

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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Volume 57

New York, Saturday, February 26, 1921

Number 9

Electrical Engineers Are Conservative Regarding Cable Rating

THE American Institute of Electrical Engineers took up a vital subject at the midwinter convention last week in New York, when careful consideration was given to the possibility of marking up the safe carrying capacity of electric power cables. The present Institute standard rule, which is of course the basis upon which cables are purchased, rates them upon an ultimate temperature of 85 deg. C. under steady load. This some engineers consider ultra-conservative, but the consensus of opinion at the New York meeting favored the 85-deg. rating, leaving to the owners of the cables the responsibility for results if the standard rating is exceeded. This can safely be done under some conditions and for certain periods, but the standard rule might well remain as it is for the present.

A question of a few degrees more or less may not seem very important to one not responsible for cable manufacture or operation. As a matter of fact, it is fundamentally important, on account of the nature of the materials which are involved. The discussion at New York related to paper cables, but of course the same general considerations apply with rubber-insulated cables. In cables, organic materials are necessarily depended upon for insulation, and such materials are extremely sensitive to the effects of high temperature. The changes which are produced are very subtle and, as inspection of the insulating material is possible only by destruction of the cable, a large factor of safety in loading must be allowed.

Entirely aside from the result of the conference of the Institute on the rating of cables, the information brought out will have great current and reference value to cable owners among electric railways. It will give a sense of security to all of those who have treated their cables with due consideration of their temperature-life characteristics.

The Motor Bus Advances Again

ANOTHER breach in the "greater capacity" fortress of the electric railway is threatened in the London General Omnibus Company's development of the fifty-four-seat motor bus, described elsewhere in this issue. It is true that the Chicago Motor Bus Company can claim priority in bringing out a bus of this capacity, but the London case is more significant in that the super-bus is to be used over narrow, congested, frequent-stop highways for the greater part of its runs, without Chicago's offset of long stretches through public parks. We are therefore to see whether the schedule speed of such a bus can equal the old-time thirty-four-seater, it being a question of a big bus with good passenger interchange facilities but more stops versus a small bus with one-aisle entrance and exit. It is true that the company has had in use for a year or so about two hundred Type K, forty-six-seaters, which also have the spacious

platforms of the latest type, but the fifty-four-seater will prove a far harder test.

The significant fact as to efficient use of space is that within a length of 24 ft. 7 in. over all it is possible to carry fifty-four seats, whereas three years ago a length of 22 ft. 6½ in. was required for but thirty-four seats. Expressed in linear dimension of street space, the drop has been from 8 in. to 3.46 in. per seated passenger, and in terms of area (passengers into the product of maximum over all dimensions of width and length) from 4.68 sq.ft. to 3.22 sq.ft. per passenger. Next in importance is the matter of weight, for through the use of such metal as nickel steel for the body framing the weight per seated passenger has been cut from 237 lb. to 173.5 lb.

It is pleasant to add that the two large American double-deck bus operators are also well up in front in both capacity and weight developments. Thus the standard forty-seven-seat bus of the Fifth Avenue Coach Company weighs 190 to 200 lb. per seat, and the new sixty-seat double-deck bus of the Chicago Motor Bus Company was figured to weigh but 209 lb. per seat, despite the inclosure of the top deck. These attainments give rise to the hope that future single-deck buses, which will probably be the most common in the United States, will also embody the use of high-strength materials, for low weight is an urgent necessity in view of the high cost of gasoline.

California's Help Sought in New York Traction Affairs

THE transit situation in New York City and New York State has received a national aspect by the appointment of Senator Hiram W. Johnson of California as special traffic counsel for New York City in opposition to the Miller plan. If Senator Johnson, who has a large popular following in his state, will bring constructive ideas to the New York City problem, his advent is to be welcomed. Criticisms have been directed against his appointment because he comes from far away, but this, of itself, ought not to debar him.

Incidentally, Senator Johnson, while Governor of California, is credited with having been largely responsible for the passage of the California public utilities act in 1911, by which the commission was changed from an elective commission to one appointed by the Governor. By this act the jurisdiction of the commission was extended to include rates, service, finances, facilities and extension of the State's public utilities. In its report for the year ended June 30, 1920, just issued, the California Commission has this to say among other things in regard to the railways within its jurisdiction:

The interurban and street railways have suffered more, perhaps, than any other class of utilities from the conditions brought about by steadily rising costs during the last few years. With street railway fares fixed at 5 cents, by custom and by franchises, the shrinking value of the dollar threatened disastrous consequences for practically all street railways. And yet it is apparent that, in spite of the more

severe competition of motor vehicles, the time is by no means here when our cities and rural territories can dispense with electric railway facilities.

The commission has not hesitated to extend to the electric railway systems of the state such relief, by increase of fares or by establishment of the zone system, or by ordering radical operating economies, as would insure a continuation of reasonably good service.

The commission has also taken opportunity to call attention to its belief that the relationship between street railways and the communities they serve should be radically changed and that a modification of obsolete franchise requirements would distinctly be in the interest of the public.

The change from unsatisfactory and obsolete term franchises to better indeterminate franchises is now being effected in several communities and is being given careful consideration in others. The commission, under the public utilities act, is called upon to take a part in the creation of better franchise conditions and several proceedings of this nature are now pending.

This plan for California does not seem to differ very greatly from that which Governor Miller proposes for New York City.

The Bus as a Tax Reducer

IT'S all very well to appeal to the other fellow's sense of justice, but there are times when a more convincing argument is needed. A good example of this is the time-disgraced practice of making the car rider pay for the bridges and the street paving used, while no payment other than a nominal license charge is required by every class of private business and pleasure vehicle. The arguments of the railway company as to the unfairness of these charges are generally admitted, but the taxes continue just the same because the temptation to pluck a victim who can't get away is too great to be resisted.

Conditions have changed now, however, and today there are many places where the victim can get away from these extortionate contributions by threatening to substitute a motor-bus service for the trackway. At once the community will become alarmed at the prospect of having its ever-on-the-job transportation service replaced by something that can be withdrawn instantaneously to more lucrative fields. It will begin to inquire more deeply into the matter and, rather than sacrifice so tangible and comfortable a service as that on rails, seek to retain it by offering to remit the objectionable and unreasonable imposts of the past.

Such a plan is practicable, of course, only when the cost of bus operation per seat is no more than that of car operation plus the paving or bridge charge, but this is often the case on lines of light traffic, and where the line is a poorly paying one or is not paying at all the change is better than to discontinue service altogether. Moreover, the effect on the community of such a change ought to be most salutary. Having admitted the injustice of such a charge where payment can be avoided, the authorities cannot well continue to impose it on routes which are bound to remain trackways.

Of course, it does not follow that the bus will not have to pay for the use of the highway, but as, unlike the car, it does not differ essentially from other vehicles, it is not conceivable that it will ever be singled out for such disproportionate burdens as has been the case since the first legislative Solon wrote that awful clause: "And the tramway shall be responsible for the installation and maintenance of the paving between the rails and for 18 in. on each side thereof" not to mention curb-to-curb paving, street sprinkling or other taxes once so cheerfully dumped out of the street railway's cornucopia!

More Science and Less Law

AN ENGINEER on a hard-pressed electric railway property recently expressed his disappointment at the expenditure by his company of a large sum of money for counsel to fight a certain measure demanded by the authorities and thought unreasonable by the company. "From an engineering standpoint," he said, "the change would have little value, but it could have been made for but little if any more than the sum expended for legal charges to find a way not to comply." The remark offers food for thought. Many public demands are incapable of fulfillment except at prohibitive cost, but there are others nearer the border line of reasonableness and practicability as regards expense where a straining to do what the public wants would be good policy.

Selling Energy to the Farmers

PEDDLING electric service to the farmers seems at first glance to be a little out of place for a company which is supposed to make its bread and butter by transporting commodities of a little more tangible character than electric energy. The old proverb that one who is "a jack of all trades is master of none" is probably quite as true today as it was when the world was a little younger. Nevertheless, many electric railways do other things than sell and deliver transportation service, and in the great interurban country of the Middle West selling electric energy is one of these.

To the old timers in the industry the problem is not a new one. The interurban railways were the pioneer builders of cross-country power lines, and in the very beginning and at intermittent intervals ever since they have been pestered by well-meaning farmers and small-town officials who have desired electric service. These people in their excusable ignorance did not know, and for that matter do not now know, that electric service, like a mule, may have various standards of quality and character and that the particular brand of these useful characteristics afforded by a 600-volt trolley circuit is not well adapted to domestic entanglements. In some instances kindly disposed officials permitted connections to the trolley circuit or to substation buses. The general practice, however, has been either to wholesale energy from the transmission line or do both a wholesale and a retail business through the medium of a subsidiary company.

The recent widespread demand on the part of farmers and residents of outlying villages for electric service seems to be bringing in a whole crop of disturbing questions. Among these may be mentioned the problems of ownership of lines, construction details, financing, methods of operation and maintenance, damage liability and rates. The subject of rates is likely to receive sufficient attention because of its obviousness, but the problems of construction and operating and maintenance methods may be quite as important to the railway from the standpoint of its main business. Rural distribution lines erected, operated and maintained by farmers' mutual associations or stock corporations are likely to prove a distinct menace to the continuity of railway power supply when connected to railway transmission lines unless the railways take an active interest in seeing that these lines are properly built and maintained. And then there is the matter of damage liability. Un-

less responsibility for this liability is properly fixed, a single accident may cause the railway the loss of valuable good will as well as a monetary loss which the sale of energy for a good many years would not cover. With these problems properly solved, however, the rural power field seems to have large future possibilities. Certainly it is worthy of careful consideration by those electric railways which are now carrying on an electricity supply business.

Why Not "An American Committee on Electrification"?

SO MANY organizations are becoming interested in the subject of electrification of steam railroads that already there is much duplication of effort in gathering, digesting and presenting information in this highly important field. Electrification affects so many interests that it is perfectly proper for the national societies representing these interests to study it from their several points of view. They ought, however, to co-operate in some way so that the results of their work will be cumulative rather than repetitive.

The necessity for co-operation has been for some time in the minds of the men who are active on heavy traction committees in a number of associations. So far they have not been able to do much, except by an attempt at interlocking committee memberships. This prevents duplication somewhat, but its effectiveness is not to be compared with that which could be secured through the functioning of a joint committee, composed possibly of the chairmen of all heavy traction committees in the national societies. This committee could shoulder such duties as the compilation of general electrification data, and it could parcel out among the affiliated special committees the lines of work in which they severally are most interested and can most effectively carry out. There are successful precedents for such a committee in the American Committee on Electrolysis and the American Engineering Standards Committee, not to mention the numerous other joint committees which have less comprehensive scope.

In this connection it is highly important for each organization that is interested in electrification to realize just why it is so interested, and to define the subdivision of the field to which it will devote attention. A joint committee would help in this task. It is easy to see, for example, that the American Railway Association is concerned in this whole matter from the transportation standpoint, while its mechanical section is interested in the maintenance of the electrical equipment and in the design of the electrical rolling-stock. The American Railway Engineering Association looks less at the details of construction of electric locomotives and cars but more at the broader engineering aspects of the problems involved. Then comes the American Electric Railway Engineering Association, which offers the railroads the benefit of the experience of many electric railways with moderately

heavy electric locomotives and heavy multiple-unit cars. These and other railway associations are close to the job and are vitally concerned with the success of electrification. There are other groups of associations which are manifesting a lively interest in it also, and the reason is not far to seek.

Take first the engineering associations of a general nature, like the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, the Franklin Institute, etc. To them a change in motive power on the steam roads opens up new and attractive possibilities for applying the principles of engineering science and for standardizing practice as it develops. Then there are the other organizations, like the National Electric Light Association, representing the power industries, which look to the railroads as an enormous field for new business. They naturally want to keep in touch with electrification progress.

All of this simply goes to prove how obvious is the necessity for some kind of clearing house for electrification information. This year there will be some duplication of work and waste of energy; next year there will be more, unless a determined effort is made to prevent it.

Service at Cost Not the Same as Cost Plus

IN SOME communities an opposition to service at cost has arisen under the mistaken notion that in principle it is very much like the cost-plus plan of contracting. This latter plan was subject to so much abuse during the war that it is under somewhat of a cloud, and in certain respects deservedly so. Under the cost-plus plan the profits of the contractor increase with the cost of the undertaking, and consequently he is under the temptation to pad the expenses and increase the cost.

The service-at-cost plan of railway operation is not open to this temptation. No matter how expensive or extensive the service, the recompense of the contractor does not increase. With the incentive form of service at cost the recompense actually diminishes with inefficient operation. With straight service at cost the operating company is on what corresponds to a salary basis, all expenses being under supervision of the city, but in no case do the profits increase with the expenses. In fact, in straight service at cost there are no profits, the arrangement being one of hiring at a fixed rate the equipment and working organization of the railway company. Perhaps it is the novelty of this idea of no profit which makes service at cost difficult for the ordinary business man to understand. It is different. Its nearest parallel, of course, is a city department which is self-supporting, like a department of docks or a water department. In fact, the only notable difference is that private management and capital are substituted for public, to the benefit of the community..

Quotation from the Federal Electric Railways Commission Report

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WHILE eventually it might become expedient for the public to own and operate electric railways, there is nothing in the experience thus far obtained in this country that will justify the assertion that it will result in better or cheaper service than privately operated utilities could afford if properly regulated.

Public ownership and operation of local transportation systems, whether or not it be considered ultimately desirable, is now, because of constitutional and statutory prohibitions of our local governments, and the state of public opinion, practicable in so few instances that private ownership and operation must as a general rule be continued for an extended period.

Commission Studies Newark Traffic

The Engineers of the Board of Public Utility Commissioners of New Jersey Make Thorough Analysis of Street Railway Operation on Broad and Market Streets and Suggest Plans for Extensions and Rerouting—Speed of Cars Found to Be Very Low on Main Thoroughfares

THE traffic inspectors of the New Jersey Board of Public Utility Commissioners have recently completed a comprehensive study of street car traffic on Broad and Market Streets, Newark, and have made suggestions in ways of handling the rush-hour peak traffic. Two of the main streets of Newark are Broad and Market, which cross at right angles approximately in the center of the densest traffic territory, and the present routing of the majority of the cars is on these streets through the center of the city. The traffic situation is further complicated by the extreme number of vehicles which must also use the same arteries followed by the street cars. Congestion and slow movement are perhaps more noticeable on Market Street, and are particularly acute from 4:30 to 6:30 p.m.

The Public Service Railway, to provide for the then steady increase in traffic, built an elaborate terminal in 1915 on Park Place and constructed loops through it so as to reduce the congestion at Broad and Market Streets and Broad and Central Avenue. This, however, was accomplished at the expense of greater congestion at Market and Mulberry Streets.

In 1915 the population of Essex County, of which Newark is a part, was 566,324, while in 1920 it was 652,000, an increase in five years of 86,000, or 15.2 per cent. During this time the Public Service Railway, unfortunately, has not opened up any new routes of importance with the exception of the Port Newark extension, and it has therefore been necessary to care for the increase in traffic during rush hours by the addition of extra service over the established routes. During the war the company adopted the skip-stop plan and thereby increased the available car mileage of existing equipment. This improved the service to some extent even though the company was unable to secure the needed additional equipment properly to care for the increased demands of traffic.

In December, 1917, as the result of a previous investigation of the then existing congestion, the commission's traffic engineers recommended staggered closing hours for department stores and other commercial establishments to spread out the rush-hour traffic. Co-operation with this plan was followed to some extent and for a while resulted in an improvement of the car service. It has not been possible, though, to get the department stores to change their hours of employment so they would not coincide with the general closing hour of other commercial establishments throughout the city. The moving picture theater at present is believed to have much to do with traffic congestion, for the shoppers after making their store purchases often spend considerable time in these places of amusement and are not ready to go home until the rush-hour traffic is really at its peak.

During October and November, 1920, a study was made of the car density on Broad and Market Streets. It was found about 50,000 persons left that city center on street cars during the evening rush hours. To help

care for this traffic the company has purchased additional trailers and intends soon to operate them on lines extending through the center of Newark. The operation of these trains, it is said, will result in even greater car density on Broad and Market Streets than at present and will tend further to slow up traffic.

The car density north on Broad Street during the evening rush is shown in the diagram. This shows that the "neck of the bottle" on Broad Street is between Central Avenue and Bridge Street, including the intersection at Central Avenue and Broad Street. The greatest number of car movements in all directions during the two-hour rush at Broad Street and Central Avenue is 525, equivalent to a car every thirteen seconds, which is merely the time required for a car to pass over the intersecting track, for the average headway on the northbound track was thirty seconds, while southbound it was thirty-two seconds. The east and west bound cars at this intersection are those of the Central Avenue line, which operate on an average headway of 3.6 minutes in each direction.

A count made on Oct. 25, 1920, between 4:30 and 6:30 p.m. showed that 242 northbound cars passed the observation point on Broad Street between Central Avenue and Bridge Street. The greatest car density was between 5 and 6 p.m., when a car almost invariably passed every twenty-four seconds, although in some instances there were two cars within the twenty-four-second period. At other times the headway was irregular. Inquiry as to the cause showed this to be due to the time required for loading the cars. Inasmuch as the operators were unable to make up the time lost on the return trip the delays became greater because of the increased car density on Broad Street. As a result of the cars being off schedule the first car appearing would usually be overcrowded.

It also developed that when a car became six or seven minutes late during the evening rush hours it was almost impossible to get it back on schedule before the theater traffic commenced. If the lost time was made up it was by turning back cars before they completed their prescribed route, though this resulted in a portion of the route being without its full quota of service.

On Broad Street the scheduled running time for the cars between Clinton and Bloomfield Avenues, a distance of 1.89 miles, during the evening rush hours is sixteen minutes. The calculated schedule speed per trip is therefore 7.1 m.p.h. Actual observations showed, however, that it was impossible for the car operators to meet this schedule and that, instead, the cars actually developed a speed of but 5 m.p.h., far too low for satisfactory street railway transportation. This meant twenty to twenty-three minutes to make a sixteen-minute run, with the consequent lengthening of headway and unnecessary overcrowding.

As a result of these studies the commission's inspectors concluded that the point of saturation of car flow has been reached at Broad and Market Streets, at Broad

Street and Clinton Avenue and at Broad Street and Central Avenue, and that in order to relieve this condition it is necessary to establish new routes on parallel streets within the central zone.

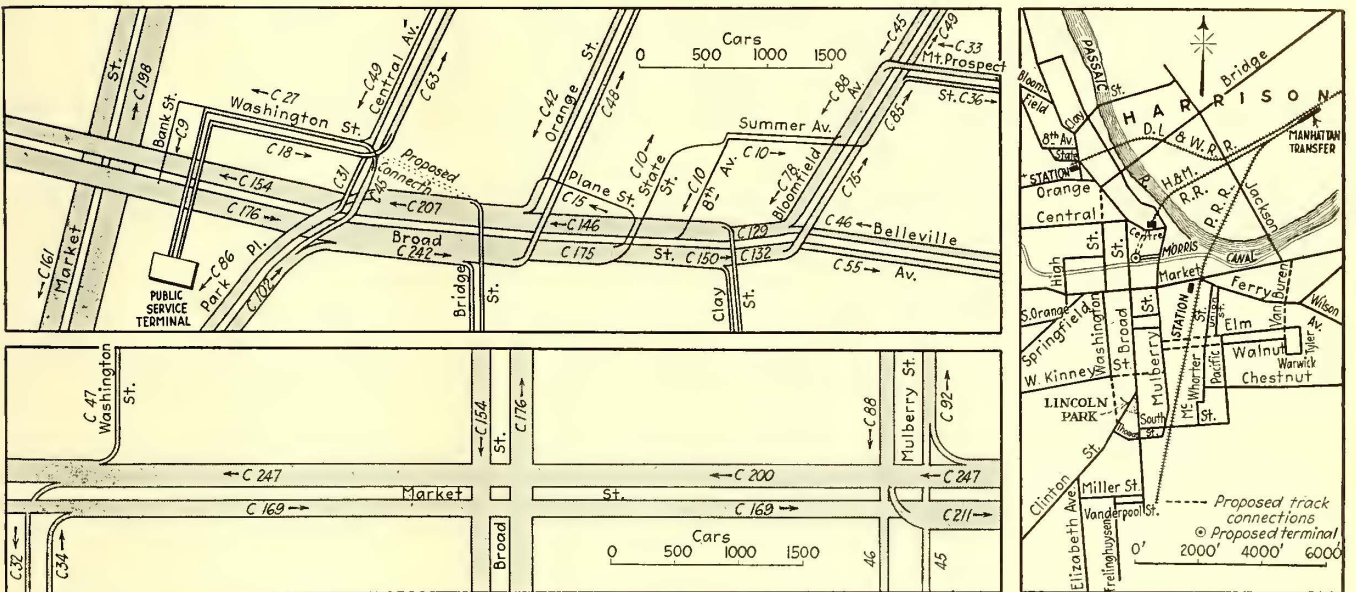
PLANS FOR RELIEVING TRAFFIC ON BROAD STREET

It is suggested that the Hudson & Manhattan station be relocated as an underground station in Military Park opposite the present Public Service Terminal, as was contemplated in 1910 (see map). This would eliminate the existing traffic interchange at the Park Place station, and the rerouting of the surface cars would be made less difficult if a double-track extension was built on Washington Street from Central Avenue north to Broad and from Kinney Street south to Clinton Avenue.

It is also suggested that the city stand the expense of eliminating the offset now existing in Washington Street where it crosses Market Street so that an additional route can be operated from Broad Street to Clin-

parts of Newark, many of them at very considerable distances from the center of the city. The majority of the commuters to the business part of the city have as their destination various points in an area extending from the Lackawanna Station on the north to Clinton Avenue on the south and from the Courthouse on the west to the Pennsylvania Railroad Station on the east.

At present it is a fairly easy matter to obtain transportation from almost any point in and around Newark to the intersection of Market and Broad or to the Public Service Railway Terminal, but to go from the extreme northern end or the extreme southern end of the city to the Pennsylvania Railroad Station is not at all easy. It is equally difficult to reach the eastern and western parts of the city from the Lackawanna Depot on north Broad Street or the City Hall on south Broad Street. In street railway transportation greatest efficiency obtains only when through routes can be operated. Through routing, however, is only feasible when a sufficient number of persons are traveling with a fair



DIAGRAMS SHOWING CAR FLOW ALONG MARKET AND BROAD STREETS, NEWARK, N. J.

At top, car flow diagram, Broad Street (Newark) between Market Street and Bloomfield Avenue during evening rush hour on Sept. 17, 1920. At right, existing and proposed trolley routes

in center of Newark, N. J. At bottom, car flow diagram, Market Street (Newark) between Mulberry Street and Washington Street during evening rush hour.

ton Avenue via Washington. As the situation now exists this route is impracticable, due to the offset in the street and the heavy traffic on Market Street that would have to be crossed.

Many of the attempts at improvement of the traffic conditions in Newark have been based upon the assumption that the great majority of travelers had as their ultimate destination the intersection of Market and Broad Streets. This assumption is so far from the facts that remedies based upon it have, in a number of instances, served still further to embarrass a large portion of the traveling public. It is quite true that many persons have as their destination some point in close proximity to Market and Broad Streets, but there are also other extremely important destination points. First, the Pennsylvania Railroad Station on Market Street, although not of the importance it once was, cannot longer be ignored in plans for handling traffic; second, Central Railroad Station on Broad Street; third, Park Place Station of Hudson & Manhattan Railroad; fourth, Lackawanna Station on upper Broad Street.

Any study will show that factories are located in all

degree of regularity over a substantial portion of the particular routes.

It is suggested that a loop be built around Lincoln Park. The Public Service Railway Company could then reroute its Broad and Mount Prospect lines so that the northern portions of these lines would terminate at the proposed Lincoln Park loop, while the southern portions could terminate at the existing Lackawanna loop.

It is believed that with the rerouting proposed, the speed of the cars on Broad Street, particularly during the periods of congested traffic, would be materially increased, thereby greatly improving the service and resulting undoubtedly in greater satisfaction on the part of the traveling public. It is believed also that the extensions would doubtless provide for the normal increase in traffic for a considerable number of years.

MARKET STREET CONDITIONS

A similar study was made of the car flow on Market Street as illustrated above. This diagram indicates graphically the number of trolley cars operating past certain intersections. The junction of Market and Mul-

berry Streets is the heaviest intersection. Here 638 cars pass in the two-hour rush period, equivalent to one car every 11.3 seconds. This is due to the large number of cars routed to the terminal via Mulberry Street in addition to the regular service on that street. Other important junctions on Market Street are at Springfield Avenue and High Street, where there was a total of 325 cars for the rush period of two hours, and also at Market Street and Springfield Avenue, where there were 306 cars.

On Market Street the scheduled running time between the Pennsylvania Railroad and High Street during the rush hours is nine minutes. The distance between these points is approximately 0.86 mile and the speed per trip would thus be approximately 5.7 m.p.h. Between 5:30 and 6:30 p.m. it was impossible for the operators on the majority of the west-bound cars to make this scheduled running time, for the cars only developed an average speed of approximately 3.98 m.p.h., or, in other words, thirteen minutes was necessary to make a nine-minute run. Many of the delays were due to the car density on Market Street and the time required in loading or discharging passengers, especially at Broad and Market Streets.

The traffic conditions on Market Street between Mulberry Street and the Pennsylvania Railroad loop are unsatisfactory because Market Street is comparatively narrow between these points. It was observed that the large number of motor vehicles which operate between these points on Market Street greatly retard the operation of the trolley cars. This condition is also dangerous to the patrons of the company desiring to board the cars.

To relieve the excessive car flow density on Market Street the report recommends that immediate steps be taken to establish new traffic routes on parallel streets, following the same general direction as the present route on Market Street. The proposed routes are shown on the map and consist of a double-track line on West Kinney Street from Washington Street to Mulberry Street, with single track east on Walnut Street and west on Elm Street, as these two streets are not of sufficient width to permit the laying of double tracks thereon.

Standardizing Practices in Handling Merchandise Traffic

North Shore Line Has Developed Book of Rules for Agents, Conductors and Other Employees Who Handle L.c.l. Matter—Would Be of Assistance to Other Electric Railway Lines

NEARLY every electric railway management that has started in the business of handling package freight will agree with the sentiment expressed by Britton I. Budd, president Chicago, North Shore & Milwaukee Railroad, that this step involves a lot of hard work and "grief." To go through the process of building up an organization, getting equipment and facilities and working out a system for handling the business expeditiously and without excessive losses is obviously no small task. Then an almost worse problem is that of expanding the organization, facilities and system designed for a \$3,000 or \$4,000 a month business to handle a \$40,000 a month business, particularly when the rate of expansion is well-nigh overwhelming. A certain amount of unsatisfactory service is bound to develop under such conditions.

But appreciating the futility of the work of the man who goes out to sell the service of the railway and succeeds in securing new customers only to have his company fall down in "delivering the goods," Mr. Budd has had a thorough study made by an expert from the steam railway field in an effort to make the service actually rendered live up to the intentions of the company as near 100 per cent as possible. This traffic expert first directed his attention to an analysis of the complaints and correction of the causes for them. This gave him a line on many of the weaknesses in the methods employed and in the organization functioning. He then made a thorough property-wide study of the system of handling this merchandise dispatch business and as a result proceeded to standardize all routine as far as possible. It was found that 90 per cent of the duties of the merchandise dispatch employees could be laid down in a set of rules, leaving but 10 per cent of the total routine to be covered by special orders. These rules have been printed and distributed to the employees involved, and Mr. Budd says they have already had a noticeable effect in reducing delays and claims and, hence, in improving the service.

While the percentage of claims on the North Shore line in this service has not been any higher than what is common in steam road service, Mr. Budd feels that it should be much less in view of the smaller volume of traffic handled and the shorter mileage of the road. The development of a complete set of regulations, resulting in the standardization of practices at all stations, and making inexcusable any incomplete billing, acceptance of improperly packed or poorly consigned shipments, etc., should be a material help in this respect. The printed rules will also materially simplify the task of breaking in new men in the service.

It is believed that a study of this book, though developed to cover the particular conditions on the North Shore lines, would be of substantial assistance to other electric lines in systematizing and otherwise improving their l.c.l. service. A copy of this book of "Rules and Regulations Governing the Handling of Merchandise Traffic," which is printed in loose-leaf form to permit ready correction and enlargement, would no doubt be furnished upon request to Mr. Budd. It was the desire of the editors of the ELECTRIC RAILWAY JOURNAL to reprint this rule book, but space limitations make this impractical, and as the subject matter does not lend itself to abstracting the above plan of calling attention to the work done by the North Shore line seems to be the only feasible way to bring it to the attention of other electric railway men. An idea of the contents can be gained from a list of the first few of the 104 headings under which the subject matter is at present grouped: Merchandise received subject to tariffs; marking merchandise; time, not guaranteed; address of consignee; packing; method of loading; contaminating merchandise; separate local and through merchandise; overloading cars; ordering cars; waybilling merchandise, etc.

According to the annual report of the Department of Public Works, Chicago, 70,078 cu.yd. of snow were removed during the year 1919 from 13,588,196 sq.yd. of streets in the first ward downtown district of Chicago at a cost of \$54,052,092, or 77 cents per cubic yard. Also 51,588 cu.yd. were removed from 7,943,892 sq.yd. of main thoroughfares in other parts of the city at a cost of \$34,353, or 66 cents per cubic yard.

Insurance Rates Reduced 38 per Cent

Putting House in Order Permits East St. Louis & Suburban Railway to Increase Protection 95 per Cent, with But 16.6 per Cent Increase in the Cost—
Keen Competition Inspired Among the Several Departments of the Company as a Result of Monthly Reports

THE East St. Louis & Suburban Railway has found it a very profitable undertaking to co-operate wholeheartedly with the Electrical Inspection Bureau in carrying out the recommendations of the latter's inspectors. These men make it a part of their regular work, if any interest is shown, to report to the insured on the condition of the property from the standpoint of fire risk and to make recommendations as to improvements which, if made, will bring a reduction of so many cents per hundred dollars in the rate charged for protection. This work of the inspection bureau is done on the theory that the insurance companies would rather carry a good risk at a low rate than a bad risk at a high rate.

Getting into the spirit of the work of the Electrical Inspection Bureau, President W. H. Sawyer of the railway set out during 1920 to place the various properties of the company in order in the way that the inspectors wanted it, but restricting the activities of the first year to only those improvements which it could be shown would pay for themselves in two years, through reduced insurance. Carrying out this plan, an expenditure for the entire East St. Louis & Suburban property of approximately \$9,000 was made, with a resulting annual saving in the cost of insurance of more than \$4,000. That is, in 1919, before the clean-up campaign was started, the rate which the company had to pay was 62.88 cents, while the rate on the 1920 contract is 39.2 cents. Actually, however, the saving made was turned into increased protection.

In 1919 the total insurance carried was approximately \$900,000 and the annual cost \$5,895. This was increased in 1920 to approximately \$1,756,000, for which the cost was \$6,875, or an increase of \$980—16.6 per cent in cost for a 95 per cent increase in insurance. The additional insurance was placed largely on substations and the principal power house, which had previously been carried as fireproof buildings without insurance, but two fires therein had rather conclusively determined that protection was needed.

SOME OF THE DETAIL IMPROVEMENTS MADE

Some of the improvements made at the Winstanley Power House in East St. Louis will serve to indicate what was done over the property generally to accomplish the results noted above. A new fire alarm box was installed close to the power station at a cost of \$224.77 to produce an annual saving in the cost of insurance of \$101.80. Two additional stand pipes were installed in the power house at a cost of \$296.18, with a saving of \$254.50. Two additional watchmen's clock stations were installed at a cost of \$98 to produce an annual saving of \$120. All wooden lockers for workmen scattered through the power station were replaced with steel lockers arranged in two or three groups and equipped with slanting tops to prevent the storage of any articles on top. This change was made at a cost of \$201.96 and it resulted in an annual saving of \$101.80.

Previously, new and junk materials were stored in lockers and cubbyholes and miscellaneous places in the basement, in addition to five main store places in the basement. All of these materials and supplies were taken from the basement and placed in a non-combustible general storeroom provided by bricking in the space underneath the high-tension switching room, which is supported on concrete pillars, as shown in an accompanying picture. Furthermore, the miscellaneous cubbyholes in the basement were bricked in so that they could not be accumulation places for future junk and rubbish. The total cost for this piece of work was \$780 and it produced an annual saving of \$305.

One of the biggest savings was made by the installa-



FIREPROOF STOREROOM AT WINSTANLEY POWER HOUSE PROVIDED BY BRICKING IN THE SPACE UNDERNEATH THE HIGH-TENSION SWITCHING ROOM

tion of Bowser oil pumps and tanks in the main turbine room to replace the old system of simply placing the barrels on their sides and drawing off the oil as needed. The tanks were installed at a cost of \$1,190 and they resulted in an annual saving on the insurance cost of \$763.50. In addition, there will accrue the saving of about one-half gallon of oil per barrel, which cannot be drained from a barrel, but is withdrawn by the oil pumps, according to the station engineer.

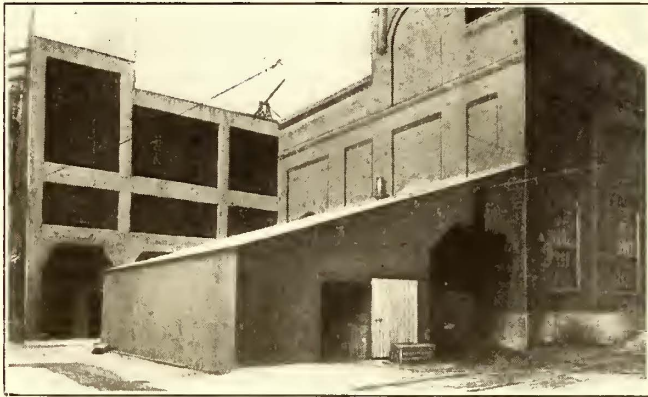
A steel shed for protecting workmen from the weather while unloading coal was built to replace a wooden shed. As this was a piece of work which had to be done regardless of the bearing on insurance, and as the new steel shed was extended to provide a storeroom for the boiler room supplies, which did not exist with the wooden structure, the cost of this item was not charged to the insurance clean-up plan. However, it produced a saving in insurance of \$101.80 annually. This shed is shown in one of the accompanying pictures.

Other miscellaneous improvements at the power house included the placing of all conductors and resistors on metal instead of wood supports, resulting in a saving of \$509; the replacement of all wooden stairs with con-

crete, built solid to prevent accumulation of material underneath and producing a saving of \$245; the removal of work benches from the turbine room to a special room fitted up for a mechanic's shop at a saving of \$50.90 per year; the installation of more steel waste cans; the replacement of wooden scrap bins with concrete bins, the purchase of more fire extinguishers, etc.

In addition to these physical improvements, the program has included a general campaign among the workmen to induce them to keep their work places clean and free from any accumulation of rags or rubbish. Each man endeavors to leave his work place in the best of condition every night. This work of appealing to the men to keep things clean and safe has been very successful because it has been possible to show them where this care results in actual money saving to the company, through reduction in insurance rates. Mr. Sawyer believes that the men do better work and that they have more self-respect if their place of employment is kept in an orderly manner.

A rather keen competition between different departments of the company in this matter of orderliness has been inspired as the result of the monthly reports made



STEEL SHED BUILT TO REPLACE WOODEN PROTECTION FOR COAL UNLOADERS, AND EXTENDED TO PROVIDE STORAGE FOR BOILER ROOM SUPPLIES

by H. J. Hodson, who has charge of the safety work of the company and of this insurance campaign. After his monthly inspection tour, which is made at the most unexpected times, Mr. Hodson writes a report in which all of the properties are classified into three divisions under these headings: "In a clean and orderly condition," "In a fairly clean condition" and "In a dirty and disorderly condition." When a department is listed under the second or third heading, it is accompanied by a few brief remarks giving the nature of the condition which has brought this classification. After these reports are written, they are submitted to Mr. Sawyer and then posted simultaneously on every bulletin board and sent to every department head. The result of this monthly report has been to promote great effort and care among the workmen to keep their department in the first group. For this reason, any one displaying slovenly work is usually "called" by his fellow employees.

Because of his frequent visits over the entire property and his close contact with the employees in all branches of the company's service Mr. Hodson has been very helpful to Mr. Sawyer in providing a close contact between the management and the employees. Mr. Hodson has often been able to bring to the attention of Mr. Sawyer cases of employees in personal difficulties, wherein a little timely help on the part of the company could be given with a very worth-while effect.

Rebuilt Cars Relieve Shortage

Winnipeg Electric Railway Has Replaced Rolling Stock Lost by Fire Last April with Cars Reconstructed from Second-Hand Bodies Purchased from the Twin City Rapid Transit Company

THE Winnipeg (Man.) Electric Railway has just placed in service twenty remodeled low-floor cars. These embody most of the latest features of rolling stock for city service and replace those lost in the fire at the company's Main Street carhouse on April 7, 1920. Following the destruction of the cars in the fire bids for new cars were asked for, but immediate delivery could not be promised. It was imperative that the amount of rolling stock be increased in order to take care of the winter rush and so the company purchased twenty passenger car bodies without trucks or motors from the Twin City Rapid Transit Company of Minneapolis, Minn., in July last and has rehabilitated them in its own shops.

DETAILS OF THE REMODELING

In the process of reconstruction the cars were first stripped of their rear vestibules, interior fittings and front and rear bulkheads, all to be replaced by the features which make up the company's standard, single-end, double-track, pay-as-you-enter, low-floor car with front and rear exit and rear entrance. In order to incorporate these features in the reconstructed cars it was found necessary to lengthen the rear vestibule 30 in. This was accomplished by placing on each side of the car one $\frac{1}{2}$ -in. x 5-in. x 5-in. angle-iron vestibule knee extending back 8 $\frac{1}{2}$ in. from outside the car body, parallel with the sides of the car to a point of intersection on the $\frac{1}{2}$ -in. x 7-in. steel bumper. These vestibule knees are supported by carrier bolts and plates held by the steel body truss under the bulkhead. These, in addition to extensions on old vestibule knees and lateral braces, hold the vestibule firmly in position. The original vestibule was replaced next, posts were securely bolted to the crown head and the intervening space in the floor and roof was filled in. This gives ample room for the conductor's compartment and for the entrance and exit double-folding doors.

As the front vestibule floor of the old cars was on the same level as the car floor it was found necessary to provide a drop pit the size of the front passenger vestibule in order to have but one step from the vestibule floor to the pavement. The steps on these cars are 15 in. from pavement to first step, 14 in. from first step to vestibule floor and 6 in. from vestibule floor into the car. The car is furnished with six rattan cross seats on each side, with longitudinal seats on both sides, front and rear, giving in all a seating capacity of forty-two passengers.

PREVENTING INRUSH OF COLD AIR

The front bulkhead has a double-acting door leading into the passenger vestibule which closes off the cold and draft when the front vestibule door on the outside is open. This door is operated jointly with the step from the motorman's compartment by means of McGuire-Cummings door-and-step operating mechanism. All steps in and out of the car are equipped with Mason lead-filled safety tread, thus minimizing accidents due to passengers slipping on the steps. The rear entrance and exit doors are operated by the conductor, the same mechanism and similar features as applied to the front

PARTIAL LIST OF DIMENSIONS IN THE REBUILT CAR

Over-all length	45 ft. 7 in.
Car body length	33 ft. 3 in.
Front vestibule length	4 ft. 4 in.
Rear vestibule length	6 ft. 10 in.
Over-all width	8 ft. 6 in.
Over-all height	8 ft. 4 1/2 in.
Rail to top of roof	10 ft. 8 1/2 in.
Approximate weight	36,000 lb.

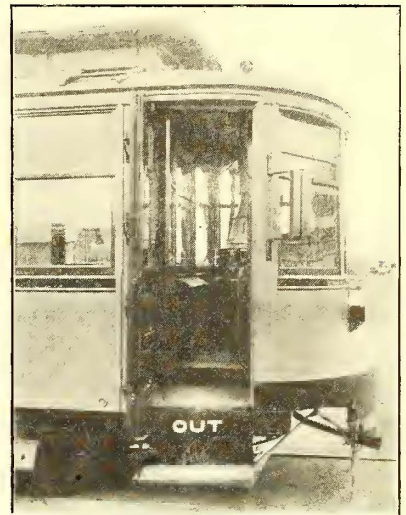
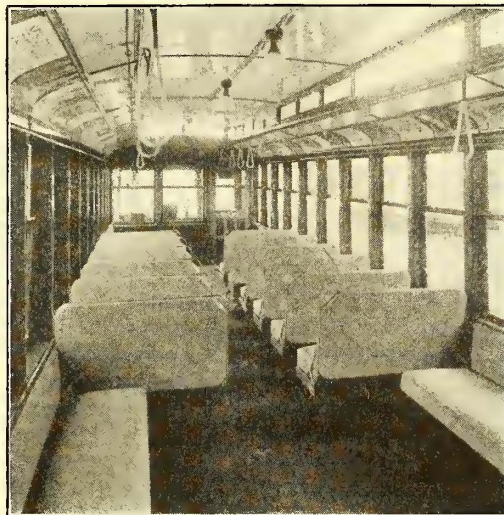
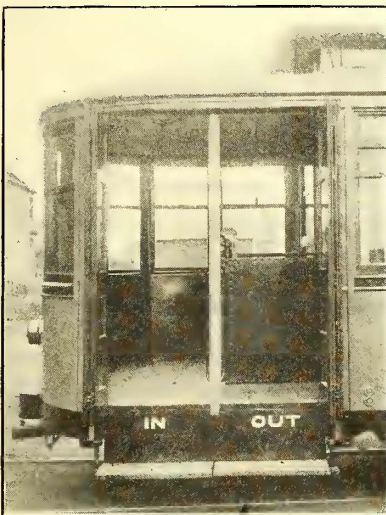
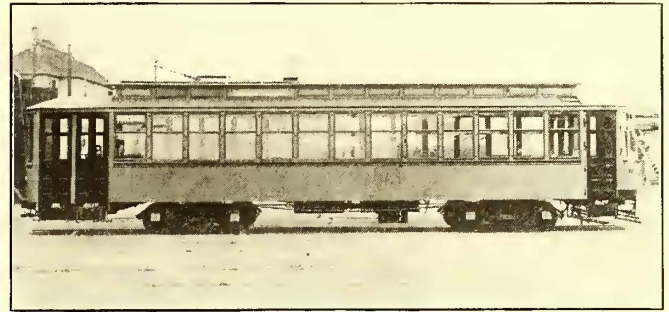
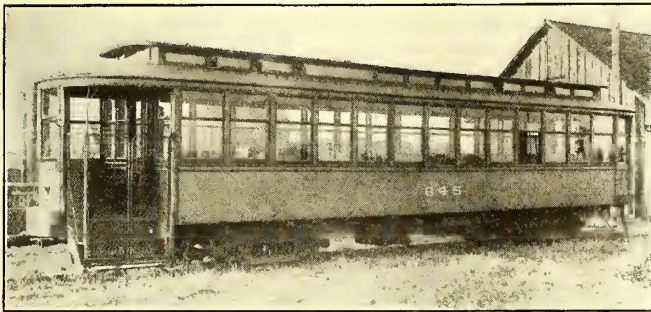
door being used. The entrance to the car is the rear door of the rear vestibule, giving ample standing room while conductor is making change or issuing transfers.

Destination signs are placed in three locations—one on the right side of the front vestibule in the gothic sash and one on each side in the last gothic sash on the car body. These signs are of the roller type and are worked from the inside of the car body. There are forty-seven route names on each.

cludes the headlight, front-exit light, front destination sign light and two lights in the rear vestibule. There is also one 56-watt, five-light circuit in the car body and a selector system in conjunction therewith. All the lights in the car body and vestibules are fitted with large opal shades. The conductor's cab is equipped with an individual electric heater, folding seat, foot rest, etc.

Some dimensions of these cars are given in the accompanying table.

In the painting of the cars the enamel system has been used for the exterior and headlinings, the color scheme being tan color below belt rail, ivory above belt rail, with the exception of sash and doors, which are of cherry, while the roof is oxide red. The interior is of natural cherry oiled and varnished with ivory headlinings.



AT TOP, APPEARANCE OF CAR BEFORE AND AFTER RECONSTRUCTION; CENTER VIEW, SEATING ARRANGEMENT OF REMODELED CAR; REAR (LEFT) AND FRONT (RIGHT) PLATFORMS AS RECONSTRUCTED

The cars are equipped with a hot-water heating system and are fitted throughout with new equipment of the latest design which comprises McGuire-Cummings No. 46 archbar trucks with 26-in. steel wheels; GE-258-C air-cooled ball-bearing motors, inside hung K6 controllers; National compressors; type G Westinghouse governors; M.R. circuit breakers; three-bank type C. G. resistor; 8-in. brake cylinders and Dayton No. 45 drop brake handles.

To give safety and convenience to the passengers, the cars are equipped with a door signal system the operation of which notifies the motorman by means of a small lamp placed in front of him when the doors are closed or open.

The Faraday high-tension buzzer system is used, with a buzzer in the front and rear vestibules. The lighting system of the car comprises one 23-watt five-light circuit with trouble light. This circuit in-

Attacking the Snow Problem

THE New York State Bureau of Municipal Information has sought reports from American cities, according to the February issue of the *American City*, on the method and kind of apparatus used for snow removal, in order to make available to municipal officials complete and up-to-date information. This is important because of the necessity of keeping at least the main arteries of travel free from snow. The reports seemed to indicate that municipal authorities are paying more attention to their methods of attack and consequently have formed some sort of an organization. Some now recognize the efficacy of beginning work while the snow is falling. The reports agree that wherever possible effective machinery should be used to reduce dependence on labor to a minimum, including the use of equipment available for temporary conversion for snow fighting.

Results with Butt-Treated Poles in California

Average Life of Butt-Treated Pine Poles Was 8.4 Years, Compared with 3.8 Years for Untreated Poles—93 per Cent of Similarly Treated Western Red Cedar Poles Sound After Eleven Years

AT THE seventeenth annual meeting of the American Wood Preservers' Association, held from Jan. 25 to 27, 1921, at San Francisco, P. R. Hicks, engineer in forest products, Forest Products Laboratory, Madison, Wis., presented a paper on experiments with butt-treated poles in California. In 1907 and 1908 the Forest Service, in co-operation with the various California electric companies, carried on a number of experiments to obtain information on the seasoning of poles and the efficiency of several preservatives and methods of butt treatment. The Western yellow pine was studied to determine whether butt-treated local timber could be satisfactorily used as a substitute for the relatively high-priced Western red cedar poles, which were usually obtained from the Pacific Northwest.

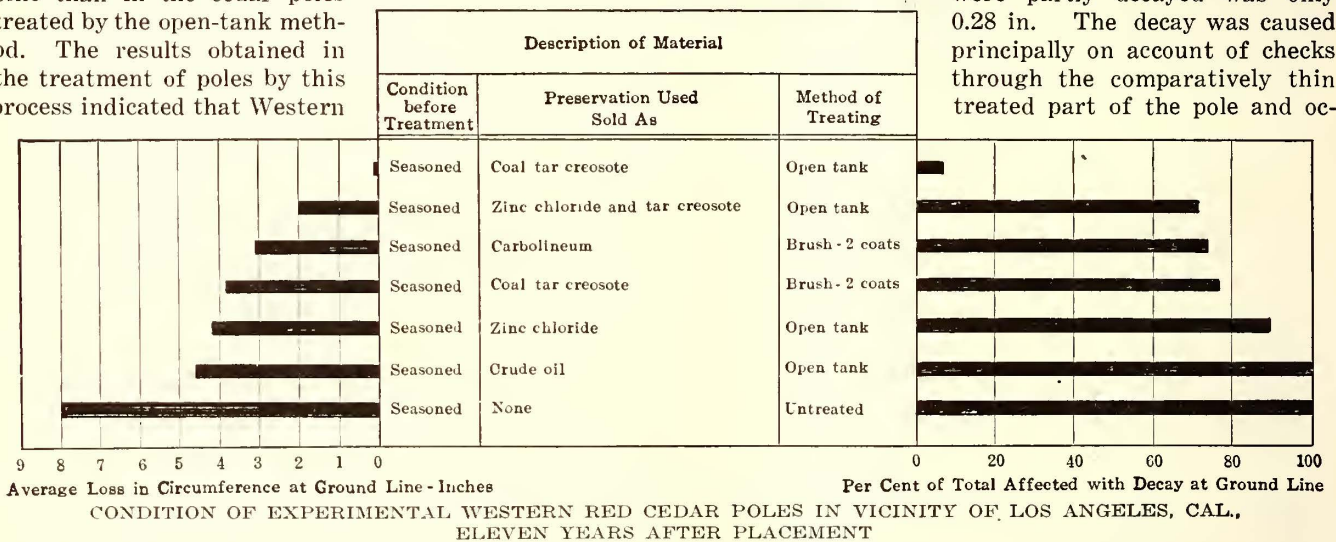
It was found that greater absorption and penetration of all preservatives were obtained in the Western yellow pine than in the cedar poles treated by the open-tank method. The results obtained in the treatment of poles by this process indicated that Western

Approximately one-third of the pole butt treated with crude oil by the open-tank method failed on account of decay in the treated butt. There was no appreciable difference in the relative durability of the pine poles butt-treated with creosote and with carbolineum. The small difference in favor of the carbolineum is not sufficient to have much weight, especially in view of the result obtained in other similar experiments.

These experiments demonstrated that butt-treated Western yellow pine poles cannot be successfully used in southern California, in comparison with untreated or similarly treated Western red cedar poles, on account of the failure of the untreated tops. If this species is to be used for poles in southern California the entire pole should be treated, preferably with creosote.

Further conclusions reached showed that the depth of penetration of the preservative appears to exercise the controlling influence on the durability of butt-treated cedar poles. An average penetration of 0.56 in. was obtained in the open-tank treatment with creosote. Out of a total of 375 poles given this treatment 349, or 93.1 per cent, were still sound, and 26, or 6.9 per cent, were partly decayed after eleven years' service. The average penetration of the twenty-six poles which

were partly decayed was only 0.28 in. The decay was caused principally on account of checks through the comparatively thin treated part of the pole and oc-



red cedar poles should be seasoned to at least 25 lb. per cubic foot before treatment, which required two to eight months in this experiment, depending upon the season the poles arrived in southern California. Western red cedar could not be successfully impregnated with crude oil by the open-tank method, although a satisfactory treatment was obtained on the Western yellow pine poles. Satisfactory absorptions were obtained in the open-tank treatment of the pine and cedar poles with zinc chloride, although the pine absorbed more preservative, with a probable greater penetration, than the cedar poles. Western red cedar poles seasoned to only 31 lb. per cubic foot could be treated successfully with zinc chloride compared to 25 lb. per cubic foot which was found desirable for successful treatments with creosote.

The average life of the pine poles, butt-treated with creosote by the open-tank process, was 8.4 years, compared with 3.8 years for the untreated poles. The relatively short life of these treated poles was not on account of the failure of the treatment in the butt, but was caused by decay in the untreated top. About one-half of the pole butt-treated in zinc chloride was, however, removed on account of the decay in the treated butt.

curred in most cases simply as a decayed pocket, while the rest of the butt was sound. The poles treated in an open tank with zinc chloride and creosote were in somewhat better condition than those treated with creosote or with carbolineum. The butt-treated cedar poles were in better condition than those treated with zinc chloride by the open tank process.

In this experiment the value of the open-tank treatment with creosote as compared with butt treatment stands out clearly. The results with the butt treatment, however, are very good, and undoubtedly this treatment is a good investment where a better treatment is for some reason or other impracticable.

In analyzing the above data and in comparing the results obtained with treated and untreated poles in other parts of the country it must be kept in mind that on account of climatic conditions in southern California these experimental poles are subjected to decay throughout the entire year.

The creosote used for the treatment of these poles was purchased as coal-tar creosote, while the carbolineum used was what is known in the trade as "Carbolineum America."

Temperature Effects in Power Cables*

Electrical Engineers at A. I. E. E. Midwinter Convention Discuss Vital Subject of Cable Loading and Temperature as Related to Life—Possible Change in Standard Rule of Institute in View—Present Rule Considered Conservative, but Sentiment Favors Reasonable Factor of Safety to Insure Satisfactory Durability

AT THE Thursday morning session of the recent midwinter convention of the American Institute of Electrical Engineers six papers were presented under the auspices of the sub-committee on wires and cables of the standards committee. The papers were as follows: "The Maximum Safe Operating Temperatures of Low-Voltage Paper Insulated Cables," by W. A. Del Mar, chief engineer Habirshaw Electric Cable Company; "Permissible Operating Temperature of Impregnated Paper Insulation in which the Dielectric Stress is Low," by Philip Torchio, chief electrical engineer New York Edison Company; "Permissible Operating Temperatures of Impregnated Paper Insulation in which the Dielectric Stress is Low," by D. W. Roper, superintendent of street department Commonwealth Edison Company; "Notes on the Effect of Heat on Impregnated Paper from Cable Insulation," by W. S. Clark, engineer wire and cables General Electric Company; "The Effect of Heat Upon Paper Insulation," by H. W. Fisher, chief engineer Standard Underground Cable Company, and R. W. Atkinson, assistant to chief engineer Standard Underground Cable Company; "Permissible Operating Temperatures of Impregnated Paper Insulation in which the Dielectric Stress is Low," by L. L. Elden, electrical engineer the Edison Electric Illuminating Company of Boston.

STATEMENT OF THE PROBLEM

In opening the symposium Mr. Del Mar listed these five questions as embodying the preliminary problems involved in determining the safe operating temperature of an insulating material:

1. What is the criterion of quality of paper insulation by which we may say whether it is satisfactory for service?
2. What is the effect of the continued application of various degrees of heat, expressed in terms of the criterion selected?
3. Will intermittent heat have the same effect as continuous heat provided the aggregate time of exposure and the temperature are the same in both cases?
4. If the above questions should be satisfactorily answered, what form of rule should be adopted so as to make the best economic use of the information thus obtained?
5. If a rational rule for the maximum permissible temperature of paper insulation should be developed, how can the hottest-spot temperature of a cable in a duct be measured in order to insure that the cable is working within the rule?

For low-voltage cables the criterion of quality is mechanical strength, best indicated by means of the tearing test. For this test a piece of paper about 3 cm. wide is carefully cut with a razor along its center line from one end to about its center and a pencil mark made 1 cm. beyond. It is then suspended from one of the small ends and a balance pan is attached to the small free end, the large end being allowed to swing free. Sand is then poured continuously into the

pan until the paper begins to tear. The stream of sand is then continued slowly, stopping if the paper continues to tear, but proceeding if the tearing stops. It is continued until the tear reaches the centimeter mark. The total weight of pan and sand is taken as the tearing strength of the paper. The tearing strength of unimpregnated Manila rope paper 8 mils thick, under ordinary conditions, is from 6 to 10 oz. When the paper is impregnated the tearing strength is usually less than this.

Mr. Del Mar gave the results of tests made to determine the effects on insulating paper of moisture, continuous heating and intermittent operation. He concluded, however, that even with all of the above questions satisfactorily answered there would still be the difficulty of applying the information to practical operating conditions, because it is almost impossible to ascertain accurately the hottest-spot temperature of a cable in a duct. This problem is complicated by the presence of other cables in neighboring ducts and by the variable thermal resistivity of the soil.

The present interest in this subject arises from the increased loads which war conditions suddenly imposed on the power plants and the consequent enforced operation of cables at higher temperatures than were previously thought safe. Experience indicates that low-voltage cables may be operated at higher temperatures than were considered safe a few years ago.

OPERATING TEMPERATURES FOR CABLES

In his paper Mr. Torchio reviewed the effect of temperature on insulating materials, abstracting from the 1913 Steinmetz and Lamme report to the Institute and the 1905 British Engineering Standards Committee tests. He gave surveys of low-tension cables in large distributing systems, and special tests on cables including sheath cracking, high temperature tests, effect of bending on cables heated to high temperatures, distillation of cable compounds, ambient temperatures in subway ducts as affected by thermal conductivity of concrete, amount of moisture in soil, different arrangements of ducts and load factors at which the cables are operated.

He stated that the principal reasons advanced for adopting lower temperature limits than 105 deg. C. for cables have been: (1) That the compound in the cable, when warm, may leave the paper, especially when the cable is installed in inclined ducts, with a tendency to flood the lower portion of the cable and to leave the upper part of the cable dry; (2) that cables are oftentimes removed from subways for reinstallation in other locations and, therefore, if the paper becomes brittle, it would crack inside the lead sheath. Further, low temperatures are advocated because the expansion and contraction of long lengths of large size lead-covered cables may cause cracking of the lead sheath at sharp bends in manholes.

*Abstracts of a group of papers presented at Ninth Midwinter Convention of American Institute of Electrical Engineers, New York City, Feb. 17, 1921.

He showed these reasons are insufficient to make an exception to the A. I. E. E. standards rules for Class A insulation for 105 deg. C. for low-tension cables:

RECOMMENDATIONS FOR TEMPERATURE LIMITS

After analysis of available operating data Mr. Torchio's conclusion was that the permissible operating temperatures of impregnated paper insulation, in which dielectric stress is low, are to be a function of the load factor at which the cable operates. The load factor for cables used in systems of distribution is intended to be the ratio between the yearly average load and the maximum load on the cable. He suggested for consideration for impregnated-paper, low-tension cables the temperature limits in function of the load factor of the cable, as follows: 105 deg. C. for load factors around 33 per cent, 95 deg. C. for those around 50 per cent, and 90 deg. C. for those over 66 per cent.

CABLE EXPERIENCE IN CHICAGO

In his brief paper Mr. Roper told of practical experience with cable loads in Chicago. Test data indicate that the maximum copper temperature of low-tension feeder cables in the large and crowded conduits of the Commonwealth Edison Company immediately adjacent to the substations is generally higher than 105 deg. C., and in a number of locations considerably exceeds this figure for several hours per day for each of five days in the week during the winter months.

He considered it reasonable to conclude that when the copper of one of the low-tension cables on the distribution system reaches a maximum temperature of 180 deg. it is being heated beyond a safe limit, and deterioration of the insulation will result, and, further, that the deterioration will be greater if there are holes in the lead sheath at the point where such temperatures are reached.

Mr. Roper concluded also that not only should due consideration be given to the time during which the maximum temperature of the copper persists, but also that in an operating system it is not possible to determine the maximum safe limit exactly, as the temperatures are continually changing. Apparently the best that can be done is to determine the maximum temperature and also plot average curves showing the number of hours per year that temperatures near the maximum are maintained. From an examination of the insulation of cables corresponding to a number of such curves it should be possible to establish, first, a lower limit at which the insulation will not be injured, even when the temperature is maintained for long periods of time, and, second, an upper limit above which it is certain that the insulation will be injured if such temperature is maintained for any considerable time. From the information so far obtained in Chicago, the best that can be done is to place the lower limit at about 110 deg. C. and the upper limit at about 180 deg. C.

RESULTS OF MANUFACTURERS' TESTS

Mr. Clark gave the results of tests made within the past four years to determine the effect of heat on impregnated paper. Experimental data showed that under the action of heat the tensile strength of the paper deteriorates less rapidly than its resistance to tearing. From the results obtained Mr. Clark felt warranted in stating, in a preliminary way, that deterioration

at 70 deg. is negligible; at 100 deg. it is marked in ninety days; at 110 deg. it is marked in thirty days, applying to the particular quality of paper and impregnating compound which were under test. He concluded that the temperature limit fixed for the operation of a low-tension cable, to avoid undue deterioration, must take into consideration the length of time during which the temperature is maintained.

Messrs. Fisher and Atkinson discussed in detail the mechanical properties of papers, especially as influenced by drying, heating and impregnating. They described an instrument for measuring tearing strength, which differed from that mentioned in Mr. Del Mar's paper in that a spring is employed instead of a weight. They based their paper upon the results of tests made under a wide variety of conditions.

Among many interesting facts developed the first striking one is that impregnation itself affects only very slightly the tearing resistance of the paper. The cause of the great loss of tearing strength when the sample of paper is dried and impregnated is the change in moisture content and is not due to the impregnation with compound. The next fact is the large variation in tearing resistance with change in moisture content of the paper. With the paper tested and with the oils used, and for the relatively short series of tests which were made, there was a small difference between the aging effect at a given temperature of paper submerged in oil and paper exposed to air in an inclosed vessel, either sealed or unsealed.

Coming to the matter of allowable temperatures for cables, Messrs. Fisher and Atkinson pointed out that while cables have been in service for long periods of time and with various degrees of deterioration of the paper, even up to practically complete carbonization, there is not any extensive record of the serviceability of cable in considerably damaged condition. Furthermore, it is probable that such cable furnishes a large proportion of the operating failures that are not due entirely to external injury, an amount of failure insignificant in comparison with the amount of such cable in service, and such cables may fail in service from injury due to causes which would not be harmful to good cable. Many of the cables known to have operated successfully after severe overheating have had very liberal insulation thicknesses.

The authors considered that it would be unreasonable for the A. I. E. E. to standardize operating conditions which would materially reduce the serviceability of cables from the standpoint of ability to remove and reinstall them without injury. They suggested that a temperature limit be assigned which may be expected to produce a reduction of 20 per cent of the original tearing resistance of the paper in, say, five years. This would work out somewhat as follows for temperature allowances:

For continuously maintained temperature.....	78 deg.
For maximum temperature maintained five hours per day, temperature during remaining part of day low..	85 deg.
For maximum temperature maintained two and one-half hours per day, temperature during remaining part of day low.....	90 deg.
For maximum temperature maintained one-half hour per day, temperature during remaining part of day low..	100 deg.

BOSTON EDISON LOADING PRACTICE IS CONSERVATIVE

The final paper in the series, by L. L. Elden, gave the results of the experience of the Edison Electric Illuminating Company of Boston. He stated there is no doubt as to the safety of low-voltage cable opera-

tion indefinitely at the 85-deg. allowance provided in the present standards rule. In the last analysis the sheath temperature is the only definite factor from which to determine the actual operating temperature of a cable, since from it the temperature of the conductor can be determined with fair accuracy. It cannot be denied, stated Mr. Elden, that if paper is subjected to high temperatures its useful life as insulation must be shortened, but the real question for the cable user to decide is the rate of depreciation that he is willing to accept as the result of operating his cables at high temperatures.

The practice in Boston has been not to exceed the temperature limit of 85 deg. C. During eighteen years of use of single-conductor and concentric low-tension feeder cables there is no record of a failure of these due to loading conditions. While this practice may be considered ultra-conservative it is felt to be justified by the freedom from service interruptions.

Referring to Mr. Torchio's suggestion as to a load-factor basis for rating, Mr. Elden expressed preference for an overload rating for low-tension cables which may be taken advantage of as occasion requires. The objection which he raised to the load-factor basis of rating was the impracticability of application to the operation of any system of distribution, as in practice each feeder operates on a load factor of its own.

SUBJECT DISCUSSED FROM SEVERAL ANGLES

Following the presentation of the papers abstracted above, the topic was treated briefly by a number of cable makers and users. Without reference to these by name the substance of their remarks was as follows: One said that expansion and contraction of cables is not given the attention it deserves. He gave the life of a cable as twenty years. Most of those discussing the subject did not favor an increase in temperature rating, preferring to have the rating conservative and to depend upon the judgment of the operating engineer as to the circumstances under which the rating can be safely exceeded.

Standardization of Insulated Wires and Cables

A CONFERENCE on the standardization of insulated wires and cables was held in New York on Feb. 2. The conference, which was called by the American Engineering Standards Committee at the instance of the American Railway Engineering Association, was attended by representatives of fourteen national organizations. After a thorough discussion of the many considerations involved, it was unanimously decided that "The unification of specifications for wires and cables for other than telephone and telegraph use should be undertaken under one general plan, covering substantially all the more important uses." It was agreed that work on the following should be included: Conductor, quality, stranding, sizes; rubber insulation; varnished-cloth insulation; impregnated paper insulation; magnet wire (including enamel, cotton and silk insulation); fibrous covering (including asbestos); sheaths; armor; standard make-ups.

It was the consensus of opinion that it would be desirable to have all the American wire and cable standards assembled in a single book. The proposed work will be carried out under the auspices and rules of procedure of the Standards Committee.

Canadian Railway Club Considers Tramway Operation

Montreal Tramways Department Head Explains How Cooperation Between Public and Street Railway Operators Can Be Made to Yield Large Savings and Improved Service—Meeting Attended by About 200

A MEETING of the Canadian Railway Club, held in Montreal Feb. 8, was attended by about 200 members and guests. Among the latter were a number of electric railway men from Boston and New York who were on their way to the American Association meeting at Chicago.

D. E. Blair, superintendent of rolling stock Montreal Tramways, read a paper under the title "Some Engineering Features of Tramway Operation." His purpose was to discuss in a general way the practice which underlies an efficient system of transportation, and he drew a line clearly between those factors whose development lies in the hands of the operating company and those from which beneficial results can come only through the help of the public.

Mr. Blair explained that present tramway equipment has reached a high standard. The art has reached the stage where little that is within control of the railway managers remains to be done to improve the standards of modern car service. He raised the question as to whether existing conditions can be modified, without injury to other interests, so as to result in worthwhile improvements, and the paper is the author's answer to his own question. A few of his principal points are summarized below:

The primary requisites of a satisfactory system of transportation include speed, safety, comfort, continuity, frequency and convenience of service. Associated closely with these is economy. Speed of transportation should be the outstanding objective of all effort toward improvement, and increase of speed within the practical limitations of street traffic will tend toward greater economy without necessarily affecting the question of safety. Higher speed will add materially to service efficiency.

Mr. Blair based the body of his paper on a discussion of the elements of the "speed-time curve," taking up separately the acceleration, coasting, braking and rest periods. He outlined the mechanics of this subject in non-mathematical fashion and showed how intelligent operation of a car will conduce to economy. He emphasized also the urgency of reducing the number and duration of stops, a phase of operation which is largely in the hands of the public. Of special importance are traffic delays and, under present conditions, operating companies are providing far more cars than are necessary to perform the relatively poor service rendered, but it is physically impossible to bring these cars into efficient and expeditious service on account of the slow dispatch of car units past congested areas.

Summarizing the whole situation, Mr. Blair lists the following points: Higher schedule speeds are desirable from every point of view, and can be obtained without extra cost and without affecting safety of operation. The higher speeds will result in an improved degree of comfort and frequency of service on account of reduced overcrowding and reduced headway between cars. The securing of speeds higher than those now prevailing depends almost entirely on reducing the number and duration of stops, decrease in the former item being more important than in the latter. The patrons' con-

Copper Requires Careful Handling

AN ARTICLE of considerable value to motor repair men dealing with the handling of copper appeared in the February issue of the *Electric Journal* over the signature of J. V. Dobson. He points out that copper cannot be given the same rough treatment that iron, steel or brass will withstand, but requires certain precautions in handling and application. For example, all bends in copper should be made free and easy, for where sharp bends and sharp fillets are made, the effects of vibration, expansion and contraction, or the "throwing out" forces due to rotation, show up first. Nicking also should be avoided because nicks are the starting points for breaks.

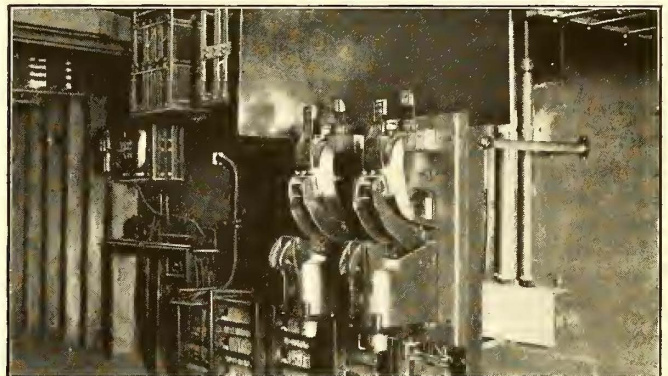
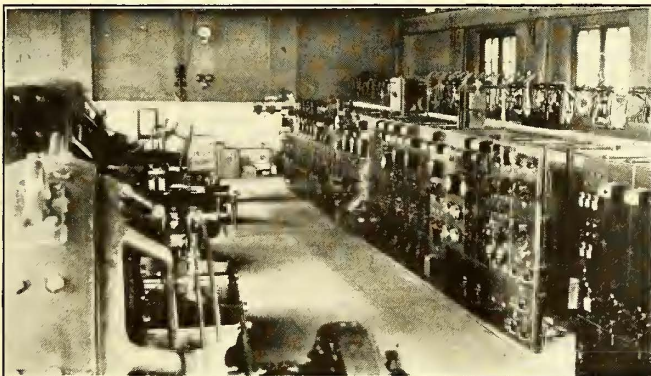
It is very easy to nick copper with the sharp edge of a metal drift or with a knife at the point where the insulation has been cut off a wire. Furthermore, the necessity is usually overlooked of providing means for the copper to expand and contract to take care of the relative motion between the different materials for the changes in temperature. As to centrifugal-force effects, even though the weight of a solid conductor may seem small, it is sufficient under vibration to cause motor and field leads to fail miserably if not properly supported.

Copper is subject to a form of sickness, which so far as has been experienced is peculiar to it alone. All commercial copper contains a small amount of oxygen in the form of copper oxide, without which it had poor mechanical characteristics. When heated in a flame rich in free hydrogen, this hydrogen unites with oxygen forming free copper and steam. The hydrogen will readily enter the hot copper, but the steam

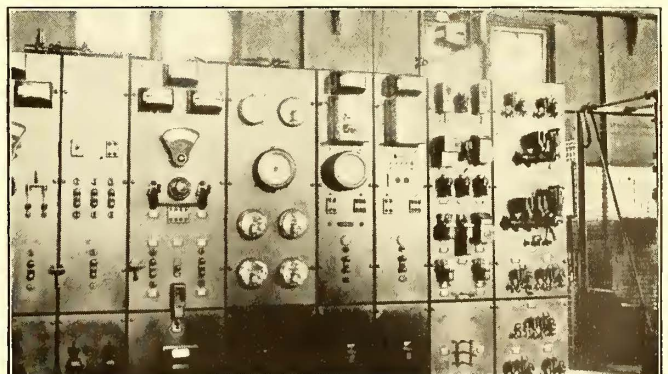
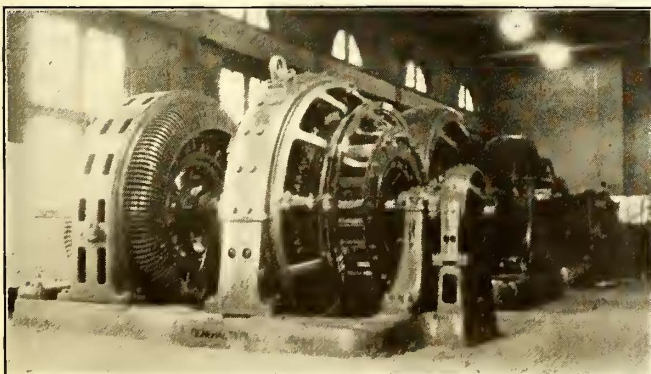
cannot get out. The copper is thus not only weakened by the elimination of the copper oxide, but the high-pressure steam expands, producing a spongy effect which still further weakens the copper. This effect is, of course, greatest near the surface. This peculiar form of sickness should be guarded against by operating men. When copper is heated in a gas and air furnace an excess of air should always be used, as deficiency of air will produce an excess of free hydrogen.

2,000-Kw. Motor-Generator Set of the Michigan Central Railroad

MENTION was made in the issue of the *ELECTRIC RAILWAY JOURNAL* of Jan. 8, 1921, in an abstract of a review prepared by W. D. Bearce, railway and traction engineering department General Electric Company, of the 2,000-kw., 660-volt synchronous motor-generator set with complete automatic control for the Detroit River tunnel electrification of the Michigan Central Railroad. This unit, which has been in operation for several months, is now the largest in railway service to be operated by automatic control. The accompanying illustrations showing it were made from recent photographs. The two machines in the background are the 1,000-kw. synchronous motor-generators installed with the original equipment. In the close-up view of the switchboard the section on the extreme right is the automatic contactor panel and adjacent to it the automatic relay panel. Then come three sections which are feeder and meter panels, while the next two are respectively the motor panel for the new set and the compensator and auxiliary panel. The remainder of the auxiliary equipment is installed in the basement.



AT LEFT, GENERAL VIEW OF SWITCHBOARD IN MICHIGAN CENTRAL DETROIT RIVER TUNNEL SUBSTATION. AT RIGHT, POSITIVE BREAKERS INSTALLED IN THE BASEMENT OF THE STATION



AT LEFT, 2,000-KW. SYNCHRONOUS MOTOR-GENERATOR SET. AT RIGHT, VIEW OF THE SWITCHBOARD, SHOWING SOME OF THE AUTOMATIC PANELS

Novel Base for Incentive

Proposal to Have It Vary in Service-at-Cost Franchises as Fares Vary from an Established Ratio of Fares to Money Rates or Commodity Values

A NOVEL method of establishing an incentive in a service-at-cost franchises for public utilities was suggested Jan. 28 in a talk on this subject before the Grand Rapids Engineering Society by Harry Barker, of Horton, Barker & Wheeler, engineers. Mr. Barker first points out it is not wholly desirable with a bonus to the stockholders or to the men and management to have the bonus rise as rates fall and fall as rates rise. Costs and rates naturally tend to rise as prices rise, and it will not do at a time of high prices to cut off the inducements for economies and efficiencies just when they are most needed. A better plan, in his opinion, is to set up parallel ranges of base rates and base costs as measured by, say, bank loans, or the Dun index figures for prices of commodities and labor might be used. From such a table, a base rate can be found that is normal for the prevailing cost of money (or prevailing prices of commodities and labor). Then for each step that actual rates are lower than this normal rate the bonuses might be stepped up in accordance with a prearranged scale. Mr. Barker believes that the management and men should share in any bonus plan.

To illustrate his plan he assumes a case where a careful investigation has shown that the fares of a certain street railway under normal operation with fair profit were more or less as follows:

3½-cent fare when money was at.....	3½ per cent
4-cent fare when money was at.....	4 per cent
4½-cent fare when money was at.....	4½ per cent
5-cent fare when money was at.....	5 per cent
5½-cent fare when money was at.....	5½ per cent
6-cent fare when money was at.....	6 per cent
6½-cent fare when money was at.....	6½ per cent
7-cent fare when money was at.....	7 per cent
7½-cent fare when money was at.....	7½ per cent
8-cent fare when money was at.....	8 per cent

Then if actual fares were 7 per cent and bank money was being loaned out at 6 per cent, this hypothetical company would get no bonus, for the normal fare for 6 per cent money is 6 cents. If, however, by good management and effective co-operation by the employees the fares were brought down to 5½ cents in times of 6 per cent money, then the company and the employees would get one step of a bonus—say one-half of 1 per cent extra return on the franchise valuation for the company, and for the men 4 per cent bonus on their yearly wage. If continued progress by company and employees brought the fares down to 5 cents and money still stayed at 6 per cent then the company would be allowed 1 per cent extra return on valuation, and the men would get 8 per cent bonus on wages.

Mr. Barker said that the direct ratio quoted above was intended of course as purely illustrative and not definitely to apply to any specific railway. He also sug-

gested that any bonus incentives to be fair should be recast every five, ten or fifteen years so that as the peculiar economies of one property and management are overtaken by the general progress of the art the public shall not continue to pay the bonus.

In the same address Mr. Barker also discussed the proper size of the index reserve fund under a service-at-cost franchise and spoke of from 4 to 12 per cent of the value of the system as being a figure at normal level which has been used. In his opinion this fund could often economically be carried as a bookkeeping reserve and the cash put to work, in the same manner that the depreciation reserve is now commonly handled.

Rehabilitating Brick Pavements

AN ECONOMICAL method of repairing a brick pavement in Appleton, Wis., the surface of which had become very rough and corrugated, was described in the February issue of the *American City*. There were places in the pavement where the joints were worn down between the bricks from ½ to 1½ in. from the original surface, and it was estimated that it would cost \$1 per sq.yd. to turn over and clean the bricks of the 29,000 sq.yd. of pavement in question.

The method finally resorted to was to clean the pavement thoroughly by flushing and then go over the surface with brooms and small hooks to remove all the dirt between the joints that the flusher had not taken out. After the pavement was thoroughly dry a ¼-in. coating of Tarvia "A" was spread on the surface of the brick. The Tarvia was worked at about a temperature of 225 deg. F. The material was spread evenly with ordinary floor squeegees with a rubber edge and then a coating of pea or roofing gravel was spread to a depth of about ½ in. After the gravel was applied a 10-ton roller was run over the surface, which forced the gravel into the binder in the joints between the bricks, while the gravel that lay on the surface of the brick was generally crushed to several smaller pieces.

Applying this new surface to the street, including the cleaning, applying binder, rolling, etc., took about ten days. The total cost per square yard amounted to about 15 cents. It took about ½ gal. of Tarvia to cover a square yard and about 1 cu.yd. of sand was enough to cover 96½ sq.yd. of surface.

Steam and Electric Operation on the Rhaetian Railway

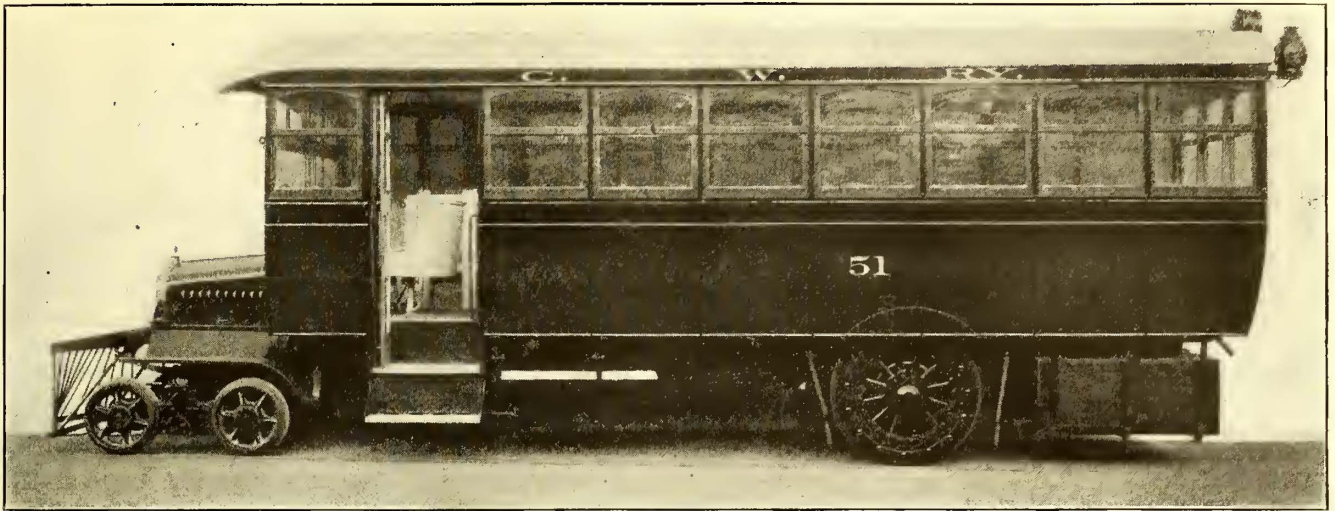
THE Rhaetian Railway operates about 186 miles of meter-gage track in the canton of Grisons, Switzerland. Electrification was commenced in 1913 and it is not yet completed. The early electrification was covered in the issue of this paper for April 4, 1914, page 760. The accompanying data from the issue of *Schweizerische Bauzeitung* for Dec. 11, 1920, show not only the figures for electric operation but permit comparison with steam.

OPERATING DATA OF RHAETIAN RAILWAY, SWITZERLAND

Year	Gross Thousand Ton-Miles	Energy Consumption in Kilowatt- Hours	Energy Consumption Watt-hrs. per Gross Ton-Mile	Energy Cost per Kilowatt-Hour Cents	Coal Consumption and Cost per Gross Ton-Mile with Steam Locomotives		Energy Cost with Electric Locomotives per Gross Ton-Mile, Cent	Lubricant per Thousand Gross Ton-Miles Steam, Pounds Electric, Pounds	
					Pound	Cent		Pounds	Pounds
1913	14,070 ¹	980,450 ¹	69.6	1.426 ²	0.340	0.106	0.100	1.1	0.8
1914	21,610	1,537,750	71.0	1.770	0.325	0.111	0.118	0.7	0.6
1915	18,150	1,370,850	75.5	1.804	0.328	0.116	0.136	0.7	0.6
1916	18,200	1,369,100	75.2	1.806	0.319	0.127	0.136	0.6	0.6
1917	16,980	1,303,200	76.6	1.870	0.311	0.136	0.143	0.6	0.6
1918	16,360	1,245,700	75.2	1.930	0.326	0.385	0.144	0.5	0.5
1919	25,970	2,140,900	82.5	1.554	0.337	0.595	0.125	0.6	0.5

¹Six months only.

²Based on 19.3 cents exchange value of the Swiss franc. Electrical energy is purchased from the Brusio Supply Company.



NEW GASOLINE VEHICLE FOR USE ON RAILS

One-Man Gasoline Motor Car

A New Vehicle for Operation on Rails, Built for Use on the Chesapeake-Western Railway, a Steam Line in Virginia, Has the Front End Mounted on a Small Four-Wheel Pivotal Truck

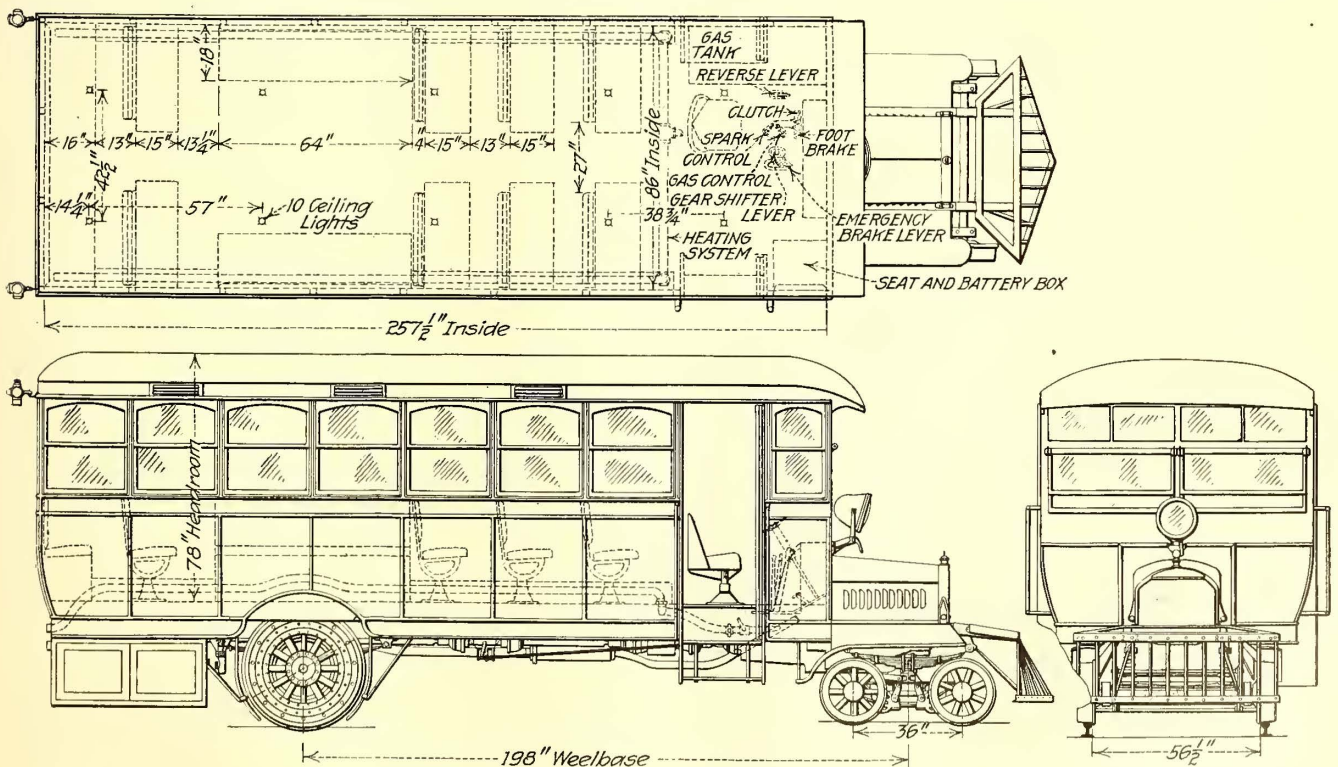
A NOVEL form of gasoline-driven motor railroad car has been put in commission by the Chesapeake-Western Railway, a steam road in Virginia. The car resembles the large type of single-deck motor bus extensively operated on the streets of cities, with the difference that under the front of the vehicle is a small four-wheel pivotal truck which enables the vehicle to take curves more easily and at higher rates of speed than with two wheels and axle of the ordinary bus.

The car consists essentially of a 2-ton Mack dual-reduction motor truck, a Mack standard engine and transmission, with an additional transmission to give

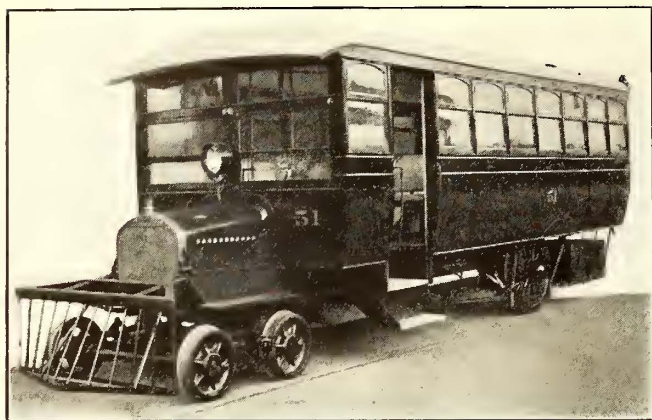
three speeds in reverse instead of the usual one speed. The following are the principal dimensions:

Wheelbase of chassis.....	16 ft. 6 in.
Wheelbase of pony truck.....	3 ft.
Seating capacity.....	31 passengers and driver
Length over corner posts.....	21 ft. 11 in.
Length over pilot.....	27 ft. 10 in.
Width of posts at belt rail.....	7 ft. 10 1/2 in.
Weight complete.....	12,000 lb.

This new type of rail bus is being put on the market by the International Motor Company, New York City, which supplied the chassis and power plant, while the body and pony truck were built and installed on the chassis by the J. G. Brill Company, Philadelphia. The body was constructed according to the best body building practice, having a composite underframe of yellow pine side sills, oak end sills and 3-in., 4-lb. steel channel crossings, all securely bracketed together. The



PLAN AND ELEVATIONS OF THE NEW VEHICLE



A PONY TRUCK FACILITATES HIGH-SPEED OPERATION

upright members are of ash and from the bottom of the side sill to the belt rail the body is sheathed in No. 18 sheet steel. The letter boards are of poplar.

The roof is of the plain arched type and is greatly reinforced by the use of suitable steel rafters placed advantageously to strengthen the construction where needed. The roof boards are 3/8-in. poplar and are covered with No. 8 canvas well lined in white lead. Three ventilators of the Brill "exhaust" type, used extensively on electric railways, are placed along the center line of the roof.

A two-leaf folding door is located on each side of the front end of the body and is manually operated by the driver from his seated position. Two stationary steps are included at each door opening for passengers entering and leaving the bus.

The upper part of the double side-sash is stationary, while the lower is arranged to drop into a window pocket. In the front end of the body one of the sashes on each side is hinged similar to the standard motor bus windshield practice.

The seats are of the Brill light-weight non-reversible "Waylo" type, which are the same as used in the single-end Birney safety car. They are upholstered in rattan and equipped with bronze grab handles.

Under the body at the rear are provided two baggage boxes which are strapped to the bottom of the bus with suitable hoop irons. Four Brill patented "Dumpit" sand boxes are supplied, two over each rear wheel, mechanically operated from the operator's position.



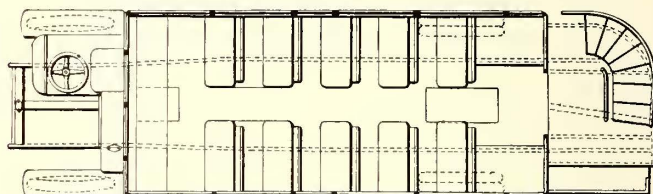
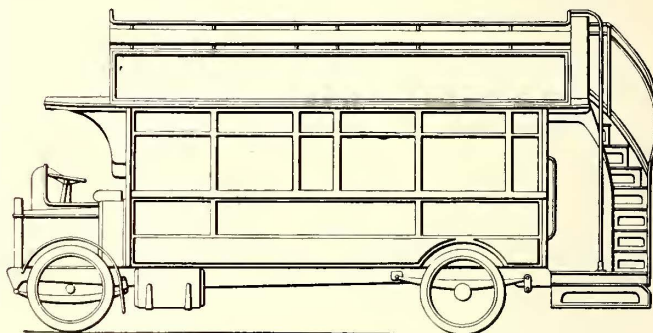
THE CAR IS WELL LIGHTED AND VENTILATED

The field which is visualized by the makers for this car is particularly the interurban railway and short-line railroad where the high costs of operating and maintaining steam equipment are causing heavy deficits. A car of this type can be run at a fraction of the cost of steam equipment.

Fifty-four Seat Bus for London

Capacity Raised from Thirty-four to Fifty-four Seats by London General Omnibus Company Within Three Years, with But 2 Ft. Increase in Over-All Length and 16 per Cent Increase in Weight

THE years 1919 and 1920 have seen a remarkable advance in the design and capacity of motor buses by the London General Omnibus Company through its building ally, the Associated Equipment Company. It will be recalled* that up to 1919 the standard city bus of the London General Omnibus Company was a thirty-four-seat double-decker designated as Type B. This was a mobile vehicle but not particularly fast because the rear platform was too narrow to permit entrance



NEW TYPE S BUS AS PLANNED TO SEAT FIFTY-SEVEN, BUT LATER MODIFIED TO SEAT FIFTY-FOUR

and exit simultaneously. As the lower deck of the Type B was not wide enough for cross seats on both sides, most "B" buses had longitudinal seats below, but a few had cross-seats on one side and a longitudinal seat on the other.

COMPARISONS OF DOUBLE-DECK, OPEN-TOP LONDON BUSES

	Type B	Type K	Type S
Seats.....	34	46	54
Over-all length.....	22 ft., 6.5 in.	22 ft., 6.5 in.	24 ft., 7 in.
Body length.....	11 ft., 9.25 in.	13 ft., 10.75 in.	16 ft., 11 in.
Actual linear dimension per seated passenger.....	8 in.	5.87 in.	5.46 in.
Over-all width.....	6 ft., 10 in.	7 ft., 1 in.	7 ft., 1 in.
Wheelbase.....	12 ft., 10.62 in.	14 ft., 2.25 in.	14 ft., 11 in.
Track.....	5 ft., 8 in.	5 ft., 10 in.	5 ft., 10 in.
Rear overhang.....	7 ft., 7.38 in.	6 ft., 8 in.	7 ft., 2.75 in.
Weight empty.....	8,064 lb.	7,924 lb.	9,380 lb.
Weight per seat.....	237 lb.	172.8 lb.	173.5 lb.
Horsepower*.....	30 hp.	30 hp.	34 hp.

* According to the formula of the American Society of Automobile Engineers, these ratings would be 24 hp. and 27.2 hp., respectively. The standard 47-seater of the Fifth Avenue Coach Company has a nominal rating of 25 hp.

Because of great increases in wages, it became uneconomical to run a thirty-four-seater, especially as the standard seating capacity of the partly competitive London County Council tramcar is seventy-eight. The

*See ELECTRIC RAILWAY JOURNAL, Oct. 11, 1919.

company therefore brought out a forty-six-seater, designated Type K, which made such advantageous use of high-strength materials that it weighed only 7,924 lb., or actually less than the thirty-four-seater it was replacing. The seating and passenger interchange features of this bus were also a great advance on the Type B.

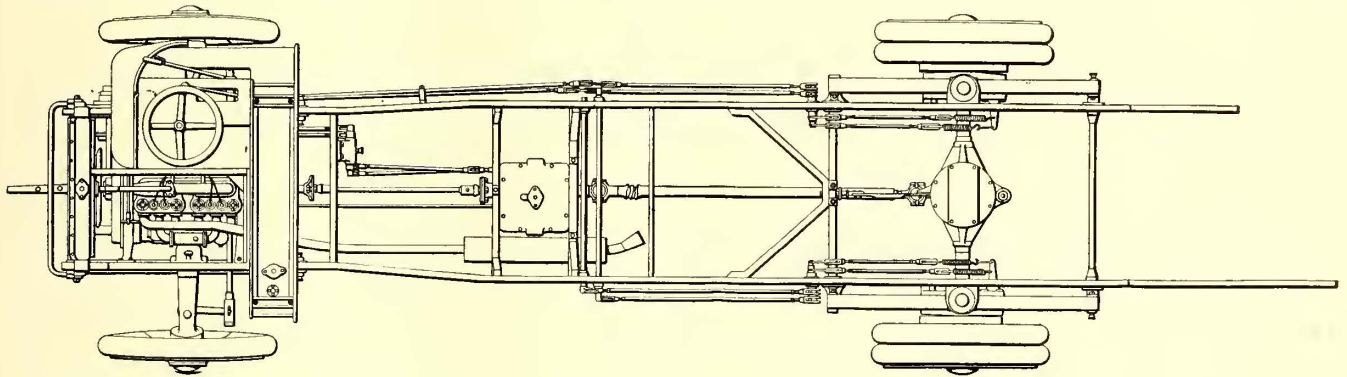
The lower deck seat layout followed the popular American street car pattern of short longitudinal seats (three per seat) at the rear and 32-in. cross seats on both sides for the rest of the compartment. This arrangement, in combination with a platform 3 ft. 10 in. instead of 3 ft. long, made for faster interchange of entering and departing passengers. The length of this bus from crank handle to rear clearance was 22 ft. 6½ in. and the width over the lower deck 6 ft. 10 in. By the end of 1920, the company already had in operation more than 400 of the 1,000 Type K buses which were ordered.

With the coming of still further increases in wages and the demands of growing traffic, the company was obliged to work out a still bigger bus, although the Type K at 7,924 lb. (3 tons 10 cwt. 3 quarters British) empty represented the maximum weight then permitted

also shows the fact that the street occupancy per seated passenger has been materially reduced in linear dimensions as follows: Type B, 8 in.; Type K, 5.87 in.; Type S, 5.46 in. At the same time, the width over all has gone up only 3 in., namely, from 6 ft. 10 in. to 7 ft. 1 in. Several score of the 200 Type S buses ordered are already in use.

In comparison with the foregoing figures, it may be interesting to state that the popular forty-seven-seat open-top bus of the Fifth Avenue Coach Company, New York, is very close to London weight standards inasmuch as its weight per seated passenger, including oil, fuel and water, is 190 to 200 lb. The new enclosed upper-deck sixty-passenger bus of the Chicago Motor Bus Company is reported to weigh 12,500 lb., or only 209 lb. per seat.

Although the London General Omnibus Company did not consider it economical from the upkeep standpoint to run Type B buses more than five years and although war conditions did make it necessary to run them seven years more, it is noteworthy that these buses are still in such shape as to be offered for further use in lighter service elsewhere. Consequently, the Associated Equipment Company is selling large numbers of buses over-



CHASSIS OF TYPE S BUS

by London police regulations. However, permission was eventually obtained for the operation of a limited number of the fifty-four-seat Type S buses briefly described in the following paragraph:

In design, materials and general layout the Type S is simply a longer Type K, the increase in seating capacity from forty-six to fifty-four being obtained by an increase in length from 22 ft. 6½ in. to 24 ft. 7 in. Nickel-steel and ash are the principal body framing materials. At first it was planned to make allowances for fifty-seven seats, as shown in the diagram on the previous page. This caused overcrowding, with the result that the seating arrangement was cut down to fifty-four.

The longitudinal corner seats in the lower deck instead of seating only two were made to seat three, the same as in the Type K bus. The long cross seat at the front, where five passengers were to sit riding backward, was taken out. With the final arrangement five cross seats were left on each side, which, together with the end longitudinal seats, gave a total seating capacity of twenty-six on the lower deck. The upper deck seats twenty-eight. The maximum width (over moldings) is but 7 ft. 1 in. The weight of this new type bus when empty is 9,380 lb. (4 tons 3 cwt. 3 quarters British) or 173.5 lb. per seat compared with 172.8 lb. per seat for the Type K forty-six-seater and 237 lb. per seat for the Type B. The accompanying table

hailed within six months of date of sale at £500 (\$2,000 at £1 = \$4) each. The chassis alone is being sold at £450 on a 2-ton motor truck rating. From this it is evident that a well-maintained motor bus may have good resale value in a rising market. The estimated cost of a Type K bus as given by Frank Pick, commercial manager of the company, would have been £691 before the war, whereas it was figured at £1,179 in the year 1919. Thus the resale price of the Type B buses cannot be very far from their pre-war cost new.

Department of Public Works Progress

THE secretary of the National Public Works Department Association recently filed his report to the executive committee of the association for 1920. This report outlines the progress which was made during the year toward molding sentiment and furthering legislation with a view to the establishment of a National Department of Public Works. The report reviews the history of the two bills which cover government reorganization and include a Department of Public Works, namely, the Jones-Reavis bill and the McCormick bill.

The secretary says the latter "is perhaps the better of the two." It was drawn a year later than the other one. The report also includes financial statements of the association for the years 1919 and 1920.

ELECTRIC RAILWAY PUBLICITY

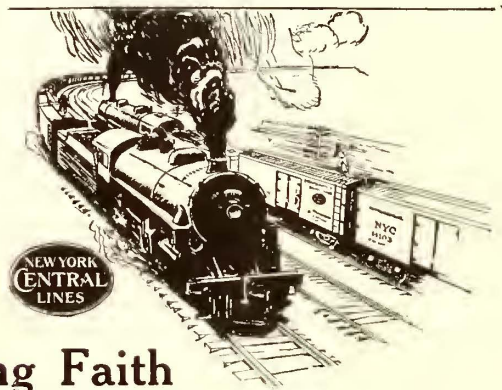
Devoted to How to Tell the Story

Dallas Issues Guide to Trainmen

THE Dallas Railway, through its publicity department, has issued a "Guide to Dallas," for distribution to its supervisors, inspectors and trainmen, that they may be able to direct passengers to their destinations intelligently. This booklet shows how every street, block number, public building, cemetery, sanitarium, school, church, hotel and railway line in the city is accessible by street car line. The guide was compiled by R. W. Tarrant, office engineer of the line and track department.

New York Central "Keeps Faith"

THE announcement below, appearing in New York Central timetables, has attracted favorable comment. It stresses the fact the company is keeping faith.



Keeping Faith

THE cars are coming! From now on travelers will notice a gradual transformation in the long trains which recently have been breaking all tonnage records. They will see an ever-increasing number of bright spots—here and there snow-white refrigerators, glossy-black hopper and gondola coal cars, and glistening-red all-steel box cars.

Already the first section of the new equipment ordered by the New York Central Lines immediately following the termination of Federal control has been received from the shops and has gone into the Nation's transportation service. The balance will be delivered continuously and in increasing volume.

These cars come with the advent of the busiest of fall and winter seasons, at a time when they are needed as never before.

WHEN the Government turned the railroads back to their owners, experts computed that approximately \$500,000,000 worth of new equipment was the imperative need of the hour. The New York Central Lines immediately placed their \$53,000,000 equipment order, covering 196 locomotives, 265 passenger cars and 11,244 freight cars.

These freight cars, if coupled together, would make a solid train ninety miles long. But measured by the total number of efficient cars added to active service, the repair program of the New York Central Lines this year amounts to several times the new construction.

Crippled freight cars to the number of 59,196 were rebuilt and rendered 100 per cent serviceable up to September 1st. During the same period, "medium" repairs were made to 41,222 additional damaged freight cars.

LAST March assurances were given the shippers and the public generally that no time would be lost in meeting the needs of the service, in rehabilitating existing equipment and purchasing new rolling stock.

The New York Central Lines are keeping faith.

THE NEW YORK CENTRAL LINES

Michigan Central — Big Four — Lake Erie & Western
Boston & Albany — Toledo & Ohio Central — Pittsburgh & Lake Erie
New York Central and Subsidiary Lines

Louisville Publishes Facts for Higher Fares

THE Louisville (Ky.) Railway, which up to this week was one of the few companies charging a nickel fare, conducted through the newspapers an intense campaign for an increase in fare. It played up in display advertisements the history of the company, its development and what good transport means financially to the city. It also pointed out that of the stock outstanding 98.5 per cent is owned by 82.4 per cent of stockholders, all of whom are citizens of Louisville.

What Are The Facts?

(An open letter to the Citizens of Louisville from James P. Barnes, President Louisville Railway Co.)

What you, Mr. Citizen, came to my office some day, as I know you will, to make suggestions as to your street car service, you will find the sign greeting you from the wall:

WHAT ARE THE FACTS?

That is my criticism. It reads the way. When I get your facts and you get my facts we can work together to solve our mutual problems, profit, help and unity.

Since I have made a long list of suggestions of expense, passenger, operation, and convenience.

None is carrying out the policy it is manifestly responsible for me to get each of you personally. I am bound to look to you through the press, the news and the radio.

But remember, please, that the door is always open for a personal interview with all you who sincerely desire to help me give Louisville the best possible street car service.

When you know the facts, when you understand my problem and your problem, I am confident that you will work with me to make the best service more and more efficient.

Can I Count On You?

James P. Barnes, President
Louisville Railway Company

What Are The Facts?

"If I ran this street car company"—

How often have you heard a fellow car rider begin a criticism of your street car service with that remark?

And then he will proceed to show you how a tremendous improvement could be readily made by a few simple shifts.

Sometimes he's right about it, but

Perhaps you, yourself, often have ideas about improving the service.

Why waste them?

Tell us. Perhaps we can use them.

Frequently you see things that we, who are so close to our task, overlook.

Often your viewpoint is correct.

And, even if we can't follow your suggestions, you have helped us, because you have shown a spirit of cooperation that opens us to greater efforts for service to you.

Our ears are open for any suggestions that will make your street car service worth more to you.

Tell us, write us, phone us.

James P. Barnes, President
Louisville Railway Company

TYPE OF PUBLICITY USED BY LOUISVILLE RAILWAY TO GET FACTS BEFORE PUBLIC

Another advertisement compares the number of rush-hour cars operated in sixteen representative cities, which shows that Cleveland and Cincinnati are the only ones that provide as many or more cars per 100,000 population served.

Two recent advertisements are reproduced in the illustrations above. The text of another advertisement outlining what the road means to Louisville reads as follows:

The Louisville Railway Company was organized in 1889 as a consolidation of the Central Passenger Railway and the Louisville City Railway.

Today it is operating 168 miles of city trackage. The number of cars operated varies from 311 during rush hours to 125 during non-rush hours. It carries annually 80,000,000 cash fare passengers and 30,000,000 transfer passengers.

By construction and purchase of seven suburban trolley lines, with 102 miles of track, the company has brought into intimate contact with Louisville a large and prosperous suburban population.

It gives employment to 1,806 persons (including the Louisville & Interurban), and its annual payroll is \$2,250,000.

It purchases each year supplies and materials to the amount of \$900,000, most of which is spent in Louisville.

Bonds to the amount of \$12,035,000 and notes to the amount of \$684,000 have been issued to provide for replacements, extensions, and more modern service. All of these issues have been marketed through Louisville financial institutions.

Seventeen hundred and eighteen stockholders, of whom 1,389 are citizens of Louisville, have invested \$11,823,600 that this community may have an efficient transportation service.

The company has served this community for more than thirty years, providing new equipment, as the need arose,

and, up to the present time, has been able to make extensions and improve the service to keep pace with Louisville's growth.

The service it will render in the future depends on the measure of co-operation it receives from citizens of Louisville.

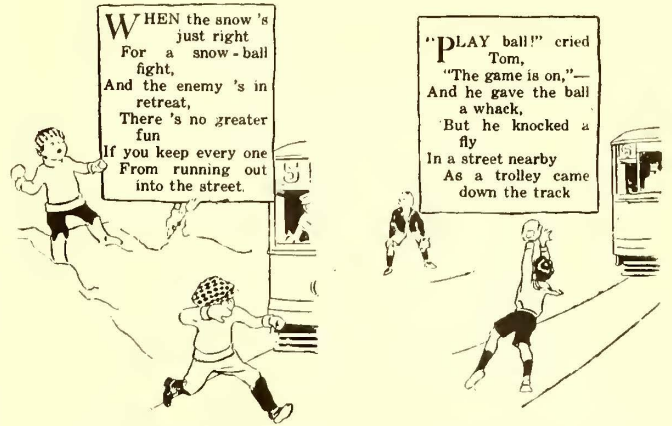
Light Up and Be Seen

A PROMINENT New York advertising man who recently visited Fort Wayne, Ind., made an interesting comment on the advertising value of electric lights as used in generous quantities by the Indiana Service Corporation on its interurban terminal in Fort Wayne. He said: "This company has outlined its terminal in electric lights, and by so doing it makes the station stand out like a fire on a dark night. The location of the station is conspicuous from the main thoroughfare by these lights and is always impressed on the minds of travelers. I think this brilliantly illuminated station is one of the best advertisements for an interurban railway that I have ever seen, and the brilliant lighting is also a real benefit to strangers in the city in that it enables them to find the station quickly. Other service corporations ought to do something of a similar kind."

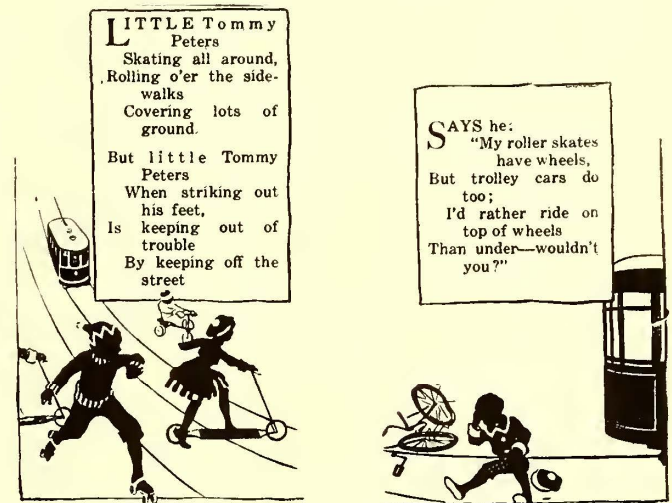
Safety Publicity Among Children

MISS "Safety First" has become quite an established character with the children in Philadelphia in the person of Miss Laura M. Roadifer of the Philadelphia Rapid Transit Company, as has been pointed out already in these columns. The results of her work are notable.

At Christmas time this season the safety department of the Philadelphia Rapid Transit Company issued a children's booklet entitled "A Merry Christmas and a Safe New Year," which was attractively printed in green and red and cleverly illustrated with children's pictures in safe and unsafe experiences with street cars. Two double pages are shown in accompanying illustrations




THE PHILADELPHIA RAPID TRANSIT COMPANY USES THIS METHOD TO TEACH CHILDREN THE SAFETY IDEA



tions and these are typical of the entire booklet, all of whose text is in children's poetry.


Safety Publicity in the British Metropolis




DON'T BOARD A MOVING BUS
IF YOU MUST, HOLD ON TO THE HAND-RAIL

THE WRONG WAY TO BOARD


THERE IS A RIGHT WAY AND A WRONG WAY. THE SECOND WAY LEADS TO DISASTER. - - LEARN HOW TO BOARD A BUS






THE LIMIT IN CARELESSNESS—TRY SAFETY FIRST


DON'T BOARD A MOVING TRAIN THIS MAY HAPPEN. IT HURTS WAIT FOR THE NEXT ONE





DON'T GET OFF A TRAM UNTIL IT HAS STOPPED

WAIT FOR THE TRAM TO STOP YOU CAN THEN ALIGHT WITH EASE AND COMFORT - - -



BY ILLUSTRATION AND SUITABLE QUOTATION THE LONDON TRAMWAYS INSTRUCT IN THE CORRECT WAY TO BOARD A CAR—AND THE PRICE OF CARELESSNESS

German Conditions Desperate

Fares Have Been Increased in Berlin 1,000 per Cent, in Vienna 1,500 per Cent, While There Has Been a Falling Off of Traffic—Receiverships and Abandonments Have Been Many

THE street railway systems in Germany, both municipal and private, are in much the situation of those in America, but in exaggerated degree. Wages and other operating expenses have increased more rapidly than fares, and there has been a falling off of traffic, especially in the smaller towns. In Berlin, where all of the street railways have been taken over by the municipality, the fare has increased from the original 10 pfennigs to 80 pfennigs and will shortly be 1 mark.

At 80 pfennigs, the system which at the 10-pfennig fare used to be prosperous is now losing from 15,000,000 to 20,000,000 marks per month! It is not expected that the mark fare will make matters much better, and the management believes that with it the limit in fares will be reached. A charge for transfers is to be introduced and freight and mail transportation is being considered. One-man cars have been proposed, but the cost of new one-man cars or even of altering the old cars to adapt them for this service is thought pro-

PERCENTAGES OF CAPITAL STOCK OF GERMAN ELECTRIC RAILWAYS, GROUPED ACCORDING TO DIVIDENDS PAID

Year	No Dividend per Cent	Dividends from 0 to 6 per Cent	Dividends from 6 to 10 per Cent	Dividends of More than 10 per Cent	Total
1907/08	21.30	47.60	29.90	1.20	100
1908/09	19.83	51.26	28.07	0.84	100
1909/10	180.23	49.41	31.59	0.77	100
1910/11	17.78	46.56	34.70	0.96	100
1911/12	17.71	46.36	34.66	1.27	100
1912/13	15.34	52.46	30.96	1.24	100
1913/14	18.15	49.58	31.87	0.40	100
1914/15	27.96	55.68	16.26	0.10	100

hibitive. There is no doubt, however, that in smaller towns the one-man cars will be adopted to a great extent.

What has been said of Berlin applies more or less to all the street railway systems in Germany. In fact, the calamity is more marked in the provinces, where the raising of the fare has resulted in a much more pronounced decrease of traffic. Many of these roads are already bankrupt, and during the last two months ten have ceased operations. The Government has issued orders that companies intending to shut down must give four weeks' notice and show proof of necessity, but the order has only theoretical force, as all abandonments which have taken place so far have been caused by the most imperative circumstances.

The same difficulties prevail in Austria and Hungary, but to an even greater extent. In Vienna, where the road is operated by the municipality, the fares have been raised from 20 hellers to 3 crowns, or 15 times the pre-war rate, yet the system is being run at a loss, which has to be made up from taxes. In Vienna for each of the four years ended June 30, 1916, to 1919, there was a continual increase in passengers per car-mile as follows: 5.4, 6.7, 8.5, 10.2.

Prior to the war the electric roads, taken as a group, paid only moderate dividends, though the supposed regularity of their business tended to give their securities an investment character. The accompanying table, compiled by Prof.-Dr. F. Helm, gives statistics as to dividends of the German roads for the years 1907-08 to 1914-15 inclusive.

There has been a diversity of practice in recent years as to the municipalization of these systems. In some cases the city has taken over the railway entirely. In other cases it has acquired a controlling stock interest. The opposite tendency is shown in Düsseldorf, where a municipal railway has recently been leased to a private company.

In fact, with the concessions which the authorities have obtained from the companies in the past, there seems to be little reason for public operation. These concessions have included free transportation of municipal employees and considerable street paving and street cleaning. In addition, fares and service have been closely regulated. In these circumstances it has appeared wise in most cities to go slowly about taking over the properties, as thereby they run a large risk without hope of much reward.

Obedience to Rules Means Safety

THE current issue of the *Utilities Mutual Protection* contains the following safety story:

A baggage car on a single-track interurban road, running westbound as an extra, was scheduled to meet an approaching passenger train at a regularly scheduled siding. While waiting on the siding for the meet to be completed, the passenger car also scheduled to make the meet pulled into the siding behind the baggage car extra.

It so happened that the extra had not pulled far enough into the siding to enable the passenger car to clear the main line. The motorman of the "regular" blew two short blasts on his whistle with the intention of asking the baggage car to move up a little to permit him to get his car "in the clear."

Instead of interpreting this signal correctly, the crew on the extra thought that it meant that the scheduled "meet" was annulled and pulled out onto the main line for the next siding, with the result that a most distressing head-on collision occurred. Four persons were killed, one of whom was the motorman of the baggage car extra, and forty other persons were injured.

The motorman responsible for the accident had been in the service eighteen years and had a splendid record. Nevertheless, if he had followed the rule not to deviate from the printed schedule without orders from the dispatcher, or if he had remembered that one crew could not receive dispatch orders, indirectly, from another crew, this disaster would have been avoided.

Progress on the St. Gotthard Electrification

A REPORT from Switzerland indicates that the electrification of the St. Gotthard line is progressing favorably and trial trips will soon be made on the Airolo-Biasca section. At Bellinzona the railroad station is being remodeled and other building operations are well along. As soon as these are finished the Biasca-Bellinzona section can also be operated by electricity.

At Bellinzona, also, a workshop for the repairing of electric locomotives is nearly finished. This is an imposing building, 328 ft. long, and it is completely equipped to accommodate from twelve to fifteen electric locomotives on three tracks at one time. Two electric cranes, with a lifting capacity of 80 tons each, are installed.

Letters to the Editors

Car Operation from the Motorman's Standpoint

SAN FRANCISCO, CAL., Feb. 3, 1921.

To the Editors:

You may be interested in the views of a motorman in regard to the prevention of accidents on a street railway. The essentials are a loud-sounding gong, plenty of sand and well-equalized brakes. I have prevented many accidents by having these, and accidents have occurred with me on account of failure of gong, sander or brakes to operate properly. A motorman having an accident on account of a poor gong, shortage of sand or unequalized brakes will not so state in his report because he knows that such a report may be used against the company and at the same time he will be cutting his own throat.

Many motormen will not report defects on the defect card as they should; one leaves the reporting to the next fellow, until possibly the defects are not reported at all. Then again reporting such defects may produce no result. Perhaps the shopman will get on the car in the carhouse and jump on the gong with such force as to produce a loud sound, saying that it is "O.K." Or if the motorman sets down "unequalized brakes" on the card, the first thing the shopman will say is: "He doesn't know what he is talking about." Probably the shopman will check up the piston-rod travel, then take up a little on the slack adjuster and let it go at that.

It is a pleasure for a motorman to run a car which is in good order, but torture to run one with a poor gong and poor brakes, especially in a congested district with fast running time. From my experience of working for a company with slow running time and another with fast running time, I had fewer accidents in the eight and one-half years with the latter than I had in the one and one-half years with the former. With slow running time one is moping along, his mind maybe a thousand miles away from his work, or perhaps on family troubles, or a sick wife or babies, etc. With fast running time his mind and hands are always ready for action. When passing a cross street he is continuously ringing his gong and is on the lookout for something to pop out in front of him, whereas when going slow he mopes along, not even ringing his gong.

There should also be better co-operation between motorman and conductor in starting their car. You often hear a motorman say: "I have the slowest conductor on the road," but often it is the motorman's fault that the conductor is slow. For instance, take a motorman who only knows how to use two points on the controller (full series and full multiple). Now if an old man or lady, or a lady with a baby in her arms boards the car, the conductor, knowing his motorman, does not dare to give the starting signal until the passenger is safely seated. But if this motorman is in the habit of starting his car smoothly the conductor will feel safe in giving the starting signal when the last passenger is up on the platform, and the car will be promptly under way, saving time, preventing accidents and insuring the good will of the public.

JOHN JOHNSON, Motorman.

Capital Must Be Attracted to Electric Railway Industry

SOUTHWESTERN ELECTRICAL & GAS ASSOCIATION
DALLAS, TEX., Feb. 7, 1921.

To the Editors:

Referring to the article by Hon. Edwin F. Sweet in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 22, it seems to me that certain statements made by him should not be allowed to pass without protest.

In one place Mr. Sweet states: "The principle underlying the street railway industry and all other public utilities should be public service and not private profit. This sounds like a truism. Almost any one would say, 'of course,' yet it is an astounding fact that heretofore and for the most part at the present time, service to the public has been and is subordinated to the pecuniary interests of the corporations owning and operating the street railways." Taken literally, this would leave the inference that "the corporations owning and operating street railways" had, without regard to the comfort, convenience or safety of the public, made full, or even excessive, profits from their operation. The commission and judicial records of the past five years prove conclusively that this has not been the case. These corporations are, at this minute, only asking for a "reasonable return" for the future and do not ask that this be made retroactive during their compelled loss-period.

Regarding forcible arbitration between employer and employed in utility service, Mr. Sweet says: "This recognizes the principle that the primary purpose of street railways is not to afford opportunity for the investment of capital and not to provide work for employees, but for the benefit of the public, whose interest is paramount."

This is true, in both theory and practice, in a *publicly* owned and operated utility, but, as a theorem, or a corollary, for the practice of *privately* owned and operated utilities it not only "puts the cart before the horse" but it deprives the cart of any motive power at all. The basic principles and laws underlying all commercial businesses from the peanut stand to the so-called "steel trust" are equally as forcibly applicable to the utility business. Even if the utility is allowed a slightly "*unreasonable* return" on its invested capital it is not best, either for itself or its public, to put its profits back into the business for the purposes above stated. The necessary money for these enforced needs must be "new money," additional and permanent capital, if the general public is to be best served. And such money, like the electric current, takes the path of least resistance; in other words, the path of the least risk, other conditions being equal.

Even in war-time in our country it was not possible to force capital into channels in which it did not ordinarily wish to flow; it took the personal stimulus of patriotism to make it do so. Now capital once more follows that path of least resistance. The fact stares us in the face that without the "primary purpose" of profit to capital invested in the utilities there would be fewer of them and those that were left would not even be able to continue their present admittedly inadequate service.

This is equally true of the other matter which Mr. Sweet discusses, namely, the flow of labor. An attempt to enforce wages or conditions which would be unjust on utility labor, especially on that of the major portion of

those employed on street railways, would be very unsatisfactory, and if such an attempt were made the utilities and their service—and consequently the general public—would soon find the evil effects of such “forced arbitration.” Labor is not as fluid as capital, and it might be slower in “finding its level,” but the inevitable result would be that the utilities would be undermanned, or inefficiently manned.

Any utility owner or operator with any public utility sense at all acknowledges the fact that the public is entitled to “100 per cent local” service; that is, to a service which keeps up with, and forestalls the community growth. But the “electric plant” is not a money-tree whose boughs may be shaken at will and dollars drop into the owner’s palm. Owners and operators know that, “other things being equal, the right of the public to 100 per cent local service is paramount” but, unluckily for the theory, “other things are seldom equal,” capital must be had; it will not come unless the proper bait is used, and that “bait” is a profit commensurate with the risk, for the commercial apothegm of the ages has been “the risk measures the profit.”

To give the increased and improved service the public is now demanding, the utility business must have new and abundant capital at reasonable rates of interest or return. To obtain this capital the industry must be made attractive to capital. To make it so attractive the risk and return must be on a par with any other legitimate and successful manufacturing and distributing business in the same community.

It is largely the fault of both consumer and general public that the utility business is, as a whole, in its present condition of financial starvation. It is true that this condition is one where ignorance of the utility business and its financial needs has been, and still is, a great factor in the stand which the public makes. It is equally true that a large portion of this ignorance is the fault of the utility in not only leaving the public unenlightened as to its business and its needs but, also, in persisting in false financing with “major” securities, in trying to lift itself out of the slough of impecuniousness by its bootstraps, but any such recriminations at this time lead us nowhere. “It is a condition and not a theory which confronts us”; the utilities need money; to get it they may have to be less regardless of the theoretical “rights” of the public than that public demands but—they need the money and they need it so that the public may have those “rights” in full as soon as possible! That’s all there is to it and premature insistence on those rights and premature efforts to enforce them will only make the matter worse and put off to a later day that which would come sooner if the general public and its exponents would not endeavor to do the impossible, namely, demand of the utility now that which is financially impossible at this moment and an attempted enforcement of which demand will prevent the granting of that demand now or in the near future.

H. S. COOPER, Secretary.

According to plans of the Bradford (England) Tramways Committee, application will be made to the Ministry of Transport for permission to extend the trolleybus system in that city, involving substitution of this type of rolling stock for the present street railway cars on certain routes. The plan comprehends the use of the new type of double-deck bus developed locally and a considerable increase in the number of rolling-stock units.

Association News

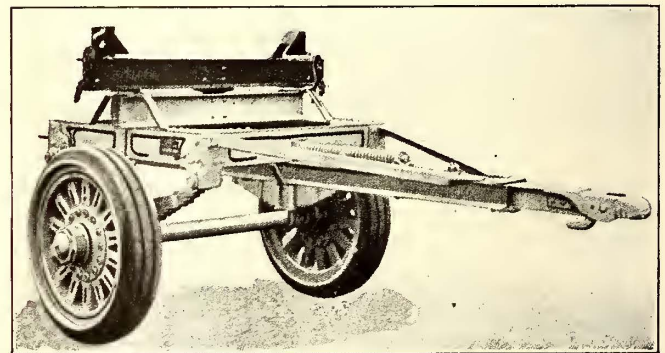
Merchandising Methods Discussed

THE T. & T. Association committee on merchandising of transportation met at association headquarters on Feb. 18, reviewed to some extent the work of last year’s committee and mapped out a plan for its report to the 1921 convention. Among those present were J. H. Alexander, Cleveland Railway, chairman; A. H. Ferrandou, Washington Railway & Electric Company; M. B. Lambert, Westinghouse Electric & Manufacturing Company, and E. S. Wilde, Union Street Railway, New Bedford, Mass.

The committee plans to outline, for the benefit of the industry, a number of specific methods that can be used by local companies in merchandising service. These will include plans for education of employees, for advertising in newspapers, on billboards by means of car cards, etc., for direct advertising through addresses illustrated and otherwise delivered before civic bodies and clubs, and for co-operation with national and state publicity bureaus for the dissemination of information for public consumption.

Two-Wheel Trailer Truck

THE Warner Manufacturing Company, Beloit, Wis., has placed a two-wheel heavy-duty trailer truck on the market for the convenience of railways which find it necessary to carry poles, pipes or other material of such a length that they cannot be loaded on standard trucks. The outstanding features of this trailer are the use of a universal ball-and-socket hitch and a swivel bolster. This patented hitch requires no coupling pins. It operates like the shoulder joints in the human body,



TWO-WHEEL HEAVY DUTY TRAILER TRUCK

allowing for all positions of the trailer and the load and eliminating binding in passing over bumps, around corners, etc.

The swivel bolsters take care of all side sway and they turn with the load as the truck is rounding corners, so that the trailer wheels will track with the truck wheels. The bolsters are provided with dogs which can be removed quickly if necessary while poles or pipes are being loaded on the truck. The dogs are adjustable in position to accommodate loads of any size. These trailers are made in four sizes, 1½ tons, 1¾ tons, 2¾ tons and 5½ tons.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

Storm and Fire Hit Boston

\$400,000 Loss Sustained by Boston Elevated by Destruction of Neponset Carhouse and Cars

Almost on the heels of the announcement by the trustees of the Boston (Mass.) Elevated Railway that the \$300,000 deficit of last year might be wiped out in the next six months if the winter should continue as mild as it had been in the early months, a blizzard bringing a 16-in. fall of snow came on Sunday, Feb. 20. Before the storm was over and the streets cleared for vehicular traffic the elevated suffered the most disastrous fire it has had in a number of years, the Neponset carhouse and forty cars being totally destroyed by the conflagration.

COMPANY'S EQUIPMENT IN READINESS

The elevated was well prepared for the storm and early Sunday morning had more than 100 plows operating over the entire system with the result that at no time was any line tied up for more than comparatively short periods. Coming as it did on Sunday, the loss of revenue due to delays of thirty to sixty minutes on various lines was less serious than it would have been on a business day. At no time were the rapid transit lines tied up. On Monday morning all lines were operating on normal schedule except where delays were occasioned by other vehicular traffic using the tracks cleared by the elevated plows.

Although the company probably did not suffer any very considerable loss in revenue, the cost of clearing the snow is expected to cause a very decided setback in the efforts of the trustees to wipe out the past deficits. An unfortunate controversy arose between the city officials of Boston and the company over the clearing of the snow from the streets.

FIRE BREAKS OUT IN CARHOUSE

Mayor Peters charged the Boston Elevated Railway with failure to cooperate with the city in removing the snow from the streets upon which its tracks are laid as required by law. The Mayor issued a statement to the effect that he called the trustees of the elevated into conference and that after some discussion they agreed to make greater effort to secure the removal of the snow over the holiday. The Mayor further stated that the trustees claimed that the financial situation of the company was such that they could not stand the greater expense.

At five o'clock Monday morning a fire, said to have originated in the electric heater of one of the cars, broke out in the carhouse at Neponset, completely

destroying the structure. Employees succeeded in running five cars out of the building, but the fire spread so rapidly that the men engaged in the work of rescue were driven out and twenty-three articulated type cars, eight semi-convertibles, one 25-foot motor car, four trailers, two snow plows and two work cars were completely destroyed. Five other cars on storage tracks outside the building were badly damaged but can be repaired.

\$400,000 Loss

The loss is estimated at approximately \$400,000, but this will be largely covered by insurance. The loss to the company, however, in the use of the cars and the carhouse cannot be estimated at this time. Before the fire was even extinguished, General Manager Edward Dana was on the scene and had emergency crews clearing the loop track and had established an emergency shuttle service between Field's Corner and Neponset.

The fact that the fire started before the streets had been broken through after the heavy snow is believed to have been the reason for the inability to check the fire before it had gone so far. Several pieces of the city fire apparatus were stalled in the snow drifts and never succeeded in reaching the fire.

Home Rule in Arkansas

Public utilities in Arkansas are vitally affected by the Emory-Walls bill. This bill has been passed by both houses of the Arkansas Legislature now in session and has been signed by Governor McRae. It repeals the act of 1919 which abolished the Arkansas Railroad Commission and substituted the Arkansas Corporation Commission. In repealing this act, provision is made for a new Railroad Commission to which certain powers formerly exercised by the Corporation Commission are transferred.

The new commission will have general jurisdiction over all common carriers, railroads, express companies, car companies, freight lines, toll bridges, street railways, electric and other interurban lines, telegraph and telephone companies, etc. No jurisdiction is vested in the commission, however, over any matter of rates or regulations of public utilities operating within a municipality, such jurisdiction being expressly conferred upon the municipality.

Procedure is prescribed whereby municipalities may assume ownership and direct operation of utilities after an election by the people. Provision is made for appeals from the rulings of any municipality in regard to rates or other question to the Circuit Court.

Detroit Campaign Started

Voters Solicited by Private Company to Discard Municipal Ownership for Service at Cost

The initiative petition, in the form of an ordinance to authorize and provide for the operation of one complete unified railway system in Detroit, Mich., under service at cost and reserving to the city the right to purchase or lease the lines, has been filed in the office of the City Clerk by Elliott G. Stevenson, attorney for the Detroit United Railway.

The proposed ordinance has been approved as to form by the Corporation Counsel and has been submitted to the Council by the City Clerk. The ordinance will be submitted to the voters at the election on April 4, and a copy of the settlement plan as set forth in the ordinance is being mailed by the Detroit United Railway to every registered voter in the city of Detroit.

Accompanying the complete copy of the proposed ordinance which is being sent out to the voters is an analysis of it, intended to enable all the people to note how the ordinance meets the various popular demands. The demands of the public are set forth as follows:

1. That the entire street railway system of Detroit be one single system, operated as such, with no stub ends belonging to the interurban lines in portions of the city which have been annexed from time to time, and that the lines in Highland Park and Hamtramck be made part of the Detroit system.
2. A reasonable rate of fare, provided for a continuous ride between any two points in the city.
3. That the rate of fare shall be the lowest possible, sufficient only to give all the service desired by the people and paying only the legitimate and proper costs of that service.
4. City control of routes, frequency of service, heating and ventilation and the like.
5. Prompt extensions of lines as the public needs demand them.
6. That the privilege of municipal purchase shall be reserved to it, in case it desires to exercise it in the future.
7. Full knowledge of street railway finances.
8. Street railway development without continued quarrel.
9. That plenty of capital be available for extension and development.
10. The building of certain lines that by their very nature are piecemeal in their service and by themselves cannot be made to render transportation for all the people throughout the city, has been undertaken by the public.

The analysis explains fully how each of the demands of the public is met by the provisions of the ordinance. With respect to the piecemeal lines, it is stated that the ordinance requires the Detroit Service-at-Cost Railway to purchase these lines, if the city so directs, thus relieving the city from guaranteeing its tax money in a piecemeal undertaking.

The ordinance must receive the approval of 60 per cent of the voters to be adopted.

New Akron Franchise Rejected

Railway Refuses to "Be a Party to Fooling the People," Declaring Results Under Grant Are Impossible

An unusual situation with reference to a new franchise has developed in Akron, Ohio. Following rejection of the franchise by the Northern Ohio Traction & Light Company, the Council defeated the measure. The measure was then reintroduced at a subsequent meeting and passed final reading. Still the company refuses to accept the ordinance, declaring that when a new contract is made the people will expect results, that results cannot be obtained under the franchise as passed, and that "the company will not be a party to fooling the people."

THE proposed franchise is based on the service-at-cost plan. The measure, a summary of which appeared in the *ELECTRIC RAILWAY JOURNAL* for Nov. 20, 1920, page 1072, as originally presented in Council, was satisfactory to the company. It was amended in Council.

TENTATIVE FRANCHISE ARRANGED

Following a strike of the trainmen on the Akron City lines last July, the company entered into a franchise agreement at a conference participated in by leading citizens of Akron, representatives of the city, including the city administrator, and company representatives. This agreement was to form the basis of a new franchise. Upon the strength of it the company granted its trainmen an increased wage and they returned to work. The agreement provided:

1. That the valuation of the system be fixed by arbitration.

2. That the initial rate of fare be 5 cents until Dec. 15, 1920, then a 6-cent fare; the 6-cent fare to be considered as the basic rate of fare for the entire life of the ordinance.

3. Minimum rate of return on the valuation fixed by arbitration board to be 7 per cent with an increase of 1/4 of 1 per cent for each reduction of one step in the fare below the 6-cent rate.

4. If money for capital expenditures cost more than 7 per cent the difference be charged to operating expenses.

This agreement was put in writing and signed July 19, 1920, by F. H. Lyder, William H. Kroeger and George C. Jackson, members of the public utility committee of the Council. It was accepted on July 23 by A. C. Blinn, vice-president and general manager, for the company.

CITY EMPLOYED EXPERT

The city employed E. E. Brownell, a traction expert, and the writing of the new contract began in August. It was submitted in Council on Nov. 9, 1920. Then the politicians got busy. Something like fifty or sixty amendments were offered and some adopted by the Council. Most of them were unimportant, but two changes, one submitted by Mayor Beck and another by Councilman Jackson, a member of the committee signing the original agreement, struck at the very heart of the contract—valuation and rate of return.

The Beck amendment provided that in making the valuation only original installation cost, less depreciation, should be considered by the appraisers. The Jackson amendment provided for a sliding rate of return with a maximum of 8 per cent when fares

were 4 cents and 4 per cent when fares were 8 cents.

Before the ordinance came up for second reading Mr. Blinn wrote a public letter refusing to accept the franchise if passed. When the roll was called on final passage Dr. F. H. Lyder, chairman of the utility committee, made public the agreement between the city and company, charged double dealing and by voting no killed the ordinance.

The chief administrator, recognized as a political boss, had the measure reintroduced, "lined up" his followers and on Feb. 15 put the ordinance through final passage by a vote of five to four.

The company and business men who attended the July conference openly charge double dealing on the part of certain city officials, and the public has been informed of all the facts. The *Beacon Journal*, recognized as the administration paper, has pointed out the folly indulged in by the Council and insists that "the people want the matter settled and will accept a franchise based on justice and good business principles." It adds that "the company is objecting to the method of valuation, and we think rightly so." The *Times*, an anti-administration paper, has denounced the city administrator and Council for not settling the question and for what it calls "double-crossing the company and public." The *Press*, opposed to any franchise, is saying nothing.

PUBLIC DEMANDS SETTLEMENT

While all this is going on the city has become thoroughly aroused over the situation. The car riders and builders want the railway system more thoroughly developed. The housing situation in Akron is anything but good, and a committee of the Chamber of Commerce has been working for months on the question. This committee found itself confronted with the fact that the only hope of bettering conditions was to secure railway extensions.

The limit has been reached as to the distance workers will walk to the car lines. Buses were established in some sections, but for the most part they have given up the effort, with the result that there is crowding along or near the car lines.

The old franchise provides for the sale of tickets at six for a quarter, a ten-minute service on all lines from 5 a.m. to 10 p.m. and a twenty-minute service from 10 p.m. to midnight with no service after midnight. The Coun-

cil granted the company a temporary 5-cent rate. The service furnished is the best in the history of the city, a three-minute headway being maintained on many lines.

The company is also maintaining service after midnight, more than fulfilling the terms of its contract at all times. Many new cars have been purchased and put into the service and there is a general feeling of good will toward the company.

The company agrees that development is necessary and wants to make the extensions, but it declares it cannot unless the contract is such as will permit of the necessary financing—and the people generally agree. The politicians, however, say no.

Seattle Case in Courts

Stone & Webster Demand Payment of Interest and Installment of Principal Be Made

A. W. Leonard, president of the Puget Sound Power & Light Company, Seattle, Wash., representing Stone & Webster interests, on Feb. 21 filed two suits in the United States Court at Seattle. One complaint petitions the court to prevent the city treasurer, city comptroller and city of Seattle from using any portion of the gross revenues of the municipal street railway system, purchased from Stone & Webster, for any other purpose until after payment has been made of interest and installment on the principal of the \$15,000,000 of bonds issued by the city to Stone & Webster interests when the city took over the railway and to compel specific performance of the contract. The other suit seeks to restrain taxpayers or any one else from prosecuting action in the Superior Court that would force the city to breach its contract and default the bonds.

Judge Jeremiah Neterer and Judge Edward E. Cushman of the United States Court signed a temporary restraining order, returnable on Feb. 28, enjoining the taxpayers from taking action in the Superior Court to prevent the payment of interest and principal. Stone & Webster interests represented in their complaint that they had not been made a party to action now pending in King County Superior Court and therefore could not protect their interests. The city of Seattle's motions and demurrer in the taxpayers' suit to protect the general fund from invasion by the railway is pending before Judge J. T. Ronald, in the Superior Court.

The motions to be disposed of are to require the taxpayers to state their separate causes of action and to require them to cite the Puget Sound Power & Light Company as a co-defendant with the city. The demurrer questions the jurisdiction of the court, and raises other technical objections to the proceedings. With Judge Ronald's opinion handed down, main action in the Superior Court will be taken up with argument on the regular "show causes" calendar.

In a suit filed Feb. 11 in the King County Superior Court the city of Seattle, Wash., has been enjoined from setting aside any receipts from the municipal railway to pay interest on the \$15,000,000 of bonds issued in payment of the railway property. The restraining order was issued by Judge King Dykeman on the plea of fourteen prominent business men and taxpayers.

The order is directed against the city and City Treasurer Edward L. Terry and City Comptroller Harry W. Carroll. It is action counter to this suit that has now been brought by Mr. Leonard.

NEW MOVE EXPECTED TO FORCE REVIEW OF TRANSACTION

The action prevents the piling up of money in the special interest fund, from the revenues of railway, for the benefit of the bondholders. It is expected that the new move will force a review of the entire transaction in the light of the facts as developed during the period that the municipality has been operating the lines.

The complaint reviews the transactions leading up to the acquirement of the property by the city, and quotes voluminously from the ordinances passed by the city.

The present fare is declared "as high a rate as is practical" and the assertion is made that "at the time of the transfer the roadbed, tracks and rolling stock were in a depreciated, run-down and out-of-repair condition."

The diversion of money from the general and other funds for the payment of interest on the utility bonds of the railway system is attacked as illegal.

Muddle Results from Ousting of New Jersey Commissioners

As a result of the decision of the New Jersey Court of Errors and Appeals on Feb. 15, sustaining the judgment of ouster issued by Governor Edwards against the members of the Public Utility Commission, the state will continue without a utility board until the Senate confirms a new board nominated by the Governor, or the Legislature enacts a new law creating a new commission. The ousting of the commissioners ends a long and bitter fight against the board. Removal charges against members of the board were brought during the term of Governor Runyon. After a hearing he dismissed the complaint on the ground that the case against the board was not proved.

The whole utility question was an issue at the last general election in New Jersey. It was on the charge made by Jersey City of misconduct in office and neglect of duty that Governor Edwards dismissed the entire board. The ousted commissioners appealed the Governor's judgment to the Supreme Court, which sustained the Governor. An appeal was then taken to the Court of Errors and Appeals.

Senator Johnson in New York Fight

Retained to Represent City Before the Legislature—Important Constitutional Questions Involved

Hiram W. Johnson of California has been retained by the city of New York, through Mayor Hylan, as special counsel to assist the city administration in looking after its rights in connection with the transit relief legislation introduced at Albany at the behest of Governor Miller. Senator Johnson has accepted the retainer in what he terms "the old, old fight with special privilege and exploiting corporation greed." The announcement of the appointment, made by Corporation Counsel O'Brien, was the most important news development in the transit fight in the last week.

IN VIEW of the backing which Senator Johnson has received from the Hearst papers in the past the impression was quick to spread that Hearst had had a hand with Hylan in securing Senator Johnson as adviser. This the Hearst papers deny. Many there are, however, who see a political plot with deep motives in the retention of Johnson, the Republican, former Progressive and arch enemy of "special privilege," as he is wont to term it, to fight the Republican Governor of New York.

Mr. Johnson in accepting the retainer is the old Johnson, the Johnson who drove the Southern Pacific out of politics in California. He said that he knew the "money power" would be arrayed against him on the other side, but "we are used to that." He expects to "go to the bat in this case," as he terms it, at the public hearing at Albany on March 2.

It was Hiram Johnson who drove the Southern Pacific Railroad out of politics in California. It was he who at San Francisco stepped into Heney's place as prosecutor when the latter had been shot in court in the graft trials and then brought about the conviction of Abe Ruef, San Francisco's labor Mayor. It was he who spurred the California Legislature into extending and widening the scope of the California Railroad Commission, now one of the most progressive and fearless bodies of its kind in the United States. And so it goes. Johnson may have an eye to the main chance, but those who take issue with him know before they are through that they have had a fight on their hands.

The impression is wrong that Johnson was the sponsor of the San Francisco Municipal Railway. He did not figure in the establishment of that line. This was a hobby of Mayor Ruef during his first administration in 1913, when the city took over the old Geary Street Railroad at the expiration of its franchise, scrapped the equipment and built a new line. Johnson was never identified with the enterprise, although he did lend aid to it as Governor.

Senator Johnson's formal acceptance came in the form of the following telegram to the Corporation Counsel:

I am very glad to undertake the employment as special counsel in the endeavor to protect and preserve the city's rights from the assault now being made upon them. I congratulate the Mayor and you and the other city officials upon the valiant struggle you are making.

I recognize the odds in the contest and the tremendous opposition and difficult obstacles which must be encountered, but it's the old, old fight with special privilege

and exploiting corporation greed on the one side and the simple justice and inherent rights of the mass of the people on the other. You are fighting the good fight and I am delighted to be a part of it with you.

In explaining the retention of Mr. Johnson, the Corporation Counsel said:

Inasmuch as the traction interests intend to have abrogated the 5-cent fare contracts existing between the city and the traction corporations by legislative enactment at Albany, which has for its purpose, by nullifying and setting aside contracts at will by State officials, an increase in fare, extracting between \$60,000,000 and \$100,000,000 yearly out of the pockets of the people; and, inasmuch as the abrogation of solemn contracts, against the people's interests, and in favor of powerful corporate interests, goes to the very vitals of constitutional government, and has a bearing on every contract made in the United States under our constitutional form of government, it behooves the Mayor and the Corporation Counsel of this city to use every means at their command to uphold the solemn agreements made with the people of this city by the traction interests, and protect the people from being compelled to pay additional millions yearly to these interests.

The Governor's comment was:

Is there so little talent in support of their side of the proposition that they have to go to California for it? I thought they were opposed to outsiders interfering.

Several of the newspapers, in their editorials, reiterated this question.

Sponsors of the legislation fostered by Governor Miller announced on Feb. 21 that the new measures would be amended so that no fares would be increased pending adoption of the plan for a unified city-owned transit system in New York.

Nineteen States to Attack I. C. C.'s Control of Intrastate Rates

Nineteen states will join with Wisconsin in challenging before the Supreme Court on Feb. 28 the right of the Interstate Commerce Commission to regulate state railroad rates under the transportation act.

In a formal statement the Attorney Generals of the states said it had always been a constitutional right of the people of the several states to control purely state traffic, adding that this principle had been upheld by John Marshall and uniformly admitted by all the courts up to this time.

The provision of the transportation act that the Interstate Commerce Commission fix a return without regard to the value of service rendered is "not only economically unsound, but it is violative of fundamental law," the statement declared. Under the group plan of fixing aggregate values, it was contended, weak roads had the right to earn on their own value and on the value of the other roads as well.

Safety Car Invades Chicago

Safety cars made their bow to the Chicago public on Feb. 18. On that date the Chicago Surface Lines began operation with three "safeties" on West Division Street, a 2-mile route, where they were added to the service given by an equal number of double-truck cars. This is a temporary arrangement, it being planned eventually to operate the entire line with safety cars. The West Division Street line is comparatively new and serves a fast growing population. The traffic is mostly short haul and it is expected that a number of people in that vicinity who have been walking to their destinations will ride with the service increased to this point. The Surface Lines has ten standard safety cars, but schedules have not been prepared for the complete installation of equipment of this type.

Wages Increased in Louisville

The Louisville (Ky.) Railway has announced an increase of 3 cents an hour in the wages of all employees, effective simultaneously with the increase in fares, referred to elsewhere in this issue. Last October the company told the Welfare Association plainly that increased wages were impossible without increased fares. The men remained loyal, and the company has kept its promise of increasing wages if fares were increased. J. P. Barnes, president of the railway, has stated that the fare case will probably be fought through the higher courts, but he felt that the increase would stick. If it does not wages will have to be readjusted. In the meantime 1,400 men are affected by an increase of about \$165,000 annually in the payroll. Present wages paid the men range from 41 to 45 cents an hour.

City of Chicago Renews Attack

On Feb. 17 the city comptroller of Chicago refused tentatively to accept a check for \$87,090 offered by the Chicago Surface Lines to settle a balance of disputed bills including payment for cleaning the right-of-way. The city law department advised the comptroller not to accept the check for the present because by doing so he would recognize the existence of the ordinances which the city claims have been canceled by the action of the companies in accepting a rate of fare higher than 5 cents. Under these ordinances the companies are required to pay the city about \$348,000 a year for street cleaning which is to be done by the city. The question has been raised as to who would remove snow after a big storm in the event that the city persists in such refusal. As has been indicated previously in the *ELECTRIC RAILWAY JOURNAL* Mayor Thompson has called upon Bion J. Arnold to relinquish his title as chairman of the Board of Supervising Engineers on the ground that the Surface Lines' franchises have been canceled and the board has no authority to function.

News Notes

Wages Reduced on Michigan Railway.—The Michigan Railroad, Jackson, Mich., on Jan. 1 reduced the wages of line foremen from \$175 to \$150 a month. The wages of other linemen were cut \$20 a month, from \$150 and \$140 a month to \$130 and \$120. The wages of all shop men were cut 10 cents an hour, and a similar reduction made for all freight men. On Nov. 15, 1920 all track laborers were reduced in pay from 65 cents and 60 cents an hour to 40 cents an hour.

Official Denial of Wage Reduction.—H. B. Titcomb, vice-president of the Pacific Electric Railway, Los Angeles, Cal., has published a statement in refutation of persistent rumors to the effect that the Pacific Electric Railway was considering a reduction in the wage scales of the working forces. He said: "We have not considered making any reduction in the wage scale of any of the employees of the Pacific Electric. Neither is there any basis for a report that we are planning any reduction other than normal fluctuation in the working force."

Further Motor Bus Service Proposed.—Plans for the establishment of additional motor bus lines in Chicago were made known recently through a petition filed before the Illinois Public Utilities Commission by the Depot Motor Bus Lines, Inc. This concern has for several months past been operating a few buses between one of the downtown department stores and the Union and Northwestern railway stations. It is now proposed to establish seven main routes which would serve districts on the far south side, the west side and the stock yards territory. W. T. Gridley is vice-president and general manager of the corporation. No date has been set for hearing on the petition. The Chicago Motor Bus Company has been operating since 1917 on the north side and has been delayed in its plans to extend service to the south side.

Commission Insists Its Own Act Shall Be Investigated.—No action has been taken on a bill introduced by Delegate J. B. Hilleary, of Upshur County, and upon measures of a similar nature introduced by other members of the Legislature of West Virginia growing out of public dissatisfaction with increases allowed to public utilities and particularly gas companies, but a committee has been named by the Legislature to inquire into the manner in which the Public Service Commission has discharged the duties imposed upon it by law. The committee, however, was named in a resolution adopted upon the insistence of the commission that its official acts be re-

viewed by a committee of the Legislature, that request having been transmitted to the Legislature by Governor Cornwell.

Eight Die in Accident.—A head-on collision between a Bridgeport and a Shelton electric car near Shelton, Conn., on Feb. 22 resulted in the death of eight persons, among them the motorman of the Bridgeport bound car. Many severely injured were removed to a hospital and several suffered minor injuries. The accident occurred when the two cars running at high speed met 100 ft. south of a 90 ft. trestle. With windows smashed and glass flying in all directions a panic ensued. Men and women who were able to extricate themselves from the wreckage fell down the adjacent embankment. The disastrous trip was the first over the Bridgeport-Derby route since the block caused by the recent snowstorm. It was said that when the cars telescoped a can of gasoline on the Bridgeport car exploded.

Court Demands Retraction.—Comptroller Charles L. Craig of New York was recently found guilty of contempt of court by United States Judge Julius M. Mayer. This decision was reached as a result of a communication written on Oct. 6, 1919, by the comptroller to Public Service Commissioner Nixon in which the former made a statement to the effect that federal jurisdiction blocked access of city authorities to reviewing reports and statements of the Brooklyn Rapid Transit Company and the New York Railways receiverships. A few days after the writing of the letter United States Attorney Francis G. Caffey filed a charge against the comptroller. The court considered the charge a grave one. It said that "the undisputed testimony shows that neither the defendant nor any official or representative of the municipal government ever applied directly or indirectly to Receiver Garrison, Hedges or Trustee Sheffield to have access to any papers, documents or information." Judge Mayer will allow reparation in the form of a retraction filed with the clerk of the court.

Program of Meeting

Oklahoma Utilities Association

The third annual convention of the Oklahoma Utilities Association will be held at the Huckins Hotel, Oklahoma City, Okla., on March 8, 9 and 10, 1921.

It is expected 300 or 400 delegates and visitors will attend and to have a large number of exhibits.

Noted speakers will be on the program. Among those who will address the convention are:

H. J. Gordon, publisher *Public Service Magazine*, Chicago, Ill.; H. P. Wright, president H. P. Wright Investment Company, Kansas City, Mo.; Paul P. Haynes, member Indiana Public Service Commission; C. C. Deering, secretary U. S. Independent Telephone Association, Des Moines, Ia. There will be a banquet on the night of March 9.

Financial and Corporate

Winnipeg Earnings Improve

Net Profit of \$600,000 Best Showing Since 1914—Management Complimented on Excellent Record

Gross earnings of the Winnipeg (Man.) Electric Railway for the year ended Dec. 31, 1920, show an increase of \$949,221 over the previous year. Notwithstanding the large increase in wages and other operating expenses, the net income shows an increase for the year of \$498,720. After paying all fixed charges and making provision for depreciation amounting to \$201,050 the company made a net profit of nearly \$600,000. This is substantially the best showing of any year since 1914.

EARNINGS SPEAK FOR THEMSELVES

The statement of earnings of the company as made public at the annual meeting on Feb. 9 follows:

Gross earnings from operations.....	\$5,233,700	
Operating expenses, before charging depreciation.....	3,428,897	
Net operating revenue.....	\$1,804,803	
Miscellaneous income.....	76,700	
Income available to meet fixed charges, etc.....	\$1,881,503	
From which the following deductions are made:		
Interest charges on debenture stock, bonds, gold notes, etc.....	\$716,214	
Extinguishment of discount on securities.....	26,786	
City percentage and car license taxes.....	181,249	
Taxes.....	127,239	
Miscellaneous non-operating expenses.....	2,942	
Other income deductions.....	30,495	1,084,928
Net income as shown on accounts submitted herewith, excluding depreciation	\$796,575	
Deduct:		
Depreciation.....	201,050	
Net income transferred to surplus.....	\$595,525	
Surplus brought forward from 1919 as adjusted.....	1,314,420	
Net income for year transferred.....	595,525	
Dividend on 7 per cent cumulative preferred stock.....	4,444	
Sinking fund appropriation.....	60,000	
Surplus carried forward.....	\$1,845,501	

In July a board of arbitration awarded increased wages to the company's employees retroactive to May 1. As a result of the company's application to the Manitoba Public Utilities Commission increased rates were granted and an appraisal of the physical value of the company's property was arrived at. The increased rates and fares authorized assisted in offsetting the increased operating expenses which had resulted from the rising costs of material and labor.

In April last the company's south Main Street carhouse, together with twenty-one cars and other equipment, was destroyed by fire. A new fire-proof, fully modern carhouse has been erected on the site of the old one and all rolling stock destroyed has been replaced. More than \$300,000 was recovered from insurance.

The company made improvements in all departments during the year to the extent of more than \$900,000. This sum included expenditures for replacing property destroyed by fire.

For the purpose of retiring as far as possible the company's floating liabilities a new issue of preferred and common shares was authorized. This stock is now being placed on the market.

FUTURE OUTLOOK VERY BRIGHT

A. M. Nanton, president of the company, presented the report at the annual meeting on Feb. 9. The property is in direct operating charge of A. W. McLimont, vice-president. When Mr. McLimont took over the property in October, 1917, a stupendous task confronted him. Jitneys were on the streets, the property was run down, the company was in bad public repute, franchise fares existed and there was considerable litigation pending between the company and the city. At the present time the jitneys are off the streets, almost the entire property has been rehabilitated and negotiations are proceeding with the City Council with a view to effecting a service-at-cost franchise, toward which public sentiment is very favorable.

The system at Winnipeg comprises 112 miles of track, with more than 306 cars.

Reorganization of Bus Companies Completed

The reorganization report on the American Motor Bus Corporation and the Chicago Motor Bus Company, submitted by Harold Almert, consulting engineer, Chicago, has been adopted by the bankers, and the business of the two concerns taken over by the Lake Shore Motor Bus Corporation, a holding company.

The American Motor Bus Corporation, the manufacturing concern, has resumed manufacturing with an initial order that will keep the factory operating at full capacity for the year 1921.

The Chicago Motor Bus Company, which operates a fleet of motor buses over the boulevards of the north side of Chicago, serving a territory which cannot be reached by the surface and elevated railways, has obtained an amendment to its franchise permitting the operation of the new enclosed top bus. The company will increase its service on the north side and shortly start operation on the south side, together with through routes between the north and south sides.

Chicago capital has taken over the entire interest of New York capital, which retires from the field.

Mr. Almert has been retained as consultant by all three companies.

\$8,559,776 Grand Rapids Value

Reproduction Cost, Less Depreciation, Fixed at This Amount in Franchise Case

After many months of constant work the valuation of the property of the Grand Rapids (Mich.) Railway has been completed. The inquiry was conducted for the purpose of establishing a rate basis for fare in a new service-at-cost franchise to be offered the company as a temporary operating arrangement.

THREE SETS OF FIGURES PRESENTED

The valuation has been completed on a three-fold basis, historic, five-year average and replacement. These three bases were arrived at by co-operation between the company's engineers, headed by W. L. Hagenah, and the city's engineers. A short conference was held on Feb. 17 and the going value decided upon. The reports were then presented to the City Commission.

The historic value of the company's physical properties was \$4,468,360 without depreciation. With depreciation it was fixed at \$3,610,526. To these amounts must be added a material and supplies account of \$131,812 and a working capital of \$107,040. The figures of these items are the same for all three valuations. The going concern value, which is not admitted by the city as belonging in the appraisal for rate making purposes, is placed at \$357,469 in the historic valuation. Property not used and useful and miscellaneous property is listed at \$12,200. This makes the total historic valuation of the railway company's lines without depreciation \$5,076,881 and depreciated, \$4,219,047.

The five-year average valuation, from 1915 to 1919, of the physical properties is \$6,718,463 without depreciation and \$5,385,102 with depreciation. After adding the fixed material and supplies and working capital together with the going concern valuation of \$537,477 and the physical property useful but not used, the total five-year valuation of the company is \$7,506,992. Depreciated this figure stands at the sum of \$6,073,631.

DEPRECIATED FIGURE \$8,559,776

The reproduction valuation, which the company insisted would be taken together with the other valuations, is \$10,591,414 without being depreciated. This valuation includes the physical property of \$9,574,409; the fixed material and supplies and working capital and a going concern value of \$765,953, together with the \$12,200 item for extra property on hand. Depreciated this figure stands at \$8,559,776.

As indicated at the outset of this article Grand Rapids is working toward a trial of service-at-cost for a year, with a view to its permanent adoption. The situation there in connection with the negotiations along these lines was reviewed briefly in the ELECTRIC RAILWAY JOURNAL for Jan. 29, page 235.

Prompt Action Urged

Ontario's Railway Board, Operating London Street Railway, Sees Need of Aid for Company

The Ontario Railway & Municipal Board, which assumed operating control of the London (Ont.) Street Railway on June 15, 1920, after two strikes within a brief period had left the city without service for thirteen days, has reported as follows for the year ended Dec. 31, 1920:

	Operation By L. S. R. to June 15	Operation By O. R. B.	Total for 1920
Gross earnings.....	\$225,205	\$299,523	\$524,728
Operating expenses:			
Maintenance.....	41,933	61,209	103,143
Transportation.....	153,170	198,243	351,413
Totals.....	\$195,104	\$259,453	\$454,557
Net earnings.....	\$30,100	\$40,070	\$70,170
Interest on bonds and loans and taxes.....	17,034	20,386	37,421
Balance.....	\$13,066	\$19,648	\$32,714
Depreciation, invested in bond redemption.....	\$13,768	\$19,500	\$33,268
Net deficit of company.....	\$702		
Net income of railway board.....		\$183	

In urging an early settlement of the higher fares dispute the board reminds the City Council as follows:

It is not contemplated by the act under which the board is in possession of the railway that the board's possession and operation would be a permanent solution of the difficulties under which the city's transportation system labors. In the very nature of things the board, in view of the statutory limitations on its powers and its inability properly to finance such an undertaking, is unable adequately to provide for the inevitable wear and tear and depreciation of the plant; much less is it able to meet the probable demands for the improved service and extensions certain to arise in a growing community like the city of London.

The board emphasizes the "urgent need for prompt action looking to some workable solution." It is shown that the two strikes last June cost the company \$2,717 and the strikers \$12,870 in wages.

The company formerly raised substantial amounts of new capital from year to year to provide for improvements, but when dividends ceased such financing was impossible. A statement shows that no new capital has been secured since 1918. The effect of the present condition upon expenditures for improvements was noted at once. In 1920 none were made.

Secretary-Treasurer Leonard Tait's analysis asserts:

The question of whether or not the road is privately or municipally operated in the future will be an ever-present one. Municipal ownership is urged by some as a panacea against increased fares. It does not matter by which plan the railway is managed, the cost of the service must be found either from those who use the cars or by taxation.

Between 1915 and 1920 wages increased \$147,133 and other operating expenses \$12,757, a total of \$159,891. The total increase in earnings in the same period fell \$34,021 short of this amount. The statement, it is pointed out, "shows conclusively the difficulty in operation to be a question of wages."

In an endeavor to keep operating costs down the Railway Board cut the service, and the year's car mileage de-

creased to 1,765,242 miles as compared to 1,918,207 in 1919. Gross earnings per car-mile advanced from 20.49 cents in 1915 to 29.73 cents, but net earnings decreased from 5.35 cents to 3.98 cents. Passengers carried totaled 10,801,531 in 1915, 13,689,732 in 1919 and 13,788,209 in 1920.

Foreclosure Step Taken

As a further step in the reorganization of the United Railroads of San Francisco, Cal., the Union Trust

Company, as trustee, has commenced foreclosure proceedings against the railway in the Superior Court. This move was made in accordance with the working out of the reorganization plan recently approved by the State Railroad Commission. The reorganization of the United Railroads should be completed and the new securities issued

Boston "L" Lost \$346,951

Trustees Feel Confident Receipts for Coming Six Months Will Exceed Cost

For the year ended Dec. 31, 1920, the receipts of the Boston (Mass.) Elevated Railway failed to meet the actual cost of the service by \$346,951. Adding to this latter amount the current deficit of \$23,659 existing on Dec. 31, 1919, makes the present deficit from current operations \$370,610. This amount must be absorbed during the six months ending June, 1921, in order that there be no deficit to be assessed against the public on that date.

The board of trustees feel confident, however, that this will be accomplished and that the receipts during the coming six months will exceed the cost of the service by an amount which will also permit of absorbing in part, if not entirely, the \$435,348 charge for the back pay applying to the months of May and June, 1919, which has not yet been provided for.

The extraordinary expense of \$615,548 on account of the severe snow storms is nearly twice the net deficit. The coal situation in New England was another factor in causing the deficit last year, an average price of \$10.07 for the 258,087 tons of coal used being responsible for an unusually high total cost of power. The details of the earnings are shown in the accompanying table:

RECEIPTS AND COST OF SERVICE OF BOSTON ELEVATED RAILWAY FOR YEAR ENDED DEC. 31, 1920

Receipts		
From fares.....		\$33,096,764
From operation of special cars, mail pouch service, express and service cars.....		105,961
From advertising in cars, on transfers, privileges at stations, etc.....		300,228
From other railway companies for their use of tracks and facilities.....		40,703
From rent of buildings and other property.....		100,499
From sale of power and other revenue.....		106,707
Total Receipts from direct operation of the road.....		\$33,750,862
Interest on deposits, income from securities, etc.....		280,774
Total Receipts.....		\$34,031,636
Profit and loss, delayed items.....		215
Cost of Service.....		\$34,031,851
Operating Expenses:		
Maintaining track, line equipment and buildings (including \$615,548.70 snow expense)...	3,209,276	
Maintaining cars, shop equipment, etc.....	3,011,850	
Power (including 258,087 tons of coal at \$10.07, \$2,597,652.93).....	3,603,992	
Depreciation.....	2,004,000	
Transportation expenses (including wages of car employees, car house expenses, etc.).....	11,528,181	
Salaries of administrative officers.....	80,059	
Law expenses, injuries and damages, and insurance.....	1,194,762	
Other general expenses.....	1,137,002	
Total operating expenses (of which \$17,216,445.20 wages).....	\$25,769,122	
Taxes, proportion.....	1,142,987	
Rent for leased roads (exclusive of subways).....	2,638,562	
Proportion of rent of subways and tunnels, to be paid to the City of Boston.....	1,537,919	
Interest on B. E. bonds and notes.....	1,494,795	
Miscellaneous items.....	59,068	
Proportion of dividend rental under Acts of 1918.....	1,463,668	
Proportion of rent of Cambridge subway to be paid to Comm. of Mass.....	252,513	
Interest on unpaid taxes.....	20,169	
Total cost of service.....	\$34,378,803	
Net loss.....	\$346,951	
Revenue passengers.....	335,526,561	
Receipts per revenue passenger.....	10.143 cents	
Cost of service per revenue passenger.....	10.246 cents	
(of which labor cost 5.131 cents)		

within sixty days, according to Frank D. Madison, of Pillsbury, Madison & Sutro, and attorney for the reorganization committee. The Market Street Railway is now being recapitalized preparatory to its taking over the properties in accordance with the reorganization plan.

New Orleans Still Floundering Around for Railway Solution

The railway problem at New Orleans, La., appeared on Feb. 19 no nearer solution than it was before the advent of the investment bankers of the East and the submission of the service-at-cost plan of Receiver O'Keefe, ap-

Many Factors Contributed to Receivership

Ohio Electric Railway Unable to Contend with Flood, Automobile and Increased Costs

One of the largest systems of interurban roads in the country, the Ohio Electric Railway, has recently been thrown in the hands of B. J. Jones as receiver. It comprises 467.26 miles of interurban lines and 33.36 miles of city lines. The company has outstanding \$8,377,200 of bonds and \$11,000,000 of stock. No dividends were ever paid on the stock. The road was beset by all the increased costs of the war-time period and just previous to the war suffered severe losses by flood.

THE principal causes that led up to the receivership, which came about through failure to meet the bond interest, are as follows:

1. Inadequate passenger rate of 2 cents a mile that went into effect in 1906.
2. Loss by flood of 1913.
3. Growth of the automobile industry, including transportation by trucks, augmented by the construction of good roads in the State.
4. Excessive costs for new tracks and paving of streets in cities, towns and villages on which the road operated.
5. Abnormal increase in material and wages since August, 1914.
6. Failure of the company to obtain increased rates of fare in cities and for interurban business commensurate with the increased cost of operation.

A small group of financiers conceived and carried out a plan for the Ohio Electric Railway by forming in 1905 the Ohio Syndicate, to which approximately \$8,000,000 was subscribed and paid in. They immediately incorporated the Cincinnati Northern Traction Company and leased the Cincinnati, Dayton & Toledo Traction Company, a line extending from Cincinnati to Dayton, with branch lines. The same year they acquired the Lima Electric Railway & Light Company by lease, and in 1909 purchased the property.

APPLEYARD LINES TAKEN OVER

The Appleyard properties were purchased at receivers' sale in 1906. These lines consisted of the Dayton, Springfield & Urbana Electric Railway, the Springfield & Western Traction Company, the Urbana, Bellefontaine & Northern Railway, the Columbus, London & Springfield Railway and the Columbus, Grove City & Southwestern Railway. In 1906 the Dayton & Northern Traction Company and the Dayton & Muncie Traction Company were purchased, also the Columbus & Lake Michigan Railroad, operated by steam. Later they rebuilt this line and electrified it. The same year the Dayton & Western Traction Company was leased likewise the Fort Wayne, Van Wert & Lima Traction Company. In 1906 the Columbus, Newark & Zanesville Electric Railway, including the Columbus, Buckeye & Newark Traction Company, the Newark & Granville Street Railway and the Zanesville Railway Light & Power Company were leased.

In 1907 and 1908 a line was constructed from Bellefontaine to Lima and from Lima to Toledo and the short line cutoff between Summerford and Lafayette (between Springfield and Columbus), thus connecting all lines and completing the system of 617 miles.

All of the lines purchased and leased were practically rebuilt, new cars purchased, new electrical machinery in-

stalled, and the system put in first-class operating condition. The Ohio Electric Railway was incorporated May 16, 1907, to take over all the property acquired by The Ohio Syndicate as the operating company.

IMMENSE SYSTEM INCLUDED

The system as completed comprised the following lines:

- From Cincinnati to Hamilton and Dayton, with branch line to Germantown.
- From Dayton, Ohio, to Richmond, Ind., with branch line to New Paris.
- From Dayton, Ohio, to Union City, Ind.
- From Dayton to Springfield, with branch line to New Carlisle.
- From Springfield to Urbana, Bellefontaine and Lima, with branch line at Bellefontaine.
- From Lima, Ohio, to Fort Wayne, Ind.
- From Lima to Toledo.
- From Lima to Defiance.
- From Springfield to London and Columbus, with branch cut off from Summerford to Lafayette.
- From Columbus to Orient.
- From Columbus to Newark and Zanesville, with branch to Granville and Buckeye Lake.
- Also city lines at Hamilton, Dayton, Lima, Newark and Zanesville, all in Ohio.

The line from Cincinnati to Dayton was operated by the company until July 1, 1918, when it was surrendered to the new owners, the Cincinnati & Dayton Traction Company. The line Dayton to Richmond was operated until April 24, 1920, when it was surrendered to its owners.

The Ohio Electric Railway has issued and outstanding the following amounts of stock:

Preferred	\$ 3,000,000
Common	8,000,000
Total	\$11,000,000

All of the common stock of the leased lines is owned and controlled by the company.

The company has the following bonds issued and outstanding:

First mortgage	\$4,200,000
Second mortgage	2,927,200
Lima Electric Ry. & Light Co.	1,250,000
Total	\$8,377,200

While no dividend has ever been paid on the stock of the company, it was able to pay all interest on its bonds and rentals to leased lines until the cost of labor and material reached such abnormal proportions on account of conditions caused by the war.

\$1,500,000 DAMAGE BY FLOOD

The flood of March 25, 1913, caused damage to the property of the company of approximately \$1,500,000.

The business of the company has suffered, like all other traction lines, from the automobile, especially where the roads have been improved.

proved by the representatives of the security holders, as offering a remedy to correct local traction complaints.

The proposed plan is unsatisfactory to the city fathers and since neither the receiver nor the investment bankers could or would offer any other means of giving New Orleans up-to-date service at the franchise fare of 5 cents it has become incumbent upon the city officials to find a remedy.

The city administration appears not to be concerned in the valuation of the property. It seems bent on learning how the lines can be operated so as to live up to the fare fixed in the original franchises held by the several lines making up the present system.

To do this intelligently and satisfactorily four experts will be selected, two of whom probably will be local men, to make a survey of the situation and report back to the Commission Council the result of their findings as to the most feasible, practical and economical plan of operation. When this plan, whatever it may be—whether a modified service-at-cost plan or some other plan—is adopted, then and not till then will the matter of valuation be taken up and considered.

Foreclosure Argument on March 5

Judge Julius M. Mayer, in the United States District Court, at New York, on petition of the bondholders' committee of the New York Railways has set March 5, as the date for argument on the question of issuing a foreclosure decree for the major part of the properties of the system.

Receiver Job E. Hedges was ordered by the court not to pay the semi-annual interest, due on March 1, on the Lexington Avenue & Pavonia Ferry Railway 5 per cent bonds. This will make the third semi-annual instalment of interest on this line in default.

Application for an order to disaffirm the leases of the Broadway & Seventh Avenue line, the Sixth Avenue line, the Twenty-third Street line, and the Christopher & Tenth Street line, all operated by the New York Railways, will be heard on March 9.

Sir Adam Beck Purchase Arbitrator

Sir Adam Beck has been officially appointed to represent the city of Toronto, Ont., in the arbitration to determine the price to be paid by the city for the assets of the Toronto Railway when the railway is taken over next September. The Toronto Railway has not yet named its representative on the board of arbitration, and has informed the city that it does not desire to do so until the third man has been selected. Instead of leaving the selection of the third man to the two other representatives the railway is desirous of reaching an agreement directly with the city in regard to the selection of a chairman, and states that it will name its representative after the chairman has been selected. The city is awaiting Sir Adam Beck's return from England for advice in regard to this request.

First Profit in Three Years in Grand Rapids

For the first time in three years the Grand Rapids (Mich.) Railway has been able to show a profit over operating expenses during a thirty-day period. The 8-cent fare now in effect is responsible for the surplus. This profit was revealed for the month of January in the report submitted to the City Commission. It amounts to the munificent sum of \$179,53.

In January, 1919, the company operated at a loss of \$1,980. In January, 1920, the loss was \$5,170.

The earnings from all sources last month was \$166,278. The general expenditures were \$14,789. The maintenance expense was \$21,741, and the cost of power \$14,041.44. The total of expenditures including salaries was \$115,264,013. From this is deducted taxes, interest on funded debt, amortization of bond discount, sinking fund and depreciation, totaling \$50,834.

One of the features of the report is the showing made by the 8-cent fare over the 6-cent fare in vogue in January, 1920, when business conditions were excellent. The 8-cent revenue brought into the coffers of the company \$161,117, while the 6-cent fare brought in only \$106,737.

12.5 per Cent Increase in Standard's Net Earnings

Preliminary reports of earnings of the utility subsidiaries of the Standard Gas & Electric Company, Chicago, Ill., for the calendar year 1920 show an increase of 18.7 per cent in gross and 12.5 per cent in net. The annual reports of these companies are under audit and the final figures may be slightly changed, but any differences will not be material. The comparative figures are as follows:

Year:	Dec. 31, 1920	Dec. 31, 1919
Gross earnings.....	\$32,252,232	\$27,158,137
Net earnings.....	11,230,742	9,980,446

The 1920 gross and net earnings reports of the individual properties are as follows:

	Gross Earnings	Net Earnings
Arkansas Valley Ry. Lt. & Pr. Co.....	\$1,865,743	\$608,632
Fort Smith Light & Traction Co.....	1,070,391	300,793
Louisville Gas & Electric Co.....	4,469,317	2,088,990
Mobile Electric Co.....	737,446	214,081
Mountain States Power Co.....	928,923	294,292
Northern States Power Co.....	11,798,779	4,466,938
Oklahoma Gas & Electric Co.....	5,070,656	1,276,114
Ottumwa Railway & Light Co. (11 mos.).....	513,467	105,185
San Diego Cons. Gas & Electric Co.....	2,661,046	883,427
Tacoma Gas & Fuel Co.....	561,098	104,909
Western States Gas & Electric Co.....	2,224,909	815,268
Puget Sound Gas Co.....	163,985	25,916
Southwestern General Gas Co.....	292,637	120,870
	\$32,252,232	\$11,230,742

In spite of continued high costs every property was able to show a consistent gain in net earnings, as well as in the gross.

Financial News Notes

Sale of Real Estate Postponed.—Sale of the real estate of the New York (N. Y.) Railways under foreclosure proceedings, to satisfy the provisions of the indenture securing the first real estate and refunding mortgage 5s has been postponed by consent until March 2.

Hydro Takes Over Guelph Radial Railway.—The ratepayers having voted favorably on the proposal in January, the Guelph (Ont.) Radial Railway was on Feb. 12, turned over to the Hydro Power Commission of Ontario, which will operate and manage the system for a period of fifty years.

Details of Reorganization Fast Being Concluded.—Stockholders of the Market Street Railway, San Francisco, Cal., have ratified the proposal whereby the company will be merged with United Railroads, San Francisco. Under the plan of reorganization of United Railroads, the company will take the name of the Market Street Railway, which will issue new securities. Steps toward foreclosing the mortgage of the underlying bonds have already been taken.

Municipal Line Lost \$281 in Six Months.—Operation of the Amarillo (Texas) Street Railway by the municipality during the last six months has resulted in a loss, according to the report of City Manager J. G. Colby covering that period. The city manager's report showed that the city had paid \$600 a month for the lease on the property, and that revenues during the time had amounted to \$5,789, leaving \$2,189 after payment of lease charges. Operating expenses exclusive of lease charges amounted to \$2,470, leaving a net deficit of \$281 for the six months.

St. Paul Continues to Lose.—Despite the fact that the passenger revenues of the St. Paul (Minn.) City Railway increased from \$436,756 in November, 1920, to \$459,100 in December, 1920, the company's income shows a deficit for the month of December of \$28,254 compared with \$6,750 for the preceding month. The very large increase in operating expenses, which more than offset the advance in revenue, is given as the reason. Commissioner McDonald in commenting on the report explains that the cost of removing snow was the principal item in the higher expense account.

Federal Light Makes \$601,028 in 1920.—In its twelve months' statement ended Dec. 31, 1920, the Federal Light & Traction Company, New York, N. Y., shows gross earnings at \$4,606,421, an increase of 18.2 per cent over the same period a year ago. Expenses, including taxes, increased over 20 per cent and the net income advanced 14 per cent over 1919. After deducting inter-

est charges, Central Arkansas Railway & Light Corporation dividend and Springfield Railway & Light Company dividend a balance of \$601,028 remains. This is an increase of 42 per cent over the balance of a year ago.

Deficit of \$16,711 for Interurban.—The stockholders of the Indianapolis & Cincinnati Traction Company at the annual meeting on Feb. 9 re-elected officers and directors. The company showed a deficit for the year of \$16,711, after deducting all expenses, including the fixed charges, interest on the company's bonds, interest on underlying bonds of the Indianapolis, Shelbyville & Southeastern Traction Company and dividends on underlying preferred stock of Indianapolis & Southeastern Traction Company (Shelbyville division).

Priority of Claims Considered.—The much discussed Grafton Traction Company bankruptcy case, pending in the United States District Court of West Virginia and placed before Referee O. E. Wyckoff for disposition, was considered on Feb. 5 at Grafton, W. Va. Mr. Wyckoff has been working for weeks on this case to determine the relative value and priority of the liens against the company and affiliated corporations and recently he notified the interested attorneys that he would be ready on Feb. 5 to have his findings considered by the several counsel and hear objections and contests of his findings.

Hydro Commission Reports Profit for Interurban.—The first annual report on the operation of the Sandwich, Windsor & Amherstburg Railway, Windsor, Ont., issued by the Ontario Hydro Power Commission, claims a net profit on the year's business of \$22,335. The total earnings were \$296,373. The sum of \$49,000 was set aside for interest on bonds and \$82,000 for sinking fund. Assets are placed at \$2,144,755, and liabilities at \$1,849,000. Extensions and improvements planned for this year will cost more than \$1,000,000. The line was formerly owned by the Detroit United Railway.

Tacoma Municipal Line Still Losing.—The Tacoma (Wash.) Municipal Railway from its inauguration to Jan. 1, 1921, has a deficit of \$152,556, of which \$44,127 was recorded during the twelve months included in the 1920 report of the city controller. The 1920 deficit was about half the deficit of 1919, when the shortage totaled \$85,836. The deficit of November, \$4,238, increased to \$10,373 in December, 1920, but this increase was largely accounted for by the charge of \$4,743, representing accrued interest upon the \$125,000 in loans made to the municipal railway fund out of the general fund of the city. In 1917, before the extension of the city line to the Todd Drydock & Construction Corporation's plant, the line made a little money, but, with the extension of the trackage, the line began losing and, in 1917 and 1918, showed a total deficit of approximately \$22,000. Approximately 3,000,000 passengers were carried on the line during 1920, virtually the same number carried in 1919, the report shows.

Traffic and Transportation

Service-at-Cost Explained

Cincinnati Traction President Seeks to Remove Any Doubts About Recent Grant There

Service-at-cost as operated in Cincinnati, Ohio, is to be explained to the riding public of that city in a statement to be issued by W. Kesley Schoepf, president of the company. Mr. Schoepf hopes to clear up any misunderstanding about the grant that may exist in the mind of the car rider and to show that the Cincinnati Traction Company is a business doing its best to serve the public and seeking in return only enough revenue to pay the interest on the investment. He will outline for the benefit of the public the possible method of procedure that would be taken by a city like Cincinnati to obtain electric railway service if such service were not in operation at present.

By keeping the three elements, the public, the investor and the employee, constantly in mind, says Mr. Schoepf, the question becomes simple and understandable. Attempts to make it complicated or mysterious are generally the work of designing critics who seek by unfair methods to engender the belief of something being wrong that they would attempt to remedy, thus seeking to gain political advantage from a public service that should not be dragged into politics. Mr. Schoepf says that the Cincinnati service-at-cost plan provides for the public the desirable features of municipal ownership with the undesirable ones left out. He holds that it is not alone as a matter of fairness and justice that a return is allowed on money invested, but it is necessary to the raising of new capital for needed improvements that interest be paid on that already invested.

PUBLIC MUST PAY ITS SHARE

Mr. Schoepf maintains that the public, too, has a very definite responsibility in the service-at-cost plan. He says that in the one important item of taxes the public must decide whether or not it wants to make the railway a tax gatherer by imposing upon it a franchise tax, viaduct taxes, street repair taxes, etc., knowing full and well that the public in turn will have to pay it in the form of increased fare. Almost a cent of the car fare in Cincinnati is added onto what would otherwise be necessary simply for the purpose of raising the taxes that have to be paid, the amount of taxes paid in 1919 being \$916,472. In 1920 it was slightly more than \$1,000,000.

Explaining how in September, 1920, when the rate of fare was 8 cents, the cost per revenue passenger was 8.7

cents, Mr. Schoepf submitted the following itemized account, showing how the revenue per passenger was distributed:

	Cents
Motormen and conductors.....	2.5
All other wages and salaries.....	1.33
Cost of power, including coal.....	1.1
Material and supplies (except coal).....	0.9
Taxes (not including city franchise tax).....	0.5
Rentals, interest and sinking funds.....	1.33
Return on capital.....	0.4
City tax.....	0.3
Total	8.7

Summing up the whole situation, Mr. Schoepf says that the service-at-cost plan simply means that the city, representing the public, has said to the company, representing the investor:

We agree with you, that this railway which you have built is worth about \$30,000,000, on which we will allow you to earn a little less than 6 per cent, and no more. The interest rate may be low, but we will make it as certain and sure to you as we can, so that you can borrow more money and make the improvements we tell you to make, allowing us to say what kind of securities you may sell and at what price, and what interest you may pay. We will also reserve to ourselves the right to order any kind of service we want and you must give it; because we are willing to pay for it. Finally, if you are very careful and economical and get fares down to 6 cents, we will allow you a little bit more—just to reward your efforts.

Lower Fares Sought in Revere, Mass.

Great public interest in a movement designed to secure better service and lower fares in the Revere section, north of Boston, Mass., was indicated when more than one thousand citizens attended a hearing on Feb. 16 at the State House in Boston. The public hearing was held by the joint committee on street railways, on bills calling for the state to create transportation districts, including the Chelsea and Revere lines of the Eastern Massachusetts Street Railway, and consolidate or lease these lines to the Boston Elevated Railway.

It is understood that the principal grievance of the public is a 15-cent fare from Revere to Boston on the Eastern Massachusetts Street Railway, while other suburbs of Boston, more remote than Revere, are served by the elevated for a 10-cent fare.

The question of discontinued lines was also brought up and criticised, but representatives of the Eastern Massachusetts explained that under the laws creating the Trustee method of operating the system, it becomes obligatory to make lines pay, or else discontinue them.

The Eastern Massachusetts Street Railway has recently published a statement showing that the January, 1921, earnings decreased 16 per cent from earnings of January, 1920.

Fare Increase Allowed

Private Company with Contract Calling for Operation of Railway at Fixed Fare Over-ruled

Judge R. M. Call, in the federal court, has dismissed the petition of the Ortega Company, a realty development concern, for an injunction restraining the Jacksonville Traction Company from charging a 7-cent fare on its lines to Ortega, a Jacksonville suburb, following the award of the Railroad Commission fixing that rate for the company's lines. The Ortega Company contends that the railway for certain cash considerations, franchises, etc., agreed to operate cars on certain schedules with a 5-cent fare. It alleged a breach of contract.

Judge Call held that the decision of the Florida State Supreme Court in the matter of the writ to compel the Railroad Commission to assume jurisdiction was binding in the federal courts. In the case mentioned the court ruled that the commission's duties included the fixing of just and reasonable rates on traction company lines, and that such duties must be performed equitably notwithstanding any private contract.

Under Sec. 30, Art. 16, of the Florida Constitution the State Supreme Court also has held that no public utility can make a binding contract for rates with an individual or corporation, or municipality, except that such contract shall be subject to future legislation. The future legislation in this case was the act creating the Railroad Commission with power to fix just and reasonable rates. This latter ruling was made several years ago when the Tampa Waterworks Company opposed a reduction in rates in Tampa.

The fact that there was a consideration of actual cash in the Ortega Company's contract with the Jacksonville Traction Company has no bearing on the question, according to Judge Call, who pointed to the fact that the franchise consideration, always valuable and with an actual cash value, was always evident in such contracts, and that even financial consideration should not be permitted to buy individual favor over the public welfare. Mention of this suit was made in the ELECTRIC RAILWAY JOURNAL for Feb. 19.

Jitney Menace Intolerable in Paterson

Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., on Feb. 16 notified Mayor Van Noort of Paterson, N. J., that operation of the Public Service Railway lines throughout the Passaic division, which includes the cities of Paterson, Passaic and Clifton, would be terminated unless destructive competition by jitney buses was eliminated by the city authorities of Paterson. Conferences are now in progress as a result of which it is hoped an arrangement may be made that will obviate the necessity of the railway cutting off service.

Seven Cents in Louisville

Temporary Restraining Order by Court Permits Company to Advance Rates in Controversy Many Months Old

Fares on the Louisville (Ky.) Railway went to 7 cents on Feb. 21, with tickets for school children and teachers at 3½ cents, and transfers issued the same as formerly. Judge Walter Evans, of the United States District Court, Louisville, on Feb. 18 issued a temporary injunction or restraining order against the city of Louisville, the Mayor and City Attorney, preventing interference with the increased fare. Judge Evans after reviewing the case during the week ended Feb. 19 announced that the court could not issue a restraining order until the company increased its rate. The company then announced the new rate and the court on the amended petition issued the injunction.

THE COMPANY announced that no rebate slips would be issued for redemption in case the upper courts failed to sustain Judge Evans. Orders were also issued to all trainmen to enforce the order, starting at 4 o'clock on Monday morning, and where people refused to pay the 7-cent fare to eject them from the cars.

Alfred Seligman, attorney for the company, in addressing the men at a meeting on Feb. 18, emphasized patience and courtesy in handling persons who refused to pay the increase, or who might refuse to pay unless given receipts showing the payment. He said in part:

Avoid any conversation or discussion with passengers of the necessity of action. Some people may not be aware of the raise in fare. Politely call their attention to the printed notices posted in every car. If a passenger refuses to pay the 7-cent fare the passenger should be invited to leave the car, and upon refusal should be ejected, using as little force as possible, but do whatever is necessary to accomplish said fact. When necessary or possible, call the police, but do not ask or direct the making of any arrests.

He stated the law did not differentiate between men and women. In the event that a trainman inadvertently accepted a nickel in payment of fare under the impression that the other 2 cents were to be tendered by the passenger the nickel was to be returned if the extra fare was not proffered at once.

It is expected that the increase in fare will enable the company to pay 5 per cent on preferred stock and 6 per cent on its common.

POLICE WILL GIVE ASSISTANCE

The chief of police issued orders to arrest all persons who refused to pay 7 cents or leave the cars. They will be charged with "breach of peace." Policemen are to act as though 7 cents is the legal rate, it being the legal rate in so far as they are concerned.

Mayor Smith announced that the mandate of the court would be carried out to the letter by himself and the city administration generally. The Mayor's office is refusing to offer any advice to citizens who are anxious to make it hot for the company.

One of the Councilmen who has fought the fare advance has announced that two ordinances will be introduced, one to have the company resume operations of lines stopped under a retrenchment policy and the other to reduce jitney bus licenses to \$10, and require

a surety bond of \$5,000 instead of a real estate bond of \$5,000. This will make it much easier on jitney bus operators, but it is doubtful whether they will turn out in any numbers even if the ordinance were passed, and it wouldn't have much chance with the Board of Aldermen, who favored the increase and voted that way. With the Board of Aldermen favoring the company there is not much chance that the Council, which has fought the company, will pass any retaliatory measures.

The city figured on carrying the case to the Circuit Court of Appeals on a supersedeas, which would have prevented the company from putting the increase into effect, but after considering the heavy damages which might accrue to the city if the decision was upheld it was decided not to make that move. Judge Evans did not pass on whether or not the city holds 5-cent contracts.

It will probably take ninety days to arrange the proof and get a decision from the District Court of Appeals.

Officials of the railway figure that the increase will aggregate about \$65,000 a month.

The property of the Louisville Railway is assessed for city taxes at \$9,000,000, but the company held its property at \$28,000,000 in a sworn statement in the Federal court in arguing for a fare increase that would pay dividends. Immediately a movement was started to force back payment on \$19,000,000 of valuation not listed for taxation. The company in reply stated that its property was worth the sum stated on the basis of a fare of 7 cents, but not worth it on a 5-cent fare basis.

The 7-cent fare went into effect without any complications from passengers, who paid the increase without arguing, there being no arrests or trouble of any kind. Heavy snow and cold weather on the first day of the new fare failed to slow up traffic. It has been observed that passengers have worked out a system of their own for securing receipts for fares of 7 cents. Riders who do not actually need transfers secure and hold them as receipts for a cash fare paid on a certain date.

Information from the office of James P. Barnes, president of the railway, shows that even in the industrial districts the public has not been the least bit ugly over paying the increase. Talk of walking clubs and other forms of

retaliation is not taken seriously, as even the press has pointed out that 7 cents is a very small payment for transportation compared with the cost of time consumed in walking. Jitney buses are not expected to develop as a source of competition under prices for materials and supplies that exist at present.

The city of Louisville has announced that the case will be appealed to the Federal District Court of Appeals, at Cincinnati, in an effort to break the injunction. It will be probably some time between March 15 and April 15, if not later, before the appeal can come up for argument.

Officials of the company claim that there is no noticeable decrease in the number of passengers riding on the cars. There may be some decline in the number of passengers handled in good weather, but any such reduction will be more than offset by the increased fare.

Pay-Leave Plan Suggested for Providence

In order to relieve vehicular congestion in and about Exchange Place, City Hall, and along Dorrance Street, Providence, R. I., Public Service Engineer Ralph Eaton presented to the joint standing committee on railroads of the City Council a plan whereby the fare collection method on the cars of the Rhode Island Company would be changed from a strictly pay-enter plan to the pay-enter pay-leave scheme. Under this plan fares of outbound passengers are collected as they leave the car while on inbound trips fares are collected as passengers board cars in the outlying districts. Mr. Eaton in commenting on the plan states that it has for its object the reduction of delays in the downtown section on outbound prepayment cars.

Briefly, the plan contemplates allowing all passengers to enter cars in the downtown district without prepayment of fare by both front and rear doors, fares being collected as they leave the car. The use of both doors is expected to tend toward a more even distribution of passengers in the car, thus producing more comfortable loading. Moreover, as passengers do not prepay their fare delays are expected to be avoided both to passengers themselves and to following traffic. The disadvantage in this system is that in leaving the car only the rear door can be used as passengers must pay the conductor as they leave.

Mr. Eaton believes that a passenger boarding a car downtown during the evening rush hour is likely to be hampered with bundles, gloves, etc., and is not in as good position to pay his fare promptly as he is after he is aboard the car.

The proposed system if adopted will be installed on trial only on certain lines, probably the Cranston and Broad Street lines, which loop back from the center of the city. The Rhode Island Company has expressed its willingness to co-operate in this trial.

Rehearing in Ottumwa Case

The Supreme Court of Iowa has granted a rehearing of the Ottumwa Railway & Light Company case and has set the case during the March sessions of the court. The case involves the right of cities to fix permanent rates of fare by railways over a period of years.

The court has twice ruled on the matter. Recently it reversed a former opinion and held that cities did not have such a right without legislative action.

In setting the case for rehearing the court has asked for the presentation of printed arguments on the following questions:

Assuming that the legislative power to make rates still rests exclusively in the Legislature, in that it has never delegated the same ("as appellant claims and as we are inclined to hold") and that, therefore, the City Council has never had the legislative power to fix the rate nor the power to bind the city for a fixed period, what gave validity or irrevocability to the 6-cent resolution adopted by the City Council (of Ottumwa) Dec. 23, 1918?

Even though the city had no power to bind the city to a contract rate for a fixed time, did that fact disable the railway from binding itself to a continuing condition of the franchise as provided in Section 7 thereof, whereby the company could not charge in excess of its specified maximum rate?

Can the company breach or ignore this provision of Section 7 and still maintain its right for franchise?

Transportation News Notes

Wants Ten Cents in Huntsville.—The Alabama Power Company, operating in Huntsville, has notified the Council of that city that it will petition the Public Service Commission for an increase in fares. The present rate is 7 cents and according to W. M. Stanley this is not sufficient to meet operating costs. A 10-cent fare will be sought.

Wants More on Penn Lines.—The Northumberland County Railway, Sunbury, Pa., has filed with the State Public Service Commission a notice of its intention to raise its fare from 6 cents to 7 cents. The Warren Street Railway, Warren, has also notified the commission that it will raise its cash fare from 6 cents to 7 cents. The company proposes to sell tickets at the rate of ten for 63 cents.

Skip Stop in Vancouver.—The British Columbia Electric Railway, Vancouver, B. C., is inaugurating the skip stop. This system has already been placed in operation on the Kerrisdale line; Vancouver, and public opinion is being canvassed as regards its general adoption. So far 95 per cent of the communications received from the railway's patrons have been favorable to the extension of the plan.

Lull in Fare Fight.—The agitation over increased railway fares in Jackson, Miss., has subsided, and though the matter is at rest at present it is highly

probable that the Jackson Public Service Company will seek relief from the city without having recourse to the courts. With the hope of increasing its revenue the company recently petitioned the city for permission to advance fares. Subsequently the city put the matter before the people. At a referendum they decided against the advance. Since the election no definite steps have been taken by the Service company.

Jitney Regulatory Bill in Iowa.—A bill which would bar jitney buses from streets on which electric railways are operated has been introduced in the Iowa House by F. C. Lake, Sioux City. Jitneys would, however, be permitted by the bill to cross bridges where there are electric railway tracks and to cross at right angles streets where there are such tracks. Violators of the law would be subjected to a fine of \$300 or imprisonment in jail not to exceed sixty days.

Ten Cents Authorized in McAlester.—The Oklahoma Corporation Commission has granted permission to the Choctaw Power & Light Company, McAlester, Okla., to charge a 10-cent fare in that city. Rates along interurban lines will be increased proportionately; between McAlester and Hartshorne from 50 to 55 cents; from McAlester to Haileyville from 45 to 50 cents. In the city special books will be issued with three tickets for 25 cents. On the interurban twelve tickets will be sold for \$1 and any one of these will be accepted between points where the cash fare is 10 cents. The new rates became effective on Feb. 15.

Ten Cents Sought in Montgomery.—The Montgomery Light & Traction Company, Montgomery, Ala., has filed a petition with the State Public Service Commission asking permission to charge a 10-cent fare on its lines in Montgomery and suburbs. The company wants a 10-cent fare continued in effect until the income of the property can produce in addition to legal interest on a fair value of the property a stabilizing fund of \$200,000. The petition makes clear the company's intention of decreasing the rate of fare to 9 cents and perhaps 8 cents "as conditions and occasion demand." A meeting will probably be held early in March to discuss the petition.

Publication Renewed.—The Twin City Rapid Transit Company has resumed publication of *Rapid Transit News* under date of Feb. 10. This pamphlet will be issued indefinitely "as a medium of direct communication between the company and the car-riding public." In this first number of Vol. 2 an explanation of the Brooks-Coleman bill now before the Legislature is given in detail, prefaced by the needs and activities of the Twin City lines. *Rapid Transit News* says that more miles of extensions were laid in the Twin Cities of Minneapolis and St. Paul during the year recently ended than in any other city in the country with the possible exception of New York.

Syracuse Case Continued.—According to figures submitted by Milo Roy Maltbie, representing the city of Syracuse before the Public Service Commission of the Second District in the proceeding before that body regarding fares on the lines of the New York State Railways in that city, the actual reproduction cost new less depreciation of the lines is \$4,864,121. Further testimony is to be taken. The company applied to the commission to charge at least 10 cents after a service-at-cost plan had been rejected by the city. The fare in Syracuse has been 6 cents.

Robbery Plot Fails.—Indictments charging forgery have been returned against the three counterfeiters of car tickets in a plot to rob the Georgia Railway & Power Company, Atlanta, Ga. C. L. Lumkin, a conductor on the Buckhead line, was arrested several days ago and confessed the entire story to railway officials. His confession implicated L. and H. C. Bumpous, who were arrested in Gadsden charged with being the "brains" of the scheme. The men made a contract with a printing establishment in Birmingham and the concern thanked the company in turn for the order. In this way the plot came to light at once, although it would have come to light eventually under the company's plan of checking tickets.

Eight-Cent Fare in Concord.—The State Public Service Commission has authorized the Concord (N. H.) Electric Railways to charge 8 cents in Concord with the privilege extended to patrons of buying ten tickets for 70 cents. Several months ago the railway management petitioned the commission for an increase in cash fares from 6 to 10 cents with an 8-cent ticket fare and a straight 10-cent fare on the Concord-Manchester lines. The commission in its finding states that an increase in fares that will add "approximately \$30,000 to what would be secured by the present fare" will help the present problem. The commission expresses the belief that a saving will be effected in the use of the one-man type of car and also in the downward trend of prices.

City Joins in Fare Petitions.—A petition from the city of Sault Ste. Marie, Mich., signed by the Mayor and city clerk and identified by officials of the Sault Ste. Marie Traction company together with a certified copy of a resolution joining the city and the company in an appeal for increased fares, has been filed with the Public Utilities Commission at Lansing. The resolution adopted by the city in the interest of the traction company was passed following a request for such action from that company several weeks ago. The knowledge that the company could not run unimpaired and satisfactorily unless higher fares were granted was found in an investigation by the City Commission, and the city joined with the company in its appeal to Lansing for higher fares. The passage of the resolution by the city was by unanimous vote.

Personal Mention

Promotions in Pittsburgh

**M. T. Montgomery Appointed Suggestion Man of Pittsburgh Railways—
C. A. Harris Made Storekeeper**

M. T. Montgomery, who has been general storekeeper of the Pittsburgh (Pa.) Railways for a little over a year, has been attached to the main office of the company as a "suggestion man." His former position of storekeeper is now filled by Charles A. Harris, formerly assistant storekeeper.

In his new capacity Mr. Montgomery's work is principally outside of the office and consists of meeting employees of all grades and in all kinds of work to get their suggestions for increased efficiency in service and for correction of service and mechanical



C. A. HARRIS

faults. Through Mr. Montgomery, the general manager, C. S. Jones, is thus able to keep in closer touch with the ideas of the various men on the system, as Mr. Montgomery acts in a capacity of what might be termed the personal representative of the general manager among the employees.

BOTH ARE EXPERIENCED MEN

Mr. Montgomery's railway experience began in 1898 with the Union Traction Company, which is now a part of the Pittsburgh Railways. After occupying there the position of conductor and later of dispatcher, he was made manager of the traffic department. In July, 1919, after having been manager of railways of the Monterey Railway, Light & Power Company, Monterey, Mexico, for six years, Mr. Montgomery became special assistant to the general manager of the Pittsburgh Railways. A biography and a portrait of Mr. Montgomery were published in the *ELECTRIC RAILWAY JOURNAL* for Jan. 31, 1920.

Mr. Harris, who succeeds Mr. Mont-

gomery as general storekeeper, is about thirty-six years old. He entered railway work with the Connecticut Company in 1908 as stock clerk for the Hartford Division in Hartford. He was later advanced to the position of storekeeper in Hartford and was then made general stock clerk for the entire system with headquarters at New Haven. In 1917 he accepted a position as assistant chief clerk in the stores department with the Pittsburgh Railways. He was later made storekeeper of the Homewood store, from which position he was advanced to assistant general storekeeper in the fall of 1919.

Mr. McClure Appointed Receiver of Interurban

J. H. McClure has been made receiver of the Indiana, Columbus & Eastern Traction Company, Cincinnati, Ohio, by Judge Killits, Toledo, Ohio. In order to fill this position Mr. McClure resigned as vice-president of the Ohio Electric Railway and as president of the Indiana, Columbus & Eastern Traction Company, the Fort Wayne, Van Wert & Lima Traction Company, the Columbus, Newark & Zanesville Traction Company, and the Columbus Interurban Terminal Company. He has been succeeded as vice-president of the Ohio Electric Railway by H. G. Gilpin, formerly general manager of that property.

Mr. McClure was chosen last year by Day & Zimmerman, utility managers, to operate the Ohio Electric Railway, of which they have taken charge. He was previously general manager of the Citizens' Traction Company, Oil City, Pa., where he proved his ability both as an efficient and an able operator.

Major Gustafson Leaves Baltimore

Major Robert K. Gustafson, who had been chief draftsman at Carroll Park Shops of the United Railways & Electric Company, Baltimore, Md., since November, 1915, has left the company to take charge of the engineering and development work of a large manufacturing concern in Little Falls, N. Y. Before entering the service of the United Railways & Electric Company he was connected with the Guggenheim Company of Bisbee, Ariz. In 1917 Mr. Gustafson attended the first Officers' Training Camp at Fort Myer, and at its close was commissioned a lieutenant. He was sent to Camp Meade and in 1918 was commissioned captain, just before sailing for France. He went over with the 79th Division, 304th Ammunition Train, and was transferred to the 5th Division and returned with the 6th Divi-

sion. He was discharged from the Army in July, 1919. In September, 1919, he was commissioned a major in the Reserves. Major Gustafson was born in New Haven, Conn., in 1891. He was graduated from Yale in the class of 1912.

D. K. Lewis at Winnipeg

D. K. Lewis Takes Position of Electrical Engineer of Winnipeg Electric Railway

D. K. Lewis has been appointed electrical engineer of the Winnipeg (Man.) Electric Railway, succeeding L. Trott. Since December, 1918, Mr. Lewis has been electrical engineer of the Fort Dodge, Des Moines & Southern Railroad, Boone, Iowa.

Mr. Lewis was graduated from Clemson College, South Carolina, in 1903, having specialized in electrical and mechanical engineering. He entered the testing department of the General Electric Company at Schenectady, N. Y., and was later transferred to the engineering office in Chicago,



D. K. LEWIS

where for twelve years he was construction foreman, installing apparatus in various towns and cities in the Western States. He enlisted in the United States Army in April, 1917, and was discharged in December, 1918.

The Winnipeg Electric Railway, besides operating 112 miles of track in and about Winnipeg, operates also the Winnipeg, Selkirk & Lake Winnipeg Railway and the Suburban Rapid Transit Company.

Changes in Tuscaloosa Personnel

Charles Hays has been made manager, purchasing agent, claim agent and electrical engineer of the Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala. Also E. C. Beatty, formerly superintendent of light and power, has been appointed engineer of overhead construction of the company. C. J. Erickson is no longer connected with the company as superintendent of the railway department and as master mechanic, his position now being filled by T. A. McDaniel.

Charles G. Staples has been appointed treasurer of the Springfield (Vt.) Electric Railway.

R. B. Stack has succeeded the late **R. L. Utley** as secretary of the Escanaba (Mich.) Traction Company.

E. S. Davis has been elected vice-president of the Springfield (Vt.) Electric Railway.

George O. Muhlfeld, managing director of Stone & Webster, has been elected a director of White Oil Corporation, to fill a vacancy.

Allan G. Hoyt, New York, N. Y., has resigned as vice-president of the Washington Railway & Electric Company, Washington, D. C. No successor to him has been elected.

E. Curtis has been appointed engineer of the power station of the Fort Smith Light & Traction Company, Fort Smith, Ark. Mr. Curtis succeeds **L. J. Noble**, who has been made general manager.

C. V. Means, traffic manager of the Los Angeles (Cal.) Railway Corporation, was elected chairman of the board of governors of the Southern California Passenger Association at the meeting of the board held on Feb. 10, 1921.

A. F. Albee has been appointed supervisor of tracks of the Boston & Worcester Street Railway, Framingham, Mass. Mr. Albee formerly had charge of the repair work and construction for the Marlboro Division of the railway.

John Whitsell, general superintendent of the Chicago & Interurban Traction Company, Chicago, has been appointed operating manager of the Winnipeg (Man.) Electric Railway. He succeeds **Frank L. Butler**, who resigned to accept the position as manager of the railway department of the Georgia Railway & Power Company, Atlanta, Ga. Mr. Whitsell will assume his new duties on March 15, 1921.

C. M. Young has resigned as superintendent of power of the Columbus (Ga.) Railroad and the Columbus Power Company. Mr. Young has held this position for about fourteen years. He began his career in public utility work about twenty-five years ago.

H. W. Williams has been appointed special representative to the general superintendent of motive power of the Chicago, Milwaukee & St. Paul Railroad, with headquarters at Chicago, Ill. He was formerly assistant engineer in the electrical department with headquarters at Seattle, Wash.

Edward F. Peck, vice-president and general manager of the Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va., was recently run down by an automobile, sustaining internal injuries. Mr. Peck plays a prominent rôle in the city of Hampton, where he has many civic and industrial interests.

F. M. Kirby has been elected president of the Wilkes-Barre (Pa.) Railway. He succeeds the late **Abram Nesbitt**, who died several months ago.

Mr. Kirby is president of the Miners' Bank of Wilkes-Barre and vice-president of the F. W. Woolworth Company. He was born in Watertown, N. Y. He has been a resident of Wilkes-Barre for the past twenty-five years.

A. W. McGuire has been named acting purchasing agent of the Twin City Rapid Transit Company, Minneapolis, Minn., by President **Horace Lowry** to fill the vacancy created several weeks ago by the promotion of **W. Whiteford** to acting general manager. Other promotions announced at the same time were those of **A. P. Anderson** to the position of general storekeeper and **George Adams** to the office of chief clerk.

Obituary

E. C. Carpenter, Claim Agent

E. C. Carpenter, claim agent of the Northern Ohio Traction & Light Company, Akron, Ohio, was killed on Feb. 12 by an Akron-Canton interurban car at Springfield Lake. Mr. Carpenter had been for twenty years claim agent of the Indiana Union Traction Company, Anderson, Ind., with which he became connected when it was the Anderson City Railway. He served under **Charles L. Henry**, now president and general manager of the Indianapolis & Cincinnati Traction Company, during the construction of the first interurban electric railway in Indiana, between Anderson and Summitville. During his connection with this company his work and ability were recognized by his election in 1909 as president of the American Electric Railway Claims Association.

In 1911 Mr. Carpenter became general manager of the Pittsburgh & Butler Street Railway and the Butler Passenger Railway, Pittsburgh, Pa. Under his active managership the roadway and rolling stock were greatly improved and during the summer of 1913 the system was changed from 6,600 volts alternating-current to 1,200 volts direct-current. He severed his connection with these companies in 1914. He was appointed claim agent of the Northern Ohio Traction & Light Company in 1918 to succeed **H. L. Ehler**.

Robert D. Carter, Jr., chief investigator in the claims department of the United Railways & Electric Company, Baltimore, Md., died on Dec. 26 last. Mr. Carter had been in the employ of the railway since September, 1914.

Myles Tierney, banker and one-time traction promoter of northern New Jersey, is dead. Mr. Tierney secured a trolley franchise from the city of Hoboken and built the White line between Hoboken and Paterson. This road was later absorbed by the Public Service Railway.

John F. Chambers, superintendent of steam plants of the Georgia Railway & Power Company, Atlanta, Ga., died on

Dec. 12. Mr. Chambers was fifty-one years old. He had been in traction work since 1893, when he entered the employ of the old Atlanta Traction Company.

Skip Stops Given Up

Near-Side Stops to Be Tried in Downtown Districts of Kansas City—Loading Platforms Abolished

The "near-side stop" at all electric railway intersections is to supersede immediately the skip stops in the congested districts of Kansas City, Mo., from Eighth to Twelfth Street and Main Street to Grand Avenue. All loading platforms except at the depot are to be abolished. This is the result of an agreement reached at a committee hearing on an ordinance designed to abolish the present system of car stops.

The ruling of the committee, as outlined above, to which the railway company officials agreed, is to be effective only until the entire rerouted railway system is put in operation and tried out. This is hoped to be accomplished in thirty days. If, in that time, it is found that the near side stop system in the downtown district has proved satisfactory, the committee expressed its intention of recommending the passage of the ordinance, but for the present the ordinance is held in abeyance.

F. W. Fleming, one of the receivers for the railway, called attention to the fact that the ordinance as drafted would reduce the car speeds maintained at present, causing inconvenience to patrons. The passage of the ordinance would not only react on the car rider but would cause an additional expense of \$750 a day to the company. The receivers, however, take the view that in justice to themselves they should place before the public the consequences of disturbing the system. Their only ambition is to give the best possible service and put the company on its feet.

Mr. Culkins Studying Cincinnati Figures

Figures requested by **William C. Culkins**, director of street railways, from the Cincinnati (Ohio) Traction Company to show cause for an increase in fare to 9 cents on March 1 have been received by Mr. Culkins from **Walter Draper**, vice-president of the company.

According to the statement gross receipts for 1920 were \$8,959,996. The cost of operation was \$9,625,301. Receipts for December when an 8½-cent fare went into effect were \$821,585. The cost of operation in December was \$915,733. In January receipts were \$781,380. The cost of operation in January was \$812,573.

The total deficit for December and January was \$125,340. The company says the increase in fares is based upon the deficits during December and January under the terms of the service-at-cost franchise.

Mr. Culkins after receiving Mr. Draper's figures said that he would consult with **Saul Zielonka**, city solicitor, and would then announce what course the city will pursue.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

Coal Production at Low Level

With Stocks and Demand Light, Bituminous Loadings Are Lowest in Ten Months

Bituminous coal production during the week ended Feb. 12, from the latest Geological Survey reports, showed a decline to 7,861,000 tons for that week, the lowest production since last April, although it is about the same as that of the corresponding week of 1919, but much lower, however, than for 1918 and 1920. The present condition of the coal market resembles quite closely the period which followed November, 1918, when industrial depression and a mild winter combined to limit demand. Early in 1919, however, the consumers had good stocks on hand; the stocks now are known to be very much lower.

The 1921 production is fast going down hill and the industry is said to be now approaching a condition resembling the quiet period of 1919. That the depression has not yet reached its lowest point is shown by the steady decrease in production indicated by advance reports of loadings by the railroads, according to the Geological Survey.

Prices also are reported to be very low and demand is weak. Mild winter weather, quiet industrial and railroad conditions and the lack of export demand keep the requirements at a low level.

Fair Demand for Trolley Wheels

Deliveries Are Good, Though Stocks Are Not Large—Producers See Good Year Ahead

Along with the slump in buying of virtually all material on the part of electric traction companies there has come a lessened demand for trolley wheels. Several of the large manufacturers report that despite this drop in sales a very fair volume of business is being placed right along. Worn out wheels, of course, have to be replaced, and it is undoubtedly this "necessity" buying that accounts for the fact that one or two factories are still working on orders previously booked. There is this distinct difference to be noted in the present orders, however, that they do not cover the needs of railroads very far in advance. This is to be regretted, manufacturers state, because deliveries are now favorable, prices at a fair level and metal quotations unprecedentedly low. Almost without exception producers see a bright year ahead for sales.

Deliveries are reasonably prompt, in some cases orders being filled from stock, especially on wheels which have come to be recognized as more or less standard. In general stocks of the finished product are not large, one representative producer, for instance, having not a trolley wheel in stock and another virtually none. This condition of course does not obtain all over the field.

Prices in this line have declined but slightly. The shading has resulted from lower copper costs chiefly, as several manufacturers state that their labor costs are no lower yet. It is estimated by a large manufacturer of

trolley wheels that the drop in prices from their peak has averaged about 5 per cent. This seems a fair proportion when it is remembered that in a table of price comparisons with pre-war prices for about fifty items appearing in the June 19, 1920, issue of the ELECTRIC RAILWAY JOURNAL trolley wheels showed the smallest percentage of price increase but one. The price of a 6-in. wheel in 1920, according to this table, represented but a 22.3 per cent increase over 1914. And it must be remembered that it requires only about an 18 per cent decrease from the peak quotation to wipe out this increase in price.

More Views on the Price Situation

Several Buyers of Electric Railway Equipment Who Were Interviewed Think Prices of Some Material Warrant Further Reduction—Buyers' Market Versus Sellers' Market

In the issues of Feb. 5 and Feb. 12 were presented the views of several large manufacturers of electric railway equipment on the question of current prices, their effect upon buying and the justice of existing quotations. There is another side to the matter of course—that of the railroads. In an endeavor to present the feeling of the buying end of the industry in the matter of prices ELECTRIC RAILWAY JOURNAL has asked the views of several representative officials of traction companies, a few of which appear in part below.

One of the prominent purchasing agents in the East asks: "Why will not the manufacturer take some losses just now, when he, like the rest of us, is asking retail merchants to do the same? In a great many cases, especially among the larger manufacturers, they are not willing to do this, notwithstanding their tremendous profits during the war. This statement is based upon a couple of interviews I have had with representatives regarding copper products. One of them told me, 'We can't reduce our prices because we are using 19-cent copper,' and yet this same chap not long ago was lacerating such retailers as clothing and shoe dealers, because they would not take losses."

BELIEVES MANUFACTURERS ARE SINCERE IN PRICE VIEWS

In justice to the manufacturers, however, the general manager of one of the large Middle Western traction companies gives it as his opinion that manufacturers honestly do not feel they are charging exorbitant prices. This he attributes to a reckless wartime ex-

penditure of money by manufacturers which makes it impossible for them to get back to a normal profit at the present time. This railway man does have this to say, however, that present prices of railway equipment are still higher than labor and raw material costs warrant. This he accounts for by the belief that a large percentage of manufacturing concerns are still basing their overhead charges on a war basis, and until such time as they will trim down their overhead he thinks it will be impossible to have lower prices.

EXPECTATIONS OF INCREASED RATES NOT REALIZED

The general manager of another property located in the Middle West outlines the situation in the following words: "The electric railways readily followed the trend of prices upward because they felt sure that relief would be given them in increased rates or revenues, or else by the reduction of their burden to correspond. This faith was not fully justified, as it turned out, and therefore the industry has taken the position that it can and will get along without the things that it wants and in fact needs until the price is where it can afford to buy them. Those who are the more dilatory in bringing their prices down to the basis of their value, or rather to the point at which the buyer will commence to buy, will be the only sufferers, because when they finally do reduce, as reduce they must, they will find that they have incurred, in addition, an extra selling cost which will entail an added loss. When there are more sellers than buyers the wise seller will go out to meet

the buyers. Most of our sellers have forgotten this during the past five or six years that a sellers' market has prevailed."

Boston Elevated Loses Forty Cars in \$400,000 Fire

Fire which started in the Neponset, Mass., carhouse of the Boston Elevated Railway early last Monday morning destroyed about forty cars and caused a loss estimated at \$400,000. The equipment destroyed, in addition to the total loss of the building, stock of material and tools, which were valued at about \$200,000, included twenty-three articulated cars, eight semi-convertible motor cars, four trailers and four miscellaneous cars and plows. Five cars in the storage yard were burned but can be repaired. Five other cars in the yards were undamaged and ten cars on one of the tracks in the carhouse were got out before the flames reached them. Cars from other parts of the system were transferred to restore normal service immediately.

Pole and Tie Producers Foresee Buyers' Market

Annual Convention of Northern White Cedar Association Takes Optimistic Tone, However

The twenty-fifth annual meeting of the Northern White Cedar Association, held in Minneapolis, Minn., on Feb. 8 and 9, was attended by thirty-two firms representing producers of poles, ties, logs, etc. The president of the association, after reviewing the wartime period of inflation and speculation, stated that the member companies had weathered the period of declining values and slumping demand in the latter part of 1920 much better than many other industries. "During the first half of 1920," the report states, "we were riding the peak of the wave. Most of our members were able to dispose of their products before the recession came."

NEED OF STRENUOUS SALES EFFORTS IN PRESENT YEAR

Regarding the outlook for the present year, however, genuine work and sales effort are seemingly going to be required to maintain sales. "We are starting 1921 with January, as a whole, the poorest business month in years. February should be better, and along later in April and the first of May we should be acquiring a full head of steam and be going ahead on a real normal basis," President Furlong stated. L. A. Page, Jr., of Page & Hill Company, speaking for the pole advertising committee, said: "Let us suggest that there will be no reward in 1921 for the man or concern who quits cold or lays down. . . . The customers of the members of your association will be somewhat more careful as to prices and more critical regarding quality. . . . Business will be good this year—for the man who thinks and digs for it. The intelligence of your sales effort and

extent of your advertising will determine the size of your 1921 crop of sales."

Membership of the association increased from forty-four to forty-nine companies in 1920. Seven new companies were admitted to membership while two others withdrew. The officers elected for the new term were: Benjamin Finch of Finch Brothers, Duluth, Minn., president; W. B. Thomas of the White Marble Lime Company, Manistique, Mich., vice-president; H. F. Partridge, Minneapolis, treasurer; M. H. Schussler of the Coolidge-Schussler Company, Minneapolis, and W. C. Meader of the Bell Lumber Company, Minneapolis, directors, each director to serve two years.

Levis County Railway Loses Heavily in Fire

Fire originating in one of the cars in the carhouse of the Levis County Railway, Levis, Que., Canada, last Monday, caused a total loss of \$230,000, Canadian value. Canadian exchange is quoted at 87.6 cents at present. Because of extremely low water pressure the carhouse, shops and contents were completely destroyed, with the exception of four Birney safety cars, two other new one-man cars and the construction cars.

The rolling stock destroyed included eight Birney safety cars, valued at \$9,600 each (Canadian money); four Brill double-truck cars, valued at \$6,000; three single-truck converted one-man cars, with a value of \$5,000 each; four single-truck, double-broom sweepers, \$6,000 each; one double-truck rotary plow and one single-truck rotary plow. These fifteen cars, four sweepers and two plows represent the entire rolling stock of the company with the exception of the six cars noted above as saved. The carhouse and shops were valued at \$40,000 and the supplies and parts therein at \$30,000. The loss is fully covered by insurance.

Electrification of Railroads in South Africa

A cablegram from Trade Commissioner Stevenson in South Africa to the Department of Commerce states that tenders are invited until May 3 for equipping the railway from Cape Town to Simonstown and other lines for electrical operation.

Rolling Stock

Delta Light & Traction Company, Greenville, Miss., has placed orders for two new cars, it is learned.

Louisville (Ky.) Railway Company, it is stated, has on its program of improved service purchase of about seventy new cars of the Peter Witt type, after the 7-cent fare which has just been authorized has been in operation for a certain length of time.

The Connecticut Company lost two passenger cars in a head-on collision

which occurred on its Bridgeport-Shelton line, Feb. 22. A can of gasoline carried by one of the passengers exploded, burning the two cars to the trucks. Eight passengers were burned to death and twenty injured.

Hartford & Springfield Street Railway Company, Warehouse Point, Conn., suffered a loss estimated at \$60,000 recently when the carhouse and its contents at Windsor Locks were destroyed by fire. The equipment burned besides the buildings, included three closed double-truck passenger cars, a large snowplow, one open double-truck car, one work car and a sand car, besides tools and car parts valued at \$5,000.

Interstate Public Service Company, Indianapolis, Ind., has received the first of the ten all-steel interurban cars built by the Cincinnati Car Company for operation of through service between Indianapolis and Louisville. A trial trip was made from Greenwood to Louisville on Jan. 24. Harry Reid, president of the company; H. H. Buckman, master mechanic, who was responsible for the design of the car, and other officials made this trip to determine what changes, if any, may be necessary along the line before the cars are all placed in operation. Various tests were made to determine the current consumption and other phases of operation. Parlor cars will be put in service later and operate as trailers on through service between Indianapolis and Louisville. The new cars are 62 ft. long over all and are capable of obtaining a speed of approximately 75 miles an hour.

Track and Roadway

City & Suburban Railway, Brunswick, Ga.—It is likely that in the near future the City & Suburban Railway will extend its car line to Arco, a distance of 2 miles.

Columbus (Ga.) Railroad.—The Columbus Railroad expects to build 6,520 ft. of track, using 70-lb. rail on ballast, three diamond point turnouts, one Mangnese railroad crossing.

New Jersey & Pennsylvania Traction Company, Trenton, N. J.—The New Jersey & Pennsylvania Traction Company on Feb. 15 filed with the Board of Public Utility Commissioners its answer to the petition of the City of Trenton which seeks to force the relocation of tracks on West Hanover street, Trenton. The company says that it would cost about \$75,000 to do the work and that when it was first installed the work was under the supervision of the city. The company also says that it is without credit which would enable it to borrow the necessary funds and asks that the petition of the city be dismissed.

Galveston (Tex.) Electric Company.—Extension of the railway service by the Galveston Electric Company so as to give service to the extreme western portion of the city is asked in a communication presented to the City Com-

mission by representatives of the Gales-ton Dock & Marine Council. A committee consisting of Frank S. Anderson, city attorney; J. H. Gernand, commissioner of streets and public property, and J. C. Purcell, commissioner of finance and revenue, was appointed to investigate the feasibility of such an extension and to report back to the commission.

Wheeling (W. Va.) Traction Company.—The Wheeling Traction Company expects to build within the next three months three new sidings and turnouts with Nachod signals.

Power Houses, Shops and Buildings

Arkansas Valley Railway, Light & Power Company, Pueblo, Col.—The Arkansas Valley Railway, Light & Power Company is planning an addition to its power plant in Pueblo. The plant will house a new 10,000 hp. steam turbine, boilers and surface condensing equipment. Other improvements are also under way including a new substation at Fowler, Col. The improvement plan will total about \$1,000,000.

Hartford & Springfield Street Railway, Warehouse Point, Conn.—A carhouse of the Hartford & Springfield Street Railway in Windsor Locks was destroyed by fire on Feb. 6. The loss is estimated at \$60,000.

Evansville, Ind.—Warren T. McCray, Governor of Indiana, has assured Mayor Benjamin Bosse at Evansville, Ind., that he will do all in his power to secure legislation to build a bridge across the Ohio River at Evansville. It is proposed to use the bridge for traction lines as well as vehicles. The bridge committee at Evansville, of which Henry C. Kleymyer, president of the Chamber of Commerce is a member, hopes to get an appropriation of \$1,500,000 from the Indiana state legislature for the building of the proposed bridge. A similar amount will be sought from the Kentucky state legislature.

Empire State Railroad Corporation, Oswego, N. Y.—The Empire State Railroad is considering the matter of a modern station in a centrally located portion of the city. General Manager Odell, in consultation with officials and business men, has stated that the company needs larger accommodations than are afforded by the West First Street substation. The company wants a station where interurban and local lines pass.

Bamberger Electric Railroad, Salt Lake City, Utah.—On Jan. 31 the new depot at Kaysville, Utah, was opened by the Bamberger Electric Railroad for the use of the traveling public.

Beaver Valley Traction Company, New Brighton, Pa.—The Beaver Valley Traction Company expects to purchase one set of Nachod Signals. The company will also remodel its power house in order to provide additional shop facilities for inspecting and repairing.

Trade Notes

The Thomas A. Edison Company, Inc., West Orange, N. J., has filed notice of increase in capital stock from \$2,000,000 to \$3,000,000.

T. B. Skelton of the sales department of the Metal & Thermit Corporation, New York City, has been transferred to the Chicago office. His new address in that city is 6138 Langley Avenue.

The Washington-Virginia Railway Company, Washington, D. C., has purchased from the Economy Electric Devices Company a complete equipment of watt-hour meters for its six interurban cars. These meters will be of the power-saving type, equipped with car inspection dials.

The Long-Bell Lumber Company, Kansas City, Mo., is planning to erect a large mill and lumber plant on the Cowlitz River at Kelso, Wash. The proposed plant will have a daily capacity of 1,000,000 ft. and will be equipped with electrically driven machinery throughout. The company turns out wood poles of all kinds and other lumber products used in the electrical industry.

George E. Learnard, president of the International Combustion Engineering Corporation, 11 Broadway, New York, has just gone abroad to confer with certain officials of the Underfeed Stoker Company, Ltd., of London, England, as well as with some well-known men of France. Through the International company there is close affiliation between the Underfeed Stoker Company, Ltd., London, and the Combustion Engineering Corporation, New York. The Underfeed Stoker Company, Ltd., is planning to build a large new factory near London, and Mr. Learnard is to be present when this work starts. It is also expected that he will be on hand when work is started on a French factory. Mr. Learnard's belief is that the whole subject of proper combustion engineering is more or less a key-stone in any reconstruction and rehabilitation program and that the general moral effect of considering the enormous economies that can be brought about by proper combustion engineering is perhaps more helpful to the general situation than the mere saving of dollars that it represents.

The Electro Service Company, Marietta, Ga., manufacturer of surge arresters, has recently appointed the following sales representatives: The R. W. Lillie Corporation, 176 Federal Street, Boston, and 30 Church Street, New York City, to cover the territory in New England and the upper part of New York State; the W. D. Hendry Company, Hoge Building, Seattle, to represent the company in the States of Washington and Oregon, British Columbia and Alaska; Jones & Hitchin, Lonja del Comercio 216, Havana, Cuba.

John Hunter, power plant engineer, has just accepted the office of chief engineer of the Heine Safety Boiler

Company, St. Louis, Mo. Mr. Hunter was born in Scotland, where he was educated and served his engineering apprenticeship, following which he entered the marine engineering service. In August of 1905, Mr. Hunter became chief engineer of power plants of the Union Electric Light & Power Company of St. Louis, and since that date has been associated with various other important power projects. He is a past president of the Engineer's Club of St. Louis, and was a member of the Jury of Awards, Department of Machinery, at the San Francisco Exposition. In the American Society of Mechanical Engineers he was member of the Council as manager for three years, and as vice-president for two years.

New Advertising Literature

Insulation.—John C. Dolph Company, Newark, N. J., has issued a thirty-one-page descriptive catalog of "Dolph" insulating varnishes and compounds.

Conductors.—"Aluminum Electrical Conductors" is being distributed by the Aluminum Company of America, Pittsburgh, Pa.

Instruments.—The Westinghouse Electric & Manufacturing Company has developed the type SX switchboard ammeters and voltmeters.

Pulverized Coal.—Catalog No. 72 on "Pulverized Coal Equipment" has just been issued by the Fuller-Lehigh Company, Fullerton, Pa.

Hydraulic Valve.—The Larner-Johnson Valve & Engineering Company, Philadelphia, has issued bulletin No. 2, descriptive of the Johnson hydraulic valve and differential surge tank.

Electric Cranes and Hoists.—The Northern Engineering Works, Detroit, has issued general catalog No. 28, covering its electric traveling cranes, hoisting machinery, etc.

Lightning Arrester.—A vacuum-type lightning arrester for telegraph, telephone and signal circuits has been placed on the market by E. Jacobus, 79 Orange Street, Newark, N. J.

Oil Coolers.—The Griscom-Russell Company, New York City, has issued a booklet entitled "The Cooling of Quenching Oil in the Heat Treatment of Steel."

Locomotives.—Digest bulletin No. 44013A of the General Electric Company is entitled "The Electric Divisions of the Chicago, Milwaukee & St. Paul Railway."

Automatic Generating Stations.—General Electric Company, Schenectady, N. Y., has issued a twenty-three-page illustrated bulletin, No. 40604, entitled "Automatic Hydro-Electric Generating Stations."

Steel Structures.—McClintic-Marshall Company, Pittsburgh, Pa., has published a twelve-page illustrated booklet on various types of steel structures erected by them for railroads, including bridges, shops, terminals, roundhouses, etc.