his good will.





Hyatt Roller Bearing Journal Box, designed to reduce maintenance cost and to increase the riding comfort of passengers.

Hyatt Roller Bearings are quiet; they enable even heavily loaded cars to start easily and accelerate smoothly. They help maintain running schedules. Consider them in your modernization program in the interest of operating efficiency and for their profitable effect on passenger revenue.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

WHEELS

FORGED AXLES

Extreme care is exercised in the manufacture of Bethlehem Axles. Special heat treatment gives them ductility and a high elastic limit. They give excellent service under severe torsional stresses.

FOR THE MODERN STREET RAILWAY

If an electric railway system is to be efficient, the cars must be equipped with good wheels. Wheels that are dependable help to insure profitable operation. Wheels that fail, causing frequent tie-ups, seriously reduce the efficiency of the entire system.

Bethlehem Wrought Steel Wheels meet every requirement of the modern street railway. They are made of high-quality steel. They are rigidly inspected at every step throughout the process of manufacture. They are made with the most exacting care. Five forging and rolling operations are required to produce these wheels. Strength, endurance and wearing qualities are worked into them in the making.

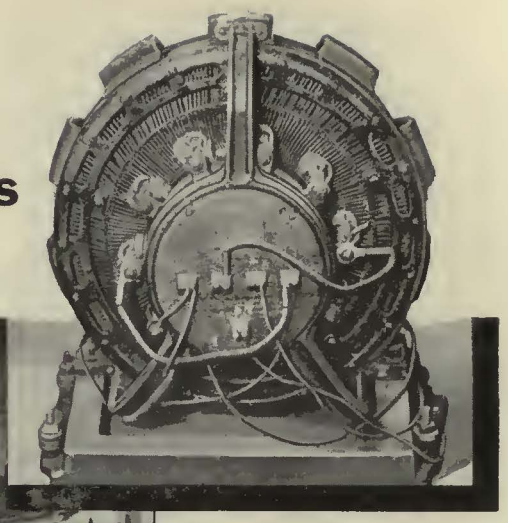
If you investigate Bethlehem Wrought Steel Wheels you will discover these qualities. You will learn how many executives have increased the efficiency of electric railway systems by equipping their cars with Bethlehem Wrought Steel Wheels. Your inquiry will receive prompt attention.

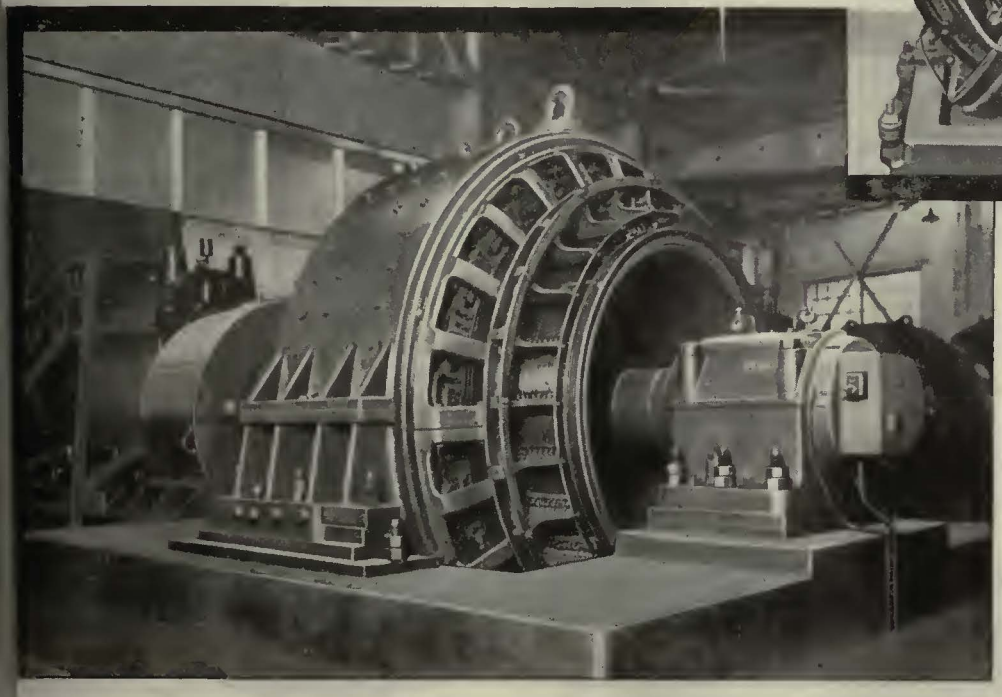
ETHLEHEM STEEL COMPANY
General Offices: Bethlehem, Pa.
strict Offices: New York, Boston, Philadelphia, ltimore, Washington, Atlanta, Pittsburgh, ffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis.
cific Coast Distributor: Pacific Coast Steel rporation, San Francisco, Los Angeles, Portland, Seattle, Honolulu.
port Distributor: Bethlehem Steel Export Corporation, 25 Broadway, New York City

BETHLEHEM

Wrought Steel Wheels

stepping up industrial loads





A 3 K. W., 250-volt Waddell-Entz generator built many years ago.

■

Direct-current reversing steel-mill motor, 7000 H. P., 700-volt, 50 to 120 R. P. M. used to drive a 40-inch blooming mill.

LIGHT UP the candle of industry," wrote Benjamin anklin. Little did he dream that some of his ientific discoveries would play such an important rt in industry's progress.

Even a hundred years after Franklin, electricity - as far as industry is concerned — was still in the oneer stage. The heavy loads of today were un- own when the 3 K. W., 250-volt Waddell-Entz nerator was built. Steel mills and other industrial ds were driven by steam and water.

Now electrical power carries the heavy loads of ilustry. "Cut out waste," is the cry. "Reduce main- nance costs to a minimum." With this warning - out goes inefficient machinery. In comes Gargan- n equipment like the 7000 H. P. direct-current ersing steel-mill motor, used to drive a 40-inch oming mill. Uninterrupted production is assured.

National Pyramid Brushes played a vital part in nging about this revolutionary progress. The st carbon brush solved a perplexing problem of mmutation and, like the Waddell-Entz generator, de a place for itself in the industrial world. But it was not patterned for modern industry. Like the ly electrical designs it had to undergo great nges to meet the demands of heavier loads, higher speeds, stricter standards of commutation, lower maintenance cost and dependability.

Many of these changes were made possible through scientific research carried on in the thoroughly equipped Research Laboratories of National Carbon Co., Inc. Constant research and steady progress in manufacturing methods have established the position of leadership which National Pyramid Brushes have held from the start.

Systematic inspection and maintenance of brushes, commutator and brush holders insure longer brush life, more satisfactory performance and greater machine efficiency.

To avoid expensive shut-downs, anticipate your requirements for replacement brushes.

NATIONAL CARBON COMPANY, INC.

Unit of Union Carbide UCC *and Carbon Corporation*

Carbon Sales Division — SILVER STRAND CABLE TRADE MARK REGISTERED — Cleveland, Ohio

Branch Offices and Factories

New York Pittsburgh Chicago Birmingham San Francisco

The Pickwick Duplex Observation Coach

53

PASSENGER CAPACITY

The additional passengers are clear profit. Duplex costs no more to operate than an ordinary coach. It depreciates more slowly and costs less to maintain. It represents a potential profit increase of over 300%.

. . . will increase your business and your profit as nothing else can!

WHETHER you want to increase your traffic or increase the profit from the traffic you already have, the most effective single thing you can do is to put the new Pickwick Duplex on your schedules.

Duplex increases your profit. First, because it carries more passengers. The additional fares are clear profit. Duplex costs no more to operate than an ordinary coach. It is easier to service, more economical to maintain. Built by motor coach operators, its features are the result of years of operating experience. It depreciates more slowly. Taking all these factors into consideration, it represents a potential increase in profit of 300% over ordinary equipment.

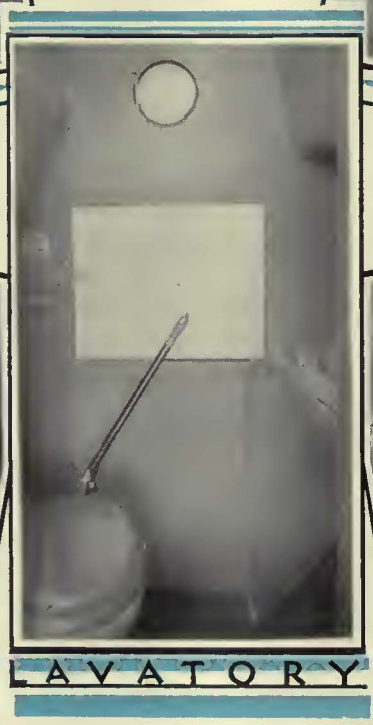
Duplex will increase your business. Its added comfort, its convenience, its greater safety will bring you new patrons. It is the greatest advertisement you can purchase.

Some of the greatest motor coach operators in the country are now examining their schedules thoroughly, revising them to include Duplex. They are placing orders accordingly. It will pay you to do the same.

THRU THE REAR WHEELS

COMPARTMENT

REMOVABLE MOTOR



LAVATORY

INTERIO

A FEW DUPLEX FEATURES

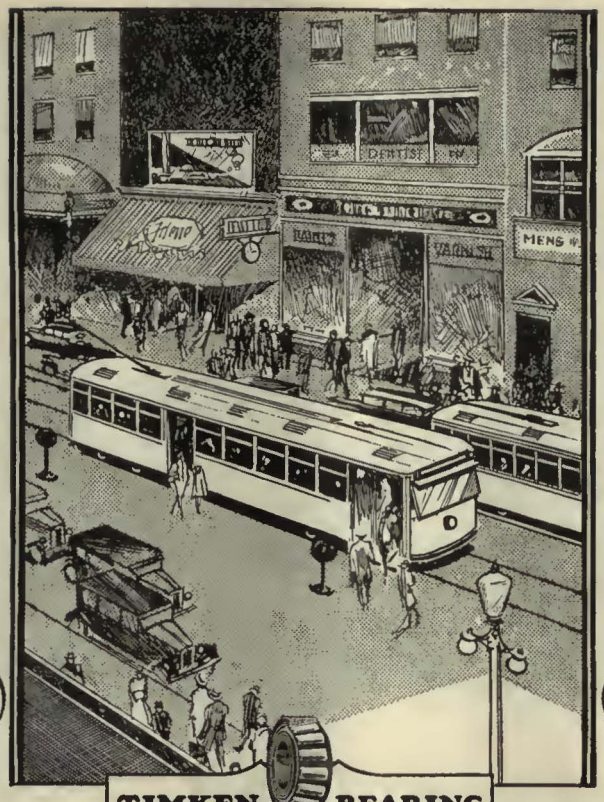
Removable Power Plant

The Pickwick removable power plant . . . replaceable in its entirety in 15 minutes . . . is one of the greatest advances in operating practice in the history of motor coach transportation.

Fifty-three passenger capacity . . . no increase in size or weight . . . Duralumin and steel construction . . . integral chassis . . . staggered compartments . . . lavatory aboard . . . buffet optional . . . special Pickwick seats . . . portable compartment tables . . . special heating, lighting, ventilating . . . the most comfortable and safest coach on the road . . . built by operators, for operators . . . removable power plant . . . exceptionally high accessibility in both body and chassis . . . low maintenance cost . . . slow depreciation . . . low initial cost. If you have not yet sent for complete specifications and information, send for them now.

PICKWICK MOTOR COACH WORKS, LTD.

(Builders of Pickwick Nite-Coach) INGLEWOOD (Los Angeles) ● CALIFORNIA



Put Your Cars on Timkens— Then Tell the Public

JUST as great transcontinental railroad systems have found in "Timken Bearing Equipped" a sure way to increase passenger patronage, so progressive street railway companies are securing similar desirable results by the same method.

Put your existing and new car equipment on Timken Bearings, then tell the public within your operating area all about it.

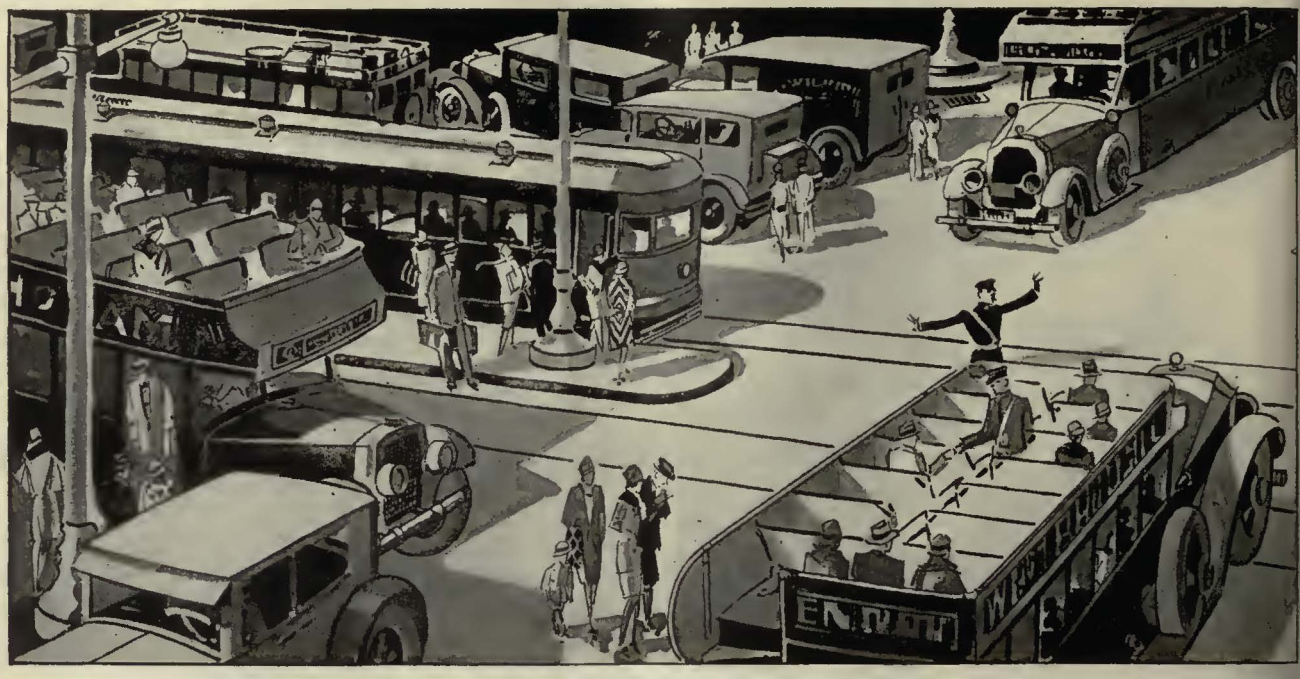
Tell them what this progressive step means in faster, more convenient travel, and prove it with revised running schedules.

Point out the greater riding comfort that comes from the glass-like smoothness of running and the freedom from jerks and jars in starting and stopping as a result of the frictionless performance of your modern Timken Bearing Equipped cars.

The public will respond to your enterprise and leadership as they never fail to respond when shown such consideration for their welfare.

And as your car-hour loads increase, watch your car-mile costs decrease... for Timken Bearings will substantially reduce power consumption, save lubricant, and slash maintenance expense to the bone through a combination that not only eliminates friction, but carries all loads—radial, thrust or both together, at the same time... the exclusive combination of Timken tapered construction, Timken positively aligned rolls and Timken-made steel. The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN
Tapered
ROLLER BEARINGS



ROEBLING

Electrical Wires & Cables

Uninterrupted and economical transportation service depends upon continuous and efficient operation. These results are assured through the use of Roebling Electrical Wire Products of proven quality, among which are—

- Rubber Insulated Wires and Cables
- Paper Insulated Wires and Cables
- Railway Signal Wires and Cables
- Varnished Cambric Insulated Wires and Cables
- Magnet Wire—Silk or Cotton Insulated
- Armature and Enameled Field Coils
- Solenoids for Control Apparatus
- Automotive Wires and Cables
- Welding Cable, Trailing and Electrode Holder
- Welding Wire

John A. Roebling's Sons Company

Trenton *New Jersey*

Makers of Wire Rope, Wire and Electrical Wires and Cables

Make your Feeder Line reliable and it can bring you added profits . . . .

Use Alcoa All-Aluminum Feeder Cable and A.C.S.R. transmission line conductor, and join the many street railway companies who are giving electric service to small communities along their lines. Using both these cables, insures the lowest possible cost—brings you the one paramount feature necessary—*reliability*. With them you reduce "out of service periods" to a minimum.

Alcoa All-Aluminum Feeder Cable combines all the necessary strength with extremely light weight and high corrosion resistance. All-Aluminum Feeders stay up. The one shown here was erected in 1909. It has given 21 years of sterling service. Alcoa All-Aluminum Cables not only stay up, they are far cheaper to put up. Unit for unit this cable is cheaper to use and erect, because for the same electrical conductance the required weight of aluminum is only half that of any other metal commonly used. A.C.S.R. combines these advantages with the reliability of a high grade steel core.

Let us send you particulars both about All-Aluminum Cables and A.C.S.R.—Aluminum Cable Steel Reinforced. ALUMINUM COMPANY *of* AMERICA; 2463 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALCOA ALUMINUM

ALL-ALUMINUM CABLE FOR FEEDER LINES

Philadelphia Rapid Transit banked the money that these Bus Bars saved them . . . . .

You too, buy bus bars by weight. You too, can save money by buying Alcoa Aluminum Bus Bars—the bars that are over 50% lighter than busses made of any other metal commonly used.

Rigid—pounds lighter per running foot—yet providing the same current carrying capacity, the use of Alcoa Aluminum Bus Bars, unit for unit, calls for lighter or fewer supporting structures. Alcoa Aluminum busses can be furnished in straight lengths up to 90 feet. These lengths bring economy in erection.

Other advantages of Alcoa Aluminum Bus Bars lie in the fact that the work of bending and assembling is accomplished with ease. The bars also have a lower operating temperature than other busses for the same current capacity.

Tables of weights, carrying capacities and other technical data are contained in the booklet, "Aluminum Bus Bars". May we send you a copy?

ALUMINUM COMPANY *of* AMERICA; 2463 Oliver Building, PITTSBURGH, PENNSYLVANIA.

BUS BARS MADE OF

ALCOA ALUMINUM

Union Metal Helps Build the City Beautiful

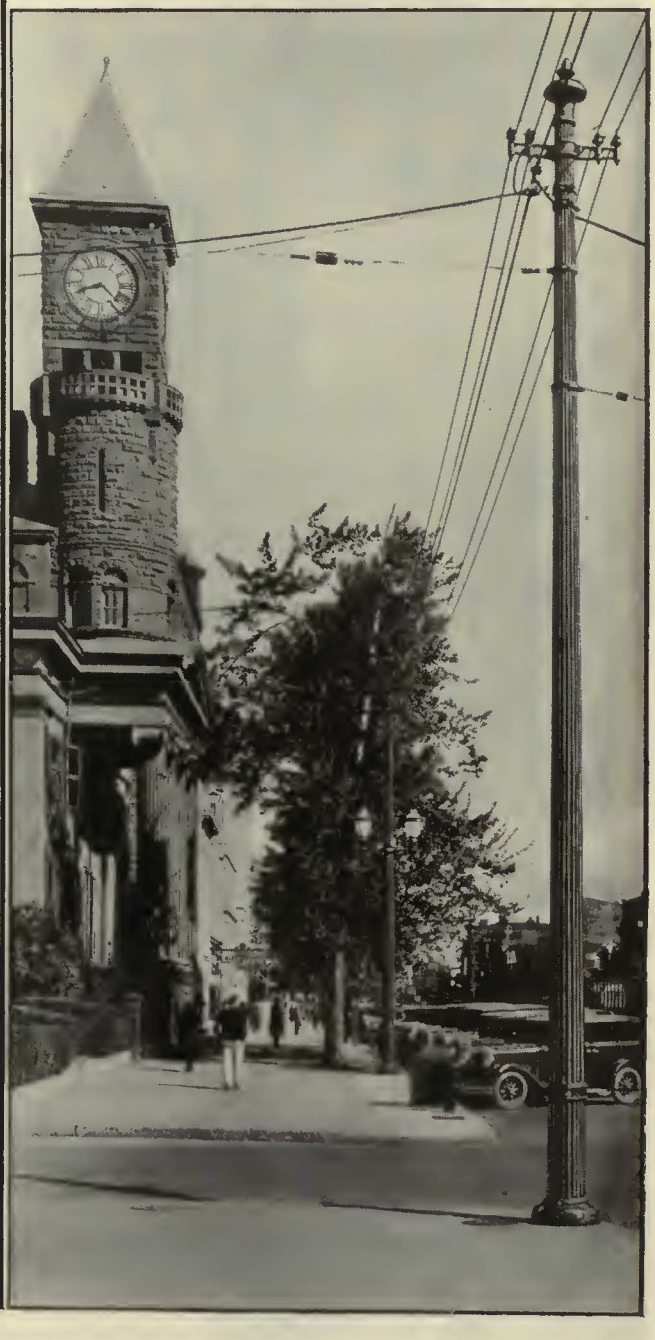
WITH the development of the fluted steel pole, Union Metal made a distinct contribution to the City Beautiful movement. Tall and stately, these fluted poles stand along the curb-line in perfect alignment . . . adding to the beauty of the thoroughfare. They represent the most modern method of carrying overhead wires through city streets. Naturally, their acceptance was immediate.

So strong are these poles that they easily support trolley span wires, feeder lines, distribution wires and street lighting equipment . . . thereby eliminating the necessity for several sets of poles and providing real pole economy for the utilities.

Because Union Metal Heavy Duty Poles are attractive they build good will for their owners wherever they are installed.

We would like to tell you of the many interesting applications and installations of Union Metal Poles. Write the nearest representative for information.

Heavily loaded Union Metal Poles, 30 and 32 feet in height, serve Middletown, Conn.



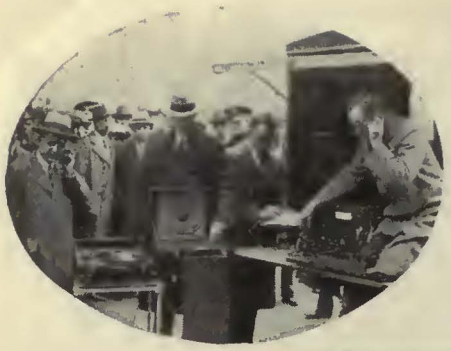
THE UNION METAL MANUFACTURING COMPANY
GENERAL OFFICES AND FACTORY ✦ CANTON, OHIO
SALES OFFICES: New York, Chicago, Cleveland, Boston, Los Angeles, San Francisco, Seattle, Dallas, Atlanta

DISTRIBUTORS
General Electric Merchandise Distributors Graybar Electric Company, Inc.
Offices in all principal cities

Distributed by Graybar

UNION METAL DISTRIBUTION POLES

GE Merchandise Distributor



Today scientific methods are being applied to the problem of eliminating excessive noise. Here you see technical observers in the streets of New York recording noise levels for a public commission that is striving to abate this nuisance.

The PUBLIC is taking NOISE seriously

This simple test shows how NOISE can be absorbed on your Buses, with J-M Insulation

COOLER IN SUMMER

J-M Insulation will make your buses much more comfortable to ride in, in the summer-time. The uncomfortable effects of heat radiation through the roof are eliminated by this material.

COMFORT for your passengers means increased patronage for your line. Quiet operation is an important contribution to riding comfort. Excessive noise must be eliminated. J-M Insulation can help you. Applied to the bus body it reduces motor and road noises before they reach the ears of your passengers.

Its effectiveness can be demonstrated by a simple test as shown above. A sheet of metal (such as used in bus body construction) struck with a hammer makes a clanging, ear-splitting noise. The same sheet of metal with a strip of J-M Insulation glued to it, hit in the same way, merely makes a dull thud. That is an indication of what J-M Insulation can do for you.

J-M Insulation is a low-cost answer to the noise problem. And in addition it will increase riding comfort in the summer-time by keeping the inside of the bus cool.

One of the largest bus companies in the East has specified J-M Insulation in over 150 new buses. The "hammer" test mentioned above as well as tests under actual operating conditions convinced this company of the big difference J-M Insulation can make in passenger comfort. Why not let us make these tests for you?

Address JOHNS-MANVILLE
At nearest office listed below
New York Chicago Cleveland
San Francisco New Orleans Montreal
(*Offices in all large cities*)
Please let me have complete information on the use of J-M Insulation in Motor Buses.

Name.....
TS-115-7
Address.....

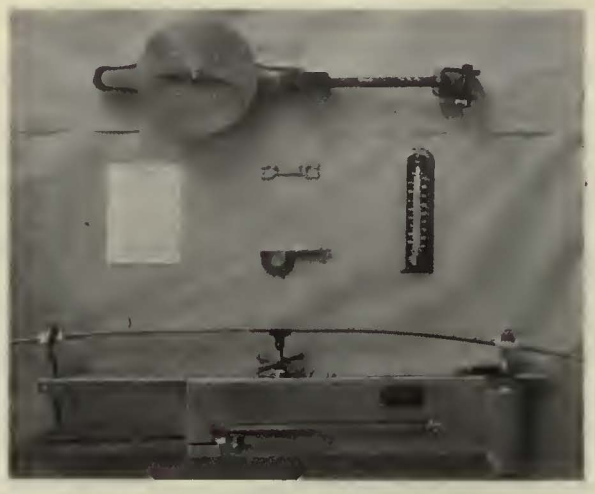
JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

SERVICE TO TRANSPORTATION

Tile Flooring, Transite, Packings, Asbestos Shingles, Fibre Conduit, Masticoke & Truss-Plate Flooring, Asbestos Exhaust Pipe Covering, Bus & Car Insulation, Brake Blocks and Linings, Built-up and Ready-to-lay Roofing, Electrical Insulating Materials, Refractory & Insulating Cements, Friction Tape.

Cleveland Dynamometer Tests Show Phono-Electric Wire Superior in Elastic Limits, Breaking Strength, and Wear



Types of dynamometers and wire measuring devices used by the Line Division of The Cleveland Railway Company.

All trolley wire on the Cleveland Railway is strung with the use of a dynamometer. Under climatic conditions in that city it has been found very satisfactory to use this method, and the appearance of the overhead indicates that the tensions obtained are very uniform.

One important point to observe in stringing wire is to have a tension sufficient to provide a good running surface for the trolley wheel, and yet not to exceed the elastic limit of the wire even in the most severe weather likely to be encountered in winter. A table has been worked out for copper and for Phono-Electric wire, calculated for 85 deg. from 30 deg. F. to 90 deg. and for 10, 20 and 100 deg., giving the calculated tension to which the trolley wire must be drawn when it is erected. Here the elastic limit of Phono-Electric is higher than copper. High-strength Phono-Electric wire, it will be noted, has a much greater breaking strength and may be allowed to remain in the line until it reaches a considerably smaller diameter than the copper wire, as shown in the second table.

Table II—Relation Between Breaking Strength and Wear for No. 00 Wire, Phono-electric and Copper

Diag.	Vertical diameter of worn wire, mils	Area, sq.in.	Copper		Phono-Electric	
			Breaking strength, lb.	Condition	Breaking strength, lb.	Condition
	364.8	0.1046	5,520	New	8,200	New
	300	0.08108	4,280	Good	6,360	Above new copper
	275	0.07214	3,810	Fair	5,650	Still above new copper
	250	0.0633	3,340	Dangerous	4,960	Above good for copper
	200			Renew wire		
	200	0.0466	2,460	Down	3,650	Dangerous
	150	0.0311	1,640	Down	2,435	Must come down

Table I—Trolley Wire Tension to Be Obtained by Use of Dynamometer

Temperature Deg. F.	No. 00 Gage Copper	No. 00 Gage Phono-electric	No. 0000 Gage Copper
10	2,500	2,950	3,900
20	2,350	2,750	3,650
30	2,200	2,550	3,425
35	2,100	2,450	3,325
40	2,000	2,350	3,200
45	1,925	2,250	3,100
50	1,900	2,150	3,000
55	1,825	2,050	2,900
60	1,700	1,950	2,750
65	1,625	1,850	2,550
70	1,550	1,750	2,400
75	1,475	1,700	2,275
80	1,400	1,600	2,100
85	1,325	1,500	2,000
90	1,250	1,400	1,900
100	1,100	1,200	1,825

WINNERS

"for excellence in editorial work"

WE ARE PLEASED TO ANNOUNCE THAT

Morris Buck

and

George J. MacMurray

of *Electric Railway Journal's* Editorial Staff have been awarded the A.B.P. ("Associated Business Papers, Inc.") prizes for 1929, as follows:

2nd Prize to Mr. MacMurray in the contest for

"BEST EDITORIAL, judged by importance of subject, clearness of style, sound reasoning and power to influence."

Awarded for "Editorial in February 16, 1929, issue of *Electric Railway Journal,* entitled 'The Subsidy as a New Shibboleth.' "

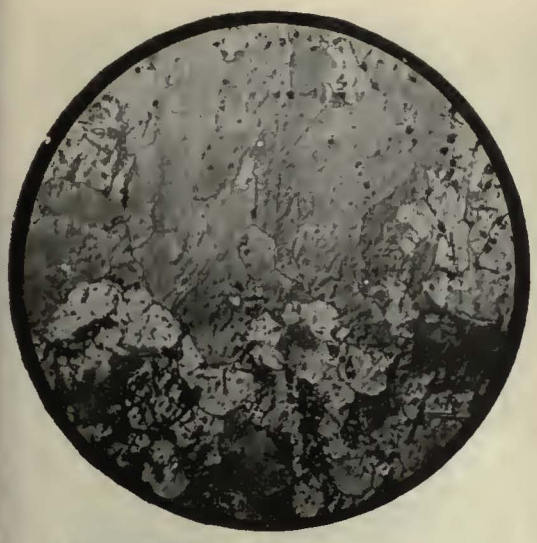
2nd Prize to Mr. Buck in the contest for

"BEST ARTICLE, SERIES OF ARTICLES OR NEWS REPORT, judged broadly on the basis of timeliness, accuracy, thoroughness, originality, clearness of expression and usefulness."

Awarded for "Series of articles published in *Electric Railway Journal* during the year 1929, entitled 'Result of Industry-Wide Survey of Electric Railways.' "

This is the first time in the history of the Associated Business Papers Awards that any one publication has won two awards in a single year. And in 1927, *Electric Railway Journal* won the first award for having rendered the most outstanding editorial service to its industry, making three awards in all won by *Electric Railway Journal* for editorial excellence during the past three years.

ELECTRIC RAILWAY JOURNAL



Photomicrograph of a TIMANG weld deposited on 14% manganese steel casting—illustrating the density, penetration and homogenous structure of TIMANG Welding Rod.

A REVELATION *in* WELDING MANGANESE STEEL . . . .

TIMANG

MANGANESE STEEL WELDING ROD (Uncoated)

When this crossing on a main line failed it was quickly welded with TIMANG and kept in service on this line for four months, and then removed to another piece of track.

Here is the same crossing, welded with TIMANG, after being in service four months. The crossing is still in service, in excellent condition.

THE photomicrograph illustrated, stamps out the age-old theory that manganese track work can not be satisfactorily welded.

Compare the structure of the TIMANG weld with that of the parent metal.

Both have practically the same manganese content—Brinell Hardness—and general service requirements.

The TIMANG Manganese Rod was developed in the TISCO laboratories—and for two years has been tested, and proven, by many leading roads, for all manganese welding requirements.

Patent No. 1,732,202

TAYLOR-WHARTON IRON AND STEEL CO.

HIGH BRIDGE, NEW JERSEY

SALES OFFICES: Pittsburgh Chicago Houston Montreal New York
Philadelphia Boston San Francisco Scranton Tampa Los Angeles

The TEST *of time*

has *proved* Socony Industrial Lubricants

MANY an industrial lubricant stands up under a ninety-day test only to appear on the cost sheet as an unnecessarily expensive item at the end of the year.

Only the test of time can prove the real value of industrial lubricants—time not measured in days or weeks but through the complete cycle, with its varying temperature conditions, of the four seasons of a year.

Socony industrial lubricants have repeatedly demonstrated their quality over year-long periods, have proved their efficiency and economy of recovery.

Before selecting the industrial lubricant for your operation, play safe, consult a Socony engineer. He will show you records of results, not over days but over years.

SOCONY

INDUSTRIAL LUBRICANTS

STANDARD OIL COMPANY OF NEW YORK

The I.R.T. and the B.M.T
carrying 70% of New York's Traffic
Selected Socony Lubricants

NEW YORK'S two great subway, elevated and surface car systems—the I. R. T. and the B. M. T.—carry approximately 70% of the total traffic in Greater New York. In 1929 an average of more than six million people a day depended upon these two systems.

Thus, it is imperative that schedules be maintained. The slightest delay is serious. Socony is proud that, for so important a factor in smooth operation as lubrication, Socony industrial oils were chosen to lubricate the power plants and rolling stock of these two systems.

We submit this additional example of Socony performance for your consideration in selecting lubricants for your operation.

SOCONY

INDUSTRIAL LUBRICANTS

STANDARD OIL COMPANY OF NEW YORK

ENGINEERS *and* CONSULTANTS

SEARCHLIGHT SECTION

EMPLOYMENT : BUSINESS : OPPORTUNITIES : EQUIPMENT—USED or SPECIAL

UNDISPLAYED—RATE PER WORD:

Positions Wanted, 5 cents a word, minimum $1.00 an insertion, payable in advance.

Positions Vacant and all other classifications, excepting Equipment, 10 cents a word, minimum charge $2.00.

Proposals, 40 cents a line an insertion.

INFORMATION:

Box Numbers in care of our New York, Chicago or San Francisco offices count 10 words additional in undisplayed ads.

Discount of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:

1 inch $6.00
2 to 3 inches ..... 5.75 an inch
4 to 7 inches ..... 5.50 an inch

Other spaces and contract rates on request.

An advertising inch is measured vertically on one column. 3 columns—30 inches—to a page. R.J.

COPY FOR NEW ADVERTISEMENTS ACCEPTED UNTIL 3 P. M. ON THE 20TH FOR THE ISSUE OUT THE FIRST OF THE FOLLOWING MONTH

POSITIONS WANTED

ARMATURE winder well experienced with railway equipment desires change. Reference. PW-217, Electric Railway Journal, Tenth Ave. at 36th Street, New York.

ENGINEER: Twenty years' experience with large eastern company as superintendent M. of W. and division manager would like to make change. PW-216, Electric Railway Journal, Tenth Ave. at 36th St., New York.

MR. MANAGER: In capacity of superintendent transportation with several companies, my efforts resulted in increased revenue, decreased costs, better public relations. That which I have accomplished for others, I can do for you. Twenty years' experience. Highest references. Correspondence invited. PW-219, Electric Railway Journal, Tenth Ave. at 36th St., New York.

REPRESENTATIVE WANTED

Sales Representative

For Metropolitan District, calling upon Bus & Electric Car Operators. RW-218, Electric Railway Journal, Tenth Ave. at 36th St., New York.

FOR SALE

Passenger Cars—Freight Motors

12—All Steel Cars
1—All Steel Freight Motor
2—Semi-Steel Freight Motors

All have Baldwin Trucks, H. L. Control
W. 333 Motors, Straight and Automatic Air

All in First Class Condition.

Cars recently painted and equipped for train operation. Seating capacity 59.

Attractive Prices for Quick Sale

THE JOSEPH SCHONTHAL COMPANY
COLUMBUS, OHIO

WANTED

Railway-Equipment
Power Plants
Rails and Overhead

Be sure to get our bid.
Dismantling done by us.

The Allite Corporation
630-38 Broadway, New York

FOR SALE
1000 K.W.
SYNCH. MOTOR GEN. SET

Modern type Westinghouse 575 v. D.C., 3 ph., 60 cy., 2,200 v., .8 P.F., A.C. 900 r.p.m. Motor Generator Set with Dir. Conn. Exciter and complete A.C. and D.C. Switchboards. Condition 95% New.

JOHN D. CRAWBUCK COMPANY
Empire Bldg., Pittsburgh, Pa.

Bargains in Buses

In an effort to standardize on a few makes we have on hand a number of very desirable buses for quick disposal. These buses include Fageol sixes in excellent mechanical condition and good for many, many more miles of dependable service. Many of these buses have been rebuilt with raised roofs, inside baggage racks and reclining chairs. There are also some A.C.F.s both with and without inside baggage racks, Internationals, Reos, Studebakers, etc. All buses have weathertight bodies and are in first class mechanical condition. Write or wire for specifications and prices. Address

P. C. JOHNSON

GREYHOUND Lines

34th Place and Cottage Grove

Douglass 5100 Chicago, Illinois

Don't Say, *"It's not worth anything"*

THAT surplus Railway Equipment you consider of no value can be turned into cash! The fact that it's of no further value to you doesn't mean that it is not of value to somebody else. There's always a market for used railway equipment. Reach the greatest number of prospective buyers for the surplus Railway Equipment you have at a minimum cost, thru an advertisement in the—

SEARCHLIGHT SECTION

Your Best Market
for
Old Trolley Cars and Equipment

Reliable Service

L. SCHIAVONE & BONOMO BROS., Inc.

Jersey City New Jersey

New and Relaying Rails

All Weights and Sections

We specialize in buying and dismantling entire railroads and street railways. Also industrial and public service properties which have ceased operation. We furnish expert appraisals on all such properties.

May We Serve You?

The Perry, Buxton, Doane Company

(Capital $1,000,000.00)

Rail Department, Philadelphia, Pa. General Department, Boston, Mass.

Pacific Sales Office—Failing Building, Portland, Oregon

600-Kw. 60-Cycle Sub-Station

1—Complete 600 kw. 60 cycle Railway Sub-Station, consisting of—

2—300 kw. Westinghouse compound interpole rotator converters, 600 volts direct current, 6 phase 60 cycle alternating current, 1,200 r.p.m.

6—100 kva. Westinghouse single phase transformers, 13,200 volts primary.

Complete with direct and alternating current switchboard equipment as in operation.

Excellent condition. On original foundation. Must move immediately.

Will quote attractive price for quick sale.

THE NATIONAL POWER MACHINERY COMPANY

1914-1918 Scranton Road, Cleveland, Ohio

FOR SALE

TURBO GENERATOR

Westinghouse, 1250 kva., 2300 volt, 3600 r.p.m., 2 phase, 60 cycle with turbine and condenser. LOCATION—Canton, Ill.

ENGINE GENERATORS

Westinghouse, 2300 volt, 3 phase, 60 cycle with Rice & Sargent and Chuse engines. LOCATION—Mattoon, Ill.

TURBO GENERATOR

General Electric, 2300 volt, 3 phase, 60 cycle with Terry turbine and Worthington condenser. LOCATION—Paris, Ill.

N. C. STIREWALT, *Purchasing Agent*
Central Illinois Public Service Company
Public Service Bldg., Springfield, Ill.

FOR SALE

6—Light Weight Double Truck Passenger Cars

Two to four years old—weight 30,000 lbs.—excellent condition—ready for immediate shipment.

Priced for quick sale.

"We buy Railways in their entirety."

H. E. SALZBERG CO.
225 Broadway, New York City

There is always a market for used railway equipment, somewhere. Don't make the mistake of junking it—advertise and turn it into CASH

HIGHEST PRICES PAID FOR ELECTRIC RAILWAYS FOR—

DISMANTLING

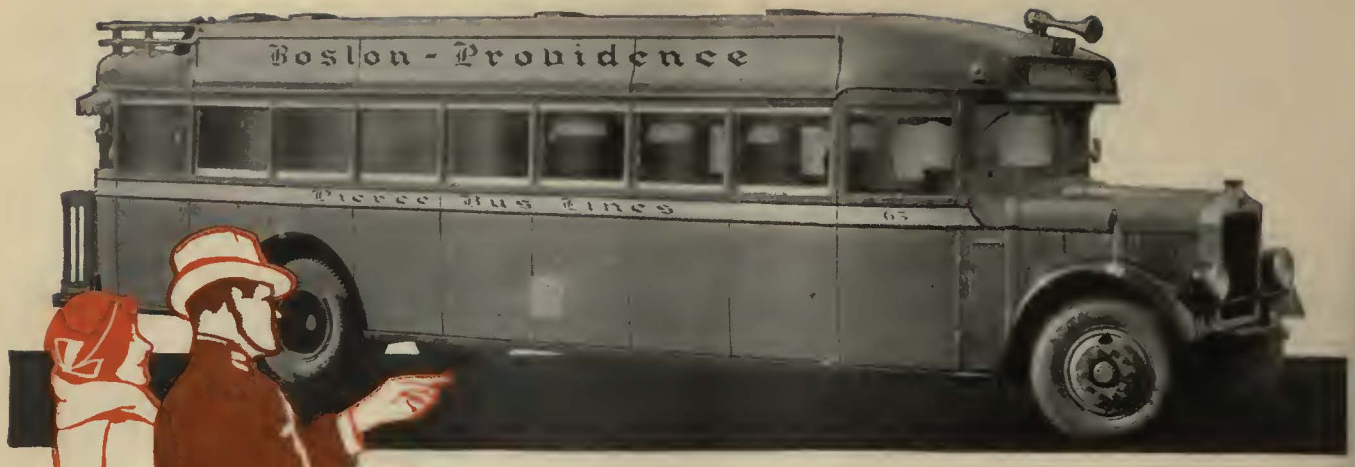
M. K. FRANK

Clark Building, Pittsburgh, Pa.
220 E. 42d Street, New York, N. Y.

ALPHABETICAL INDEX

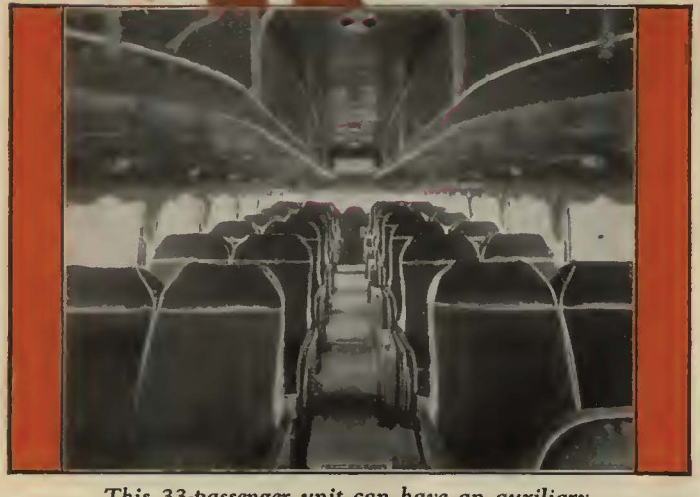
This index is published as a convenience to the reader. Every care is taken to make it accurate, but *Electric Railway Journal* assumes no responsibility for errors or omissions.

Searchlight Section—*Classified Advertising*



"Let's go by BUS!"

BENDER Palace Hyway Coach Offers the Comfort that Turns Occasional Riders Into Regular Passengers



This 33-passenger unit can have an auxiliary seating arrangement, building the total up to 41

1. Spacious, comfortable seats.
2. Full head room.
3. Luggage inside, protected against weather.
4. Cushion-edge luggage racks for passenger safety.
5. Commodious aisle, the widest of any coach of this type for the same over-all width.
6. Sturdy windows that operate easily and raise all the way up.
7. A beautiful, harmonious, restful interior.
8. *Safe*, easy-riding, substantial construction.

Full particulars await your request.

THE BENDER BODY CO. / W. 62nd and Denison / Cleveland, Ohio

BENDER BODIES

CHICAGO Repeats-

Orders six, and then seven

BRILL TROLLEY BUSES

The Chicago Surface Lines recognizes the merit of the trolley bus. Its flexibility in traffic, quick acceleration, smooth operation, unlimited supply of light, heat and power, and the familiarity of existing organizations with its type of equipment are factors worthy of consideration.

The fact that Chicago placed two orders for Brill Trolley Buses, a total of thirteen units, is certainly significant.

THE J. G. BRILL COMPANY
PHILADELPHIA

American Car Company
St. Louis
The G. C. Kuhlman Car Co.
Cleveland

Wason Manufacturing Co.
Springfield, Mass.
Pacific Coast Representative
Rialto Building, San Francisco

1000-kw. G-E synchronous converter and control panels in automatic substation at Orient Heights

Electric train at Crescent Beach

Six-car train on Boston, Revere Beach & Lynn (note steel bridge structure and catenary suspension)

The Boston, Revere Beach & Lynn electrified to improve schedules

THE Boston, Revere Beach & Lynn Railroad, which operates 34½ single-track miles of narrow-gauge track between East Boston and Lynn, Mass., serves a densely populated suburban district and—during the summer months—a heavily patronized seaside resort. It carries nearly 15,000,000 passengers annually.

Of late years, the overwhelming daily demands of commuters and visitors to Revere Beach dictated an increased frequency of service and a material decrease in running time. As the best and most economical way to meet these demands, the railroad, in 1928, installed General Electric traction equipments on its passenger cars.

As many as eight cars can be coupled into one train, all being controlled by a single operator in the leading cab. General Electric also furnished synchronous converters for the substations (one equipped with complete automatic control), a 1000-kw. portable substation, overhead line material, and electric turnstiles.

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

350-69

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES