

Electric Railway Journal

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Number 5

It Is Important to Check Transfers

THEORETICALLY, every transfer presented for passage on the cars should be checked by the auditing department before it is destroyed. Actually, however, such a plan would involve too much time and labor. Hence, the common practice is to check only a portion of the transfers, usually all those of one or two lines being taken each day so that all of the lines will be included, though not in any regular system of rotation, within a comparatively brief period. If this plan is carefully followed, it is undoubtedly adequate, but we have observed a tendency toward slackness by some companies in this respect. Electric railway managers must remember that as each transfer represents a ride, it is potentially worth 5 cents to the company, whether the practice on the road is to register transfers or not to do so. In other words, unless care is taken to prevent transfer abuse by passengers and conductors, a large loophole is left for the escape of fares. Of course money can be wasted in too elaborate systems of auditing transfers, but we believe that more roads err on the side of laxity in this respect than from over-caution.

The Use of Short-Term Notes at the Present Time

THE proposed financing of the power deal involving the Lehigh Valley Transit Company shows the situation that is to-day confronting the corporate borrower. As noted last week, the banking syndicate, in the tying together of the various plants concerned, plans to use an issue of \$20,000,000 of ten-year 6 per cent notes. Such short-term media are not unexpected in view of the existing financial conditions. Government bond offerings, generally upon at least a twenty-year basis, have at present, for patriotic reasons, the first call upon our national resources. The Farm Loan bond business is another source of important competition, and there are many bargains in old bonds in the general market. To compete even to a small degree with the federal issues and to meet the high yield on outstanding bonds, the business of the country must pay a high rate. But this does not mean that corporations need commit themselves for a long term of years to 6 per cent money, for it is feasible to defer long-term bonds until peace is restored. Thus one finds corporations issuing notes for even shorter periods than the proposed Lehigh issues—for one, two or three years, at a rate sufficient to be attractive. This method of financing seems advisable, pending the restoration of normal conditions. It would

probably be well, however, to remember that any financing will be easier during the lulls between Liberty Bond offerings.

A Patriotic Spirit Will Offset Draft Reaction

THERE is no doubt of the existence of a feeling of uncertainty and unrest in the electric railway ranks, as in others, due to the present and prospective drafts of men for military service. It will require special effort to maintain discipline under these conditions. There may even be a tendency among the younger employees subject to draft to become careless in their work, feeling that they are about to leave their present employers anyway and that it matters little what they do. A patriotic spirit will prevent such an unwholesome reaction from the draft, which has been adopted equitably to distribute the burden of the war so far as man power is concerned. Those who go and those who remain behind will equally contribute to the winning of the war if they possess the proper spirit. Such a spirit is not that of the motorman who thinks that he can take chances or the conductor who feels that he can knock down a few fares because he is not going to be in his present job very long anyway. Such a man would make as poor a soldier as he is a railway employee. In spite of the difficulty which railways are having in keeping up the quantity as well as the quality of their labor supply, we believe that such virtual slackers are far from representative. Nevertheless, it is incumbent upon railway managers to promote a spirit of patriotism among their employees, not only because it is the right and proper thing to do but also because it will help the men to keep their standards of service high, whether or not they expect to join the army soon.

Low Wages Are Often a Waste of Money

IN commenting last week on the question of pay for rainy days to track gangs, we referred to the difficulty of obtaining labor of this kind at the rates which railways think they can pay or ought to pay. Several construction engineers who have read that editorial say that the belief of many managers that low wages are adequate for this sort of work is the crux of the problem. One of them writes:

"Laborers are being paid 40 cents an hour all through the towns in this valley, and my instructions this year were to get men for 20 cents an hour. We are now paying \$2.50 a day for ten hours' work on the track. It is not work, however. We are simply donating \$2.50 a

day to the finest collection of human flotsam that was ever washed ashore at Cull Harbor. I could hire one good man for \$3.20 a day who would do more work, heavier work, better work, more intelligent work than a pair of the half-dead culls that now cost us \$5."

It should be borne in mind that poor labor in track construction is not only inefficient in itself, but it is demoralizing to the gang foremen, who are usually the better men carried by the company on a monthly basis throughout the year. Poor laborers cause these men to become discontented and leave for higher-waged though less certain employment in other industries. That this is the case is evidenced by a recent canvass of fifteen of the larger companies in all sections of the country.

The problem is a serious one to maintenance-of-way engineers throughout the country. They come into direct contact with the poor labor used in many track gangs and thus realize the situation. One of them suggests, as a partial solution, that an effort be made to carry a few of the best track men through the winter so as to insure them an all-year job. They could be kept at tightening bolts, cleaning up brush, mending right-of-way fences and other jobs which are suitable for winter and would form the nucleus when the spring came of a good section gang which would be satisfied with moderate wages. We stand with them in believing that good work on the track is essential and that cheap labor is usually inefficient labor and uneconomical in the long run.

High Altitude in Service as Well as Location

THE rare air and the magnificent view in which the Denver Tramway men live and work may be the source of inspiration for the real accomplishment in evidence in the operation of this Western railway property. Or perhaps it is only a keen perception of the future that is responsible for the marked progress in conditions, both internally and with respect to the public which this company is enjoying. Whatever may be the background, there is no gainsaying the fact that the Denver Tramway organization is working out new solutions of electric railway problems. Part of this work has been described in recent issues of this paper. Another article in this issue tells of the publicity policies of the company, while others which will appear in succeeding issues will cover some of the details of the company organization and management. The one-man car idea is undergoing study in anticipation of its adoption in Denver, in a way which, it is hoped will greatly increase its desirability. Other schemes equally interesting and vital are being worked out to provide for the needs of the times.

An outstanding feature of this company's printed talks to the public is the truthfulness and sincerity with which it puts forth any discussion of the service being rendered. No hint of any attempt to cover up deficiencies through nice talk can be gleaned from any of the company's publicity. The watchword handed down from the general manager and permeating the whole or-

ganization is service, and no statement is made in any advertising literature which the company is not prepared fully to back up. No advertising campaign was ever continuously successful unless the goods proved to correspond to their representation, and this is the governing policy of the Tramway company in all its publicity matter. It is in the market to sell transportation and expects to be continuously in this business. Therefore, it cannot afford to misrepresent. If there are deficiencies, they are admitted but corrected as rapidly as possible. If there are complaints and criticisms, these are gladly received, for some of them carry valuable suggestions for the improvement of the service. If the tramway is at fault, the publicity manager does not hesitate to take a "rap" at his own company. This induces confidence in the veracity of the mouthpiece of the corporation. The publicity manager is directed in his relations with the balance of the organization, to maintain the viewpoint of the public and in short to be the public's special representative in the company conferences. This is indicative of the real intent to be of maximum service to the public in fact as well as in theory.

Railway Men Must Let the Light of Publicity Shine

READERS of the great metropolitan newspapers feel that they are entitled to find in the editorial pages at least evidences of intelligent consideration and careful thought. What, then, are we to say when we come upon such paragraphs as these which appeared the other day in the New York *Evening World* in discussing a raise in car fares?

* * * is it the duty of these American people to bear added burdens in order that no street railway corporation shall have to reorganize its business methods or share by so much as a fraction of a per cent of its accustomed dividends? * * *

Twenty-eight up-State traction companies have already petitioned the Public Service Commission for permission to increase their fares from 5 to 6 cents.

Think what this means for the corporations, a comfortable increase of 20 per cent in revenues. * * *

The distraction and confusion of war must not for one instant be allowed to serve as a cover under which street railway corporations may shift their share of the general load to the shoulders of the public.

There is no evidence here whatever that the writer has ever conceived the situation as involving anything but sentiment. He seems to think, as so many critics do, that the electric railway corporations have countless millions of annual profits and have only to make up their minds to be happy with a bit less. It is quite apparent that he does not know that many of the companies are paying no dividends, that some are not making even interest on their bonds, and not one is making enough to make either its stock or bonds a prime investment. He has no apparent glimmering of the idea that this situation means just one thing to the public—that the public will be the real sufferer if the companies are made to suffer. The public must appreciate the absolute certainty that if this business situation continues with the carrier companies the public will have to get along soon with fewer cars, passengers will have to

stand-closer together and will lose many car lines altogether.

This editorial writer never stopped to think that the business of furnishing street railway rides cannot go on indefinitely with fixed fares and rising costs any more than selling clothes, furniture, food or coal can continue under the same conditions. The companies are not caught red-handed trying to "put something over." They show the public and the Public Service Commission the facts and ask only a judgment that will be fair to them and at the same time keep up good service for the public.

Now for the real point, the point that prods the electric railway man himself.

Such crass editorial ignorance of a simple public business proposition is due to the fact that the electric railway men haven't made the facts of their business known. Newspaper editors are not so foolish or hateful as not to perceive that a company whose expenses are growing faster than its income is headed toward bankruptcy. Now, if the editors lack information and appreciation of the facts, how much more will the public generally lack them? No one but the railway people can change this. The need of intelligent and persistent publicity about the electric railway business is proved merely by the appearance of such writings. Nothing else can clear away the darkness of mind that leads to such misconceptions. These misconceptions, through repetition to millions of readers in the columns of the press, may do enormous damage.

There is no good reason to suspect malicious intent on the part of at least the majority of the papers. They are really open to the truth and intelligent presentation of the railway case. But the railway men must illuminate the darkness.

Now Is the Time to Get the Skip Stop Going

WE cannot withhold a word of praise for the wide-awake manner in which our neighbors in the transportation field—the steam railroads—are adapting their transportation methods to the abnormal conditions brought about by the war, and we believe that the electric railways could gather some suggestions from what they have done. Judging by reports, the steam railroads are undertaking everything and anything that spells economy—such as reducing the number of passenger train units, taking off diners and sleepers and accepting l.c.l. shipments only once a week, and the public applauds because it recognizes that these things are helpful for the country at large and so are necessary. This should give the electric railways heart, not only in the fare contest but in introducing other reforms. No such radical changes, so far as the public is concerned, as the steam railroads are making need be applied because there are at hand for the electric railways plenty of possible economies that do not depend upon reduced service for their introduction. All that is involved is a relaxation of popular opposition to im-

provements, and this seems to be very much in evidence to-day.

Probably the most prominent of such means for economy without reduced service appears in the skip stop. This has been definitely established as a time-saver to both public and railways for at least two years, but the number of cities where it has actually been introduced is painfully small. Places where it has been tried out and has "failed" are somewhat more numerous, but still the list of railways that have taken up the subject vigorously includes but an insignificant percentage of those that would benefit by such a change.

Part of this lack of energetic interest may be due to the apparent pettiness of the savings involved, and it is true that there are some conditions where the introduction of the skip stop will effect no direct economy and very little improvement in service. However, they are by no means in the majority. Generally speaking, they include short lines with infrequent headway, and under such circumstances the existing frequency of stops makes very little difference in the result. For example, there may be assumed a 4-mile round trip with a fifteen-minute headway served by two cars. The apparent schedule speed would then be 8 m.p.h., and allowing two minutes for layover the actual schedule speed would be about 9 m.p.h. With good equipment and limited interference, this schedule could be maintained with about ten actual stops per mile, but the advantage gained by cutting out half of the designated stopping points and thus reducing the actual stops to, say, about six per mile would hardly mean anything more than an increased layover. Elimination of four stops per mile or sixteen stops in each 4-mile round trip at fifteen seconds each (including acceleration and braking periods) would save four minutes out of the thirty originally required and, assuming an even distribution of patrons over the route, would save the average patron one minute at the expense of a schedule that would make the cars pass at odd times.

Double the assumed length of the line, however, and cut the headway to ten minutes, and the skip stop presents a wholly different aspect. Using the same actual schedule speed as assumed in the foregoing paragraph, six cars would then be needed to serve the run, allowing four minutes' layover. A reduction from ten actual stops per mile to six would save eight minutes in the time of each round trip, and if two minutes are cut off the layover, only five cars instead of six would serve the run, since the time for each round trip would be fifty minutes instead of sixty.

The outlined increase in actual schedule speed would save the average patron two minutes and the patron at the end of the line four minutes in each ride—well worth consideration. At the same time the increase of 16 per cent in apparent schedule speed would produce a saving equivalent to 11 per cent of the operating expenses of the line. This is also well worth consideration. The saving in fact, is equivalent to no less than a third of the gain to be effected by introducing the 6-cent fare under normal conditions.

Making the Most of Publicity

Denver Tramway Has Found Humor the Wedge to Public Understanding of the Railway Problems—Special Publication For and By the Employees Is Popular and Worth While

CONSISTENTLY living up to the declared intention that its publicity should not in any sense constitute a whitewash for the deficiencies of the company, and frankly turning the searchlight of public scrutiny on itself and admitting some imperfections, the Denver Tramway Company has for a year been steadily gaining ground in public favor. It took some seven or eight issues of the little now-much-sought "Tram-O-Grams," the company-public magazine, to overcome frequent references to this utility sheet by such titles as "Tramway Bunk," etc. Many letters were received at first to the effect that if the money thus appropriated were used to improve the service, it would be better spent. But with bi-monthly issues beginning on Feb. 5, 1916, it was not long until the droll humor of the green print and the antics of the tramway "pup" (Public Utility Problems), which mascot the publication in its precarious mission, had won a place in the routine life of the car riders. Now, Tram-O-Grams is not only read by the company patrons, but its periodic appearance is actually awaited. In popular favor, Tram-O-Grams is to Denver what B. L. T.'s column in the *Chicago Tribune* is to Chicago, but in addition, despite its humorous trend, it weaves the true knowledge of the tramway problems into the stories and the readers are educated as well as entertained.

TRAM-O-GRAMS


While many of the policies embodied in the publication of Tram-O-Grams are not new, the ideas of the men responsible for its character are worthy of recitation. The big governing principles of course are laid

out by F. W. Hild, general manager, the "Heap Big Chief," as the public knows him through Tram-O-Grams, while the editor of this paper is J. C. Davidson, publicity manager. The latter is blessed with the happy faculty of telling the public why the company is right when it seems to be wrong, and making everyone believe it and take it with a smile.

Pouring oil on troubled water was to be metaphorically the effect of the publicity which Tram-O-Grams was to set forth when it was decided that the breach between company and public was such that the former needed some more intimate contact with its patrons in order to disseminate information on the company's real problems and to foster a get-together spirit. The discussions in the paper were to be truthful and backed up by efficient service. It was realized that the company was permanently in the business of selling transportation, and that no advertising could be continuously successful unless the goods to be sold were exactly what they were represented to be. So every member of the company organization was instilled with the spirit of service, and the maximum of this commodity was to be the least that would be satisfactory. Consequently the publicity department was armed with the most powerful weapon available in the strife for public good favor, and could go ahead confidently to show how much, and not to cover up how little, service the company was supplying its patrons.

No "scrapping" back is tolerated in Tram-O-Grams, since its publishers believe this engenders antagonism to the company and disinterest in the paper. Sometimes the contents of letters to the company are made the

"STRAPHANGING NUMBER"

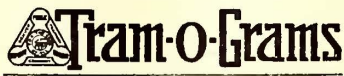


Vol. 1 DENVER, SATURDAY, APRIL 1, 1916 No. 8

FIRST, permit us to introduce the melancholy animal that we bring on top of our starboard column of conversational chat about Denver's standing army. We call him PUP but his full name is Public Utility Problems.

which accounts for his being such a sad critter. In Tram-O-Grams we talk mostly about the problems of this particular public utility, so nothing could be more natural than to choose PUP, as representing Public Utility Problems, for Tram-O-Gram's mascot. While talking about this we wish to deny several times the insinuation of the lady who telephoned us to say that our PUP would be the better for a good scrubbing. PUP has white hair with black spots, and the car cleaning crews run the vacuum cleaner over him once a week, so he is sure to be perfectly clean. If we had a pet leopard we suppose this critic of ours would want us to buy some erasers and rub out his spots.

The problem that gives PUP his perplexed air today is one that got us all fussed up a few weeks ago and when we went out to City Park yesterday it was brought to our attention again. For the car was full and we had to stand up, and suddenly the motorman rang the gong, dropped the fender, turned off the power, applied the emergency brakes and cursed all in the same breath as a black touring car flashed across the tracks two inches in front of the fender, and Hudson Mazum was right about lack of preparedness, for we fell into what was left of a fat man's lap and he wanted to know if this was a jitney bus. And inasmuch as we had poked the man next to him in the course of our long and angular descent, this man felt that he had the right to mildly protest by asking if the particular strap assigned to us had broken, which drew our attention to the people standing up in the car. Now, why couldn't they all have seats? Why didn't the Tramway give its whodysawt editor a seat so that he wouldn't have to wander around on fat parties against his will and perhaps against other people's? And then we remembered that we had made an investigation of this straphanging problem and had promised to tell you about it. Here's where we unload




Vol. 1 DENVER, SATURDAY, JUNE 10, 1916 No. 18

OUR wife has gone to the country and now everybody knows who ties our perky little bow neckties. Ever since the left we've been trying to catch up with the long list of things-to-do which we were instructed to follow carefully, but we can't see the sense in washing breakfast dishes every day when we've got a supply that will last two or three weeks, although we admit it was rather foolish of us to roam off the other morning and leave the front door open and the lawn sprinkler sprinkling. We manage to cook some rather classy breakfasts all by ourselves when we get up in time to make them—we never realized before how necessary it was to have a wife to supplement the alarm clock. The house has an unnatural quietude now that our wife isn't here, and in the evening there's nothing to do but play with the PUP and hang around—and speaking of hanging, we promised to give the second chapter of "Straphanging." Didn't we? This will be a good time to chat about it, because the Tramway has been making a check of the number of passengers on every car at "peak load points" for several months and we can talk without dealing in glittering generalities or guesses.


These "traffic checks" are so complete that they take four speedy accountants four days just to tabulate the figures. They are so carefully made that men who were sent out to check up the other men who made the counts were able to find only negligible mistakes. The traffic check consists of a count—by an observer on each car—of the number of passengers on the car at the peak load point, which is the point on each line at which the largest number of passengers are on the car. Every trip of every car on every line of the Tramway was counted this way; not once, but every day for months, and it is on these traffic checks that this issue of Tram-O-Grams is based.

There is AN AVERAGE OF A SEAT FOR EVERY BODY on the Denver street cars in any HALF HOUR period of EVERY DAY.



WHAT OTHER CITY IN THE UNITED STATES CAN SAY AS MUCH?

Yet we haven't discovered how to prevent straphanging without using the tolerably slow European methods. Many places that looked good on paper have fizzled in actual tryout. For



Vol. 1 DENVER, SATURDAY, NOV. 11, 1916 No. 21

IT started like this: the morning was one of those bright, sunny affairs for which Colorado is famous; cool, just warm enough to enable us to steer between the Scylla or Coal and the Charybdis of Ice without having any shikels scraped off our side pockets, and our thoughts were as far from consideration of winter snows and chills as they possibly could be.

Hold the picture a minute, then look over our shivering shoulders at the piece of office mail we found awaiting us on this balmy morning. It read something like this:


"We have a ver' so extremely heavy snow storm threatens to tie up the Tramway, every man and woman on the system, no matter what his position, will be assigned to help fight the snow and keep the cars running. Immediately upon signal in such an emergency, each one will take his place as assigned in the re-companing schedule. Such a snow as fell in 1913 may not come again, but if it should, we want to be prepared for it."

Well, we looked in the schedule and what if you think they had us down for?

"Editor of Tram-O-Grams, assigned to pick and shovel work on Lawrence line."

Sobson's got our number!

Everybody on the system we learned in reply to questions prompted by an abnormal streak of curiosity, is assigned to do certain definite volunteer work in case of a snow that is too big for the regular snow-fighting crews to handle.



Even all the pretty young maids in the Auditing Department are to stop their work of checking up transfers and organize into a commissary crew to feed the snow fighters. The restaurants over the city where food supplies were to be requisitioned are named, and the places and time of taking meals to the men on the firing line were outlined. The only thing this remarkable schedule didn't arrange for was at what hour the ambulance should call for the Editor of Tram-O-Grams out on the Lawrence line.

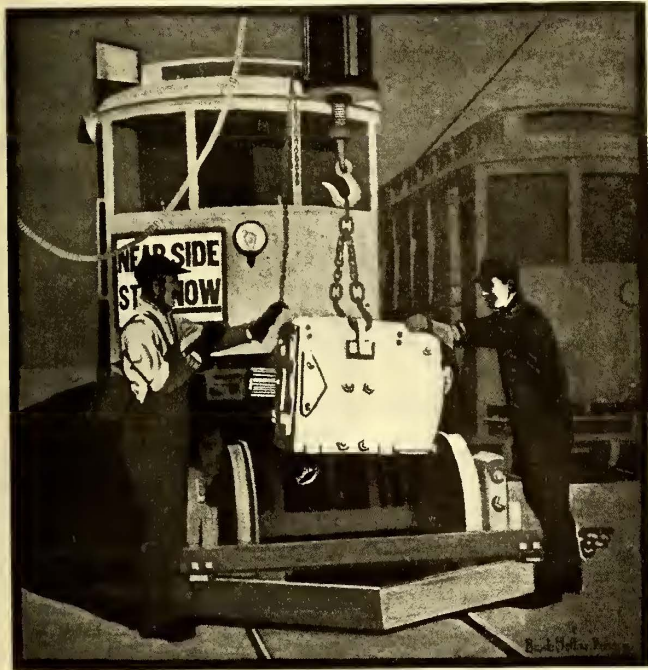
The two hundred and fifty-three miles of Tramway track must be kept open no matter what the cost, and in the good old winter time the company's regular snow fighters must be

GENERAL IDEA OF THE STYLE AND APPEARANCE OF THE DENVER PUBLICITY LEAFLET

theme for a lesson story, but the letters are never quoted and the names of the writers never mentioned. No advertising is carried in the little two or four-page paper, for the reason that it was the aim to concentrate full attention on the stories the company had to tell. Another of the policies which has helped most to establish the company organ in the confidence of its patrons is the admission of a fault when there is one, and then the prompt action to correct this. Even in so



Vol. IX—No. 4 Shop Number January, 1917



COVER OF ONE ISSUE OF THE TRAMWAY BULLETIN

large a matter as the charge that a number of cars of safe and serviceable character but much smaller than the present standard ought to be discarded, the company graciously acknowledged through Tram-O-Grams the truth of the charge, and then explained why these cars could not be dispensed with at the moment, but it gave assurance that they would be later on. This was after the cars had been dubbed "Hildidink" cars to "honor" the g.m.

The subjects treated in this company public organ cover all manner of topics, from discussions of "our wife" and the "assistant editor" (Mr. Davidson, Jr., eight months old) to straphanging, tramway history, municipal ownership, painting and cleaning tramway cars, putting the vent in ventilator, etc. But no matter how far removed from street railways a story may seem to be in opening, before the reader knows it he is thinking about and interested in something about the tramway company. Naturally, improvements in the service are featured, and then there is much information as to car service, owl-car schedules, transfer privileges, etc., that is of personal value to the riders. One of the fea-

tures which helps to make the paper readable and lively is the interpolation of small cartoons, which with humorous exaggeration visualize and drive home the point being made.

DISTRIBUTION OF TRAM-O-GRAMS

Fifty thousand copies of Tram-O-Grams are printed to serve the 250,000 population of Denver, which pays 150,000 cash fares a day to the tramway company. These 50,000 copies have been carefully estimated to have 150,000 readers, because of the number left on the cars and reread and the number taken away which are found in offices and homes and read by the wives and young people. On Saturday morning, twice a month, the paper is issued and the conductors distribute copies to the passengers on all inbound cars. At first the edition was divided 150 to a car, but this was soon found to be unsatisfactory, and accurate traffic figures for each run were made the basis of the number supplied to each car. For instance, a certain car and trailer made so many trips and carried a total of so many passengers. This number divided by two was determined as the proper number to assign to that run to realize the maximum value. After the first day, the remaining copies are placed in the "take one" box, and they usually disappear in a few days. Any left over are taken out of the boxes. These were formerly distributed in automobiles, barber shops, etc., but now with only 1000 or 1500 left over they are put in boxes at the interurban and central loops in the downtown district where five and sixteen car lines respectively turn back, and the left-overs disappear without the need to throw any away.

Evidences of the appreciation and popularity of Tram-O-Grams have been constantly forthcoming. On one occasion the printer was late in getting out the issue, and almost every conductor, as he came to his division headquarters, anxiously inquired where in the world Tram-O-Grams was, and asked that it be hurried up so he could keep his passengers quiet. All during that day, after the papers had appeared about three hours late, there was excellent evidence of the demand. Other indications of the interest in the paper are afforded in the fact that as high as 10,000 replies to contests have been received.

All in all, this little publication is considered by the company to be the best and at the same time the cheapest publicity it can get. In the year and three months



Latest photo of the Shop Editorial Board in the trenches: Grover Woolams, N. C. Harvey and Harry Newberry, who are responsible for the meaty contents of this issue of The Bulletin. The hammer is simply a gentle hint of what may happen to anyone who doesn't agree that this is the best number ever published.

EDITORIAL BOARD FOR FEBRUARY SPLIT MEN

N. R. Rogen, South Division
W. C. McFarlane, Central Division
J. J. Hamill, North Division
J. C. Cash, East Division

PHOTOGRAPH OF EDITORIAL BOARD FOR THE SHOP NUMBER AS IT APPEARED IN THE BULLETIN

Tram-O-Grams has been published relations of the public toward the company have changed from antagonistic to reasonable to favorable. And why? There is only one answer, simple as it is. The company has been frank, honest, open to criticism, ready to admit deficiencies when they existed and willing to improve conditions when within its power, and it has educated the public through intelligent publicity to understand and appreciate its situation. Confidence has been gained that the best service possible is being given, or if not that the company is ready to go more than half way to meet the public in any request. So, as is always the case where this formula for public friendship is applied, the complaints have turned mostly to suggestions, many of which are of real merit.

THE COMPANY-EMPLOYEE PUBLICITY

So much for the company-public publicity, but that is not all the publicity manager has to keep him away from the ball game, with an annual pass in his pocket. Besides Tram-O-Grams, there is the Tramway Bulletin, a 9-in. x 12-in. magazine issued monthly for the 1500 to 1700 company employees. This is a magazine edited by the company employees and the editor and is made to be the gossip and news among the employees and not talk "at" them. If the company has any orders or instructions to issue to the men, these are delivered usually by word of mouth, or through the bulletin boards. In other words, the Tramway Bulletin is not the official mouthpiece of the management to the employees, but is rather the "keep-acquainted" organ of the employees themselves, a magazine of the employees for the employees, a medium for the dissemination of information and the discussion of any subject of particular interest to the employees, but not a place to "air" personalities of course.

The unique feature of this paper is the scheme the publicity manager has for getting the employees themselves to write the paper. At each of the four divisions of the company there is a local social and athletic club. The presidents of these clubs appoint, or the club elects a man to represent it on an editorial board one month to get out the paper for the next month. This editorial board is rotated through the different departments of the company, appointments being made in other than the transportation department by the head of the department. When the names of the men elected or appointed to serve on the board for the next month are received by the editor, letters are addressed to them acknowledging their appointment and asking them to meet at a certain time for a conference with the editor. In the meantime they are asked to be thinking over possible subjects for articles, or to bring up subjects which may have been suggested by trainmen in club meetings, etc. They meet and talk over the issue from cover design to make-up and feature articles, and then who they can get to write the stories. With this decided, the editor puts it up to these men to induce their fellow employees to write the stories suggested.

As the final decision on the subjects to be treated is left to this editorial board, although it may be assisted by the editor, its members recognize their responsibility for the issue and their suggestions are then numerous and free. This group of four or five men actually do supply a good share of the material for their issue, even the shop mechanics. As a reward, the

photographs of the editorial board for that issue are run each month, and the names of the men on the editorial board for the next month are printed.

By this scheme, the request to write something comes from one trainman to another, or from one shopman to another, and it is accorded a much different reception than would be the case if the superintendent or master mechanic or editor asked him to do it. This way he knows he doesn't have to do it, but he does it out of interest. By having them do the writing, the bulletin gives the viewpoint of the men in the ranks and supplies them with the kind of reading matter they want. The editor does not know and could not have this close knowledge unless he worked with them.

Once in a while an employee contributes something for publication which would reflect discredit on the company unjustly. If the editor cannot show him why it is wrong and why it should not be published, the matter is put up to the author's department head and finally to the general manager. If he still persists, the article is published, and with it a statement of the company's position, dependence being placed on the employees' sense of fairness to take the matter properly. In this, as in any other intra-company matter, Mr. Hild is perfectly willing at any time to put the matter up to the employees, since he has absolute confidence that their decision will be fair, if they have all the facts. If an employee wants to contribute something that the officials had rather not see in print, and he is right and insists, it is printed and the company takes its medicine. These are the policies which have made the magazine truly an employee's paper and have helped to bring about most amicable relations between company and employees.

It is the aim to publish everything sent in by the men, and the contributors are assured that their stories will be corrected as to grammar, spelling, punctuation, etc., but otherwise unaltered, so that they may tell their story without fear of being laughed at for lack of knowledge of writing. Like Tram-O-Grams, the Bulletin is enlivened by small cartoons and also by numerous half-tone cuts, and the reading matter is made as interesting and full of human interest and as vital to the employees as possible. Some advertisements are carried, principally local, but in keeping with the better thought of the times, advertising from companies selling equipment or material to the tramway company is being eliminated.

The personal items receive a good deal of space in the paper, for what employee does not delight at knowing what his friends are doing and live in anticipation of seeing his own name in print. These personals are supplied to the editor by a novel process, created for the purpose. One of the old trainmen, who knows the property like a book and most of the employees by their "front" names, was given the title of chief conductor, with duties to spend the forenoon of each day in riding the cars, especially those operated by the newer men, to assist them and diplomatically show them how to do better work. Then in the afternoon he comes into the editor's office full of news and gossip and acts as assistant editor and contributes his morning's "tid bits" to the personal and news columns of the Bulletin. This arrangement gives the editor a valuable reporter, with only half his time charged against the publicity department.

Thus the company magazine has a real place in the

life of the employees and helps to bind them into a brotherhood and to lend interest and contentment to their work. In these respects it is very similar in its mission to Tram-O-Grams, for this is designed to bring out the community of interest in the street railway which exists between the public and the company, and to bind the whole population into a corps of enlightened citizens which knows something of the ins and outs, the ups and downs of the tramway business, and which would never tolerate any legislation to the detriment of the tramway company and hence to the transportation service.

Chicago Anti-Parking Ordinance Proves Effective Relief

Average of 3.7 Minutes Per Car Saved in Loop District During Maximum Half Hour and 2.2 Minutes Per Car During Full Peak Period, 4 to 7 P. M.

CHICAGO'S anti-parking ordinance which prohibits the parking of automobiles and other vehicles on any of the car line streets in the downtown loop during the hours of 7 to 10 a. m. and 4 to 7 p. m., became effective on May 1. Until recently no figures were available to show just how much saving in time was made to the Surface Line cars as the result of clearing the streets of standing machines. However, excerpts from a report submitted to the commissioner of public service, John P. Garner, and thence to the City Council, covering a traffic check made under the direction of T. E. Flanigan, acting transportation supervisor for the city, give a good approximation of the time saving and schedule improvements effected. Not enough men were available to make a complete check, but the figures published herewith are claimed to represent approximately 85 per cent of the total street-car traffic:

TRAFFIC CHECK BEFORE AND AFTER EXISTENCE OF ANTI-PARKING ORDINANCE

Half Hour Period	No. Cars Entering Loop	No. of Minutes Before	No. of Minutes After	Time Saving, Minutes	Average Minutes Per Car, Before	Average Minutes Per Car, After	Average Saving Per Car, Minutes
4:00 to 4:30	329	4,138.2	3,625.2	513.0	12.6	11.0	1.6
4:30 to 5:00	395	5,601.3	4,390.5	1,210.8	14.2	11.1	3.1
5:00 to 5:30	498	7,600.9	5,750.4	1,850.5	15.2	11.5	3.7
5:30 to 6:00	436	5,868.7	4,777.4	1,091.3	13.5	11.0	2.5
6:00 to 6:30	332	2,980.8	2,712.5	268.3	8.9	8.1	.8
6:30 to 7:00	268	1,913.8	1,828.2	85.6	7.1	6.8	.3
Total.....	2,259	28,103.7	23,084.2	5,019.5	12.4	10.2	2.2

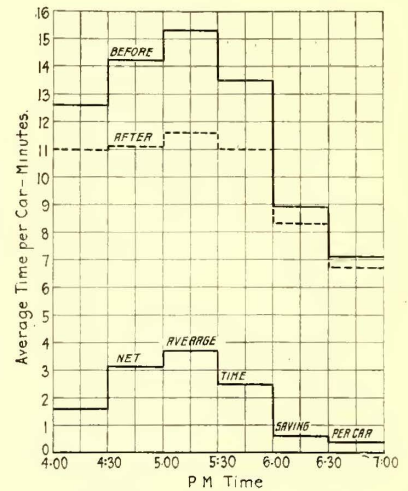
The figures above were derived from a check made the fourth day after the ordinance became effective—May 4. At this time vehicle owners and drivers had not become thoroughly acquainted with the provisions of the ordinance, and its operation had no doubt not reached maximum efficiency. It is quite possible that a check made at the present time would show a slight increase in the time saved above that shown in the table.

The greatest individual line time saving was effected on Wabash Avenue and on State Street. During the half hour of maximum traffic, the average time for loop terminal cars to proceed north on Wabash Avenue from Van Buren Street to Washington Street and return was reduced 8.4 minutes. The average time of through routes No. 1 and No. 3 cars, northbound on Wabash Avenue from Van Buren Street to Lake Street and thence west to State and Lake Streets, was re-

duced eight minutes. Only a slight saving was made by southbound through routes No. 1 and No. 3 cars. This is an indication that the loop cars on Wabash Avenue, which enter the district practically empty from 5 to 5.30 p. m. and load very few if any passengers northbound between Van Buren and Washington Streets, were being compelled to creep along on the northbound track between these points principally because of the congestion caused by automobile parking. Similar conditions prevailed on State Street where the average time of loop cars from Van Buren Street north to the far side of the loop and return was reduced eight minutes, while the average time of northbound through route No. 6 cars, from Van Buren to Lake Streets, was reduced 8.2 minutes.

In general, a tremendous amount of time in the total is saved for the car riders through the benefits of this anti-parking ordinance. The time necessary for automobiles and other vehicles as well as street cars to move from point to point within the loop district has been materially decreased. Congestion along all streets between intersections has been greatly reduced, and there has also been a marked improvement in the movement of street cars, vehicles and pedestrians at intersections. This improvement, of course, lends itself to a more even distribution of load on the street cars. The facilitating of all traffic within the 2.5-square-mile district affected by the ordinance can reasonably be assumed to reduce the liability of accidents of all kinds.

As the result of this new ordinance, many automobile owners were summoned to court for



GRAPHIC PICTURE OF CHICAGO TRAFFIC IMPROVEMENT

violating the anti-parking feature. During May, 1917, the number of cases disposed of in the automobile court was 4090, as compared with 2720 cases in April, 1917, and 2067 in May, 1916. The large increase in the number for May, this year, is almost entirely attributable to the anti-parking ordinance under which arrests were made from the first day. No particular difficulty, however, was encountered in establishing the new traffic regulation.

The New York papers a few days ago had a good deal of fun with the farewell appearance of the horse car in that city. The last car had been operated on a short downtown line. In 1916 it carried 3576 cash passengers and 1945 transfer passengers, with total receipts of \$178.80. Last year it cost the New York Railways Company more than \$1.50 to carry each passenger, and on July 17, 1917, the total receipts were 10 cents.

Lima, Peru, Has Enterprising Electric Railway System

Special Equipment Has Been Constructed in Company's Shop to Meet Local Needs

BY PHILIP S. SMITH

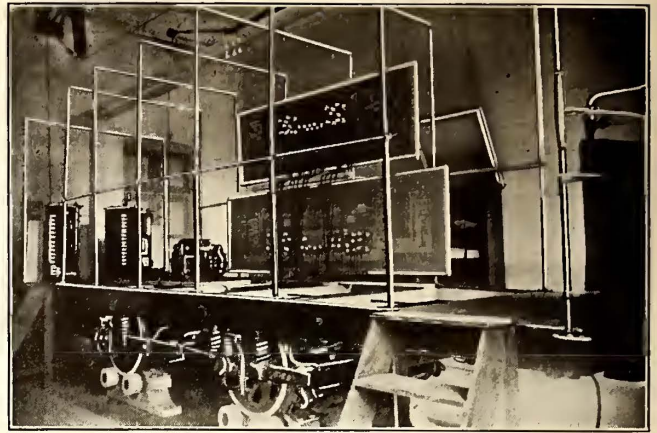
Special Agent United States Department of Commerce

THE electric railway system of Lima, Peru, is now generally conceded to be one of the best in South America. It is operated by the *Empresas Electricas Asociadas*, a company formed by the combination of the former lighting company and three electric railway companies. One of the railways operated cars in Lima, another between Lima and Callao, 9 miles, and the third between Lima and Chorillos, about 8 miles. The old English line between Callao and Chorillos, via Lima, is operated by the *Empresas* as a freight road. These lines as well as the several local extensions in the suburbs of Lima, having in all some 75 miles of single track, 135 passenger cars and six electric locomotives, are under the charge of Arthur H. Mann, resident engineer. Previous to taking up this work Mr. Mann was general superintendent of the Jersey Central Traction Company, Keyport, N. J.

SOME RECENT LARGE SHOP JOBS

It is impossible to obtain good mechanics in the local labor market and so it has been necessary for the company to train its own employees for the various classes of work which have to be done. In this way the mechanical staff of the "factoria," or carhouse, has been trained to the point where it makes all repairs, including machine work, carpentry, casting and coil winding. One of the jobs recently completed consisted in sawing an eight-window car which had been damaged in an accident, into four two-window sections and inserting them into four other cars of similar type, thus materially increasing their capacity. The construction of complete new cars has also been undertaken successfully, two examples being shown in the accompanying illustrations.

According to the franchise under which the company operates it is obliged to sprinkle all of the streets through which its cars run. In order economically to perform this service on the long interurban lines it was necessary to construct a car having twice the capacity of the small cars used in the city itself. One of the illustrations shows the completed car which is built of steel throughout. The frame is made of four 8-in. I-beams, connected to cross beams in five places by angles. The car itself is 30 ft. long and is mounted on McGuire

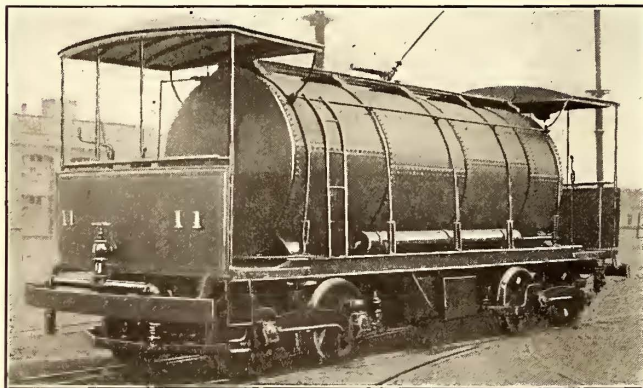


INSTRUCTION CAR USED IN LIMA, PERU, SHOPS

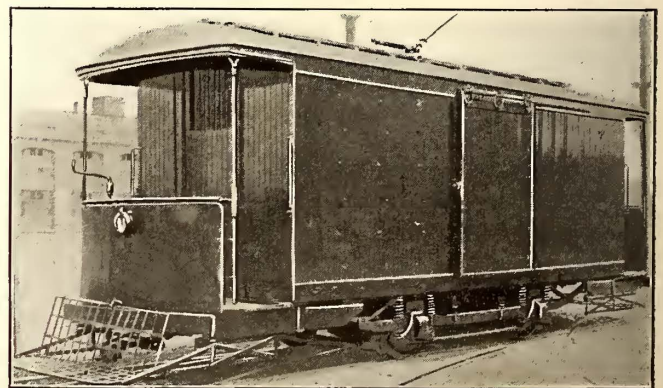
trucks equipped with two GE-80 motors. The tank is constructed of boiler plate and is secured to the car frame by five holding-down straps. At one end a compartment has been formed by putting in a false head about 2 ft. from the end, and this serves as a storage reservoir for the air, which is maintained at a pressure of 90 lb. per square inch by means of a Westinghouse No. 3 compressor. A hand-operated valve, placed between the tank and the air reservoir, can be closed, thus retaining the pressure while the tank is open for refilling. The sprays are independent and can be operated from either end of the car through dashboard levers and quick opening valves. With full air pressure the spray on one side can be thrown 60 ft. A separate National Brake & Electric Company AA-1 compressor is used for the brakes.

The franchise also calls for the free transportation of meat from the abattoir to the Central Plaza, or market place, and the car shown in the illustration below was built to replace the two old cars formerly used for this purpose. It has a capacity of twenty-four sides of beef and is well braced to provide against sagging on account of the wide center doors.

The unusual fenders on these cars are the design of Mr. Mann and are being used also on several of the regular cars. When in the operating position they are pulled forward and the apron is tipped back and hooked to the bumper. The iron braces drop into slots at each side, thus holding firmly until no longer required, when they are lifted out, the apron is dropped down and the whole fender is pushed under the car, clearing both coupler and bumper. It is shown in the latter position on the rear end of the car.



LARGE CAPACITY SPRINKLER CAR FOR USE IN VICINITY OF LIMA, PERU



MEAT CAR BUILT IN SHOPS OF ELECTRIC RAILWAY SYSTEM OF LIMA, PERU

To assist in teaching conductors and motormen an instruction car has been designed and installed as shown in the third picture. A car frame with two GE-54 motors is mounted on rollers permitting the wheels to revolve when power is applied. Blueprinted diagrams of the wiring arrangement of a two-motor car and of a four-motor car is attached to the framework of the side of the car, and on them all motors, resistances and controller connections are clearly shown. The motors are represented by groups of five lamps and the resistances by as many lamps as there are resistance points on the controller. The latter lamps are so connected that they are cut out one by one as the controller is notched up and the increased voltage on the remaining lamps causes them to burn brighter progressively, thus giving a visual understanding of the heating to which the resistances are subjected if the car is run with the controller on any of the resistance points. The

air-compressor governor and rheostats are mounted above the car floor to facilitate the demonstration of the working details, and the other devices which have to be manipulated during the running of the car, such as signal lights and trolley, are installed as in the actual car.

The training of all men is the same so that motormen and conductors are practically interchangeable. It consists of instruction in running a car until proficient, two weeks in the pit, a day or two on the instruction car with a teacher and then another week in the pit. At the end of this time an examination is given by the master mechanic and if passed the student is put on a regular run, but if not he is kept in the shops and given another period of training and examination. The result of this thoroughness is that, although the raw material is not all that could be desired, the corps of operators so trained is reasonably competent and satisfactory.

The Human Nature of Publicity

Managers of Electric Railway Properties Should Study the Psychology of Publicity—Helpful Suggestions Are Given on the Way to Present the Facts Most Convincingly to the Public

By IVY L. LEE

ELECTRIC railway men can be classified roughly into four categories:

1. Those who believe that the public has no right to see what goes on inside their business, and therefore have no use for publicity.

2. Those who have no particular objection to publicity but think that, no matter what they might do, the public would not be in the least more favorably inclined in its attitude toward the business.

3. Those who believe the idea of publicity is a good thing but do not believe the public cares to know what their company is doing.

4. Those who believe in the public and are making great progress toward a better relationship between that public and their business.

With reference to the first class, I do not doubt but that the logic of events will be more than persuasive. The people now rule. In place of the divine right of kings, we have substituted the divine right of the multitude. The crowd is enthroned. This new sovereign has his courtiers, who flatter and caress precisely as did those who surrounded medieval emperors. These courtiers are sedulously cultivating the doctrine that to be weak is to be good and that to be strong is to be bad. The demagog is abroad in the land, and there are omens that cannot be disregarded.

One of the main reasons why the electric railway is not understood by the public is that electric railway managers have failed to take account of certain fundamental currents of human nature, which, from time immemorial, have been made most of by men who have influenced the action of crowds. Electric railway men have been standing aside content to be judged by the machines they were running, not attempting to have themselves regarded as human beings, not making it known that electric railways were but composites of hu-

man nature. Machines haven't the necessary red blood to draw multitudes.

I know that 999 men out of 1000 in the electric railway business are doing their work as well, if not better, than 999 men out of 1000 in other occupations. The electric railway business as a whole is to-day conducted as honestly and as efficiently as any other business in the world.

Why is it then that the good in electric railways has not always been appreciated? Why is it that the public immediately rises up in arms at the mere thought of an increase in fares? It is because electric railway men have neglected the human nature of the situation; it is because loud-tongued politicians have let their imaginations run rampant for the benefit of the multitude while electric railway men sat still, attended to their jobs and said nothing about what they were doing or of the difficulties they had to meet.

From the beginning of history, popular leaders have taken account of the fact that the people in the mass act upon impulses. Such leaders have not been disposed to exaggerate the influence of reason in determining the acts of mankind at large. If electric railway men then are to assume the place to which they are entitled as leaders of the public, they must consider these same elements in the psychology of the multitude.

MAINSPRINGS OF CROWD STIMULATION

These elements may be briefly described as follows:

1. In the first place, crowds do not reason—they proceed on impulses. It is impossible to induce a crowd to proceed toward any proposition on strictly logical premises. John C. Calhoun proved beyond dispute, as a matter of pure reasoning, that the Southern states had a right to secede, but Wendell Phillips came along and preached the doctrine that the slaves should be freed

and that the Union must be preserved. It would have been a logical thing to pay the Southern people for their slaves, but we all know that it was not possible to deal with the problem in that way. The dealing was with crowds.

2. Again, crowds are led by symbols and phrases. Joseph Chamberlain, when he was advocating the Boer War, achieved his purpose when he dubbed those opposed to him as "Little Englanders." We know that Bryan through the creation of that extraordinary phrase, "You shall not crucify mankind on a cross of gold," did more to advance the free silver cause than all of the other subtle and logical efforts that were ever made to advocate that idea.

3. Success in dealing with crowds, that success which we must attain if we are to solve the railway question, rests upon the art of getting believed in. Does anyone question that Mr. Roosevelt's supreme influence while he was President was due to the fact that the American people absolutely believed in him, believed in the purity of his motives and the elevation of his patriotism? Believing in him as they did, they paid no attention to his blunders or to criticisms of him.

4. The problem of influencing the people *en masse* is that of providing leaders who can fertilize the imagination and organize the will of crowds. Moses painted a picture of the Promised Land, and he induced the Israelites to spend forty years of extraordinary hardship under his leadership. Cæsar drew a picture of the conquest of Gaul and so infused the imagination of the Roman populace that they thrice offered him a crown. Napoleon's uncanny power in France was due to his resourcefulness in the appeal to these same elementary crowd-impulses.

These are some of the mainsprings of crowd stimulation. They are factors which statesmen, preachers and soldiers have from time immemorial recognized when they sought to lead peoples. My point is that in working out the electric railway problem we must take account of these same principles of crowd psychology.

BE CAREFUL OF THE TERMS USED

We can never be too careful in the terms we use. Some time ago, a certain public service corporation was in great financial difficulties; it could not pay its bond interest. Its president induced its bondholders to agree to a reduction of the rate of interest on the bonds. The president then announced to the public that there was to be "a readjustment" of the finances of the company. Now "readjustment of finances" sounded so much better than saying "Your company is bankrupt," and no one ever suggested that his company was bankrupt. It was a matter of terms.

There is often talk of "educating the public." Electric railway officers themselves are getting a good deal of very helpful "education." It is not a question of "educating the public," it is a very real question for the electric railway man of understanding the public and having the public understand him.

What we say to the public, it seems to me, must be with reference to the effect it will make and not primarily with reference to its logical sequence. You cannot argue with the public. It wants facts; not generalizations.

Again, I would suggest that there is no gain in pointing out the logical inconsistencies of other people's

statements or arguments, however erroneous they may be. If we cannot answer what they say with something that will appeal constructively to the imagination or emotion of the public, with something which will supplant the erroneous statements, it is hardly worth while to go into the case at all. We may say what has been said of man, that "a crowd convinced against its will is of the same opinion still."

A public to be influenced must feel. Too many railway announcements are full of cold legal phraseology; they leave the public unmoved.

To make the public feel we must be concrete; we must tell of our work in language the layman can understand. He will not analyze figures. What he wants to know is, are you doing the best you can? Convince him of that and you don't need to argue details.

We should see to it that in all matters the public learns the truth, but we should take special pains to emphasize those facts which show that we are doing our job as best we can and will create the idea that we should be believed in. We must get so many good facts, so many illuminating facts, before the people that they will not magnify the few bad facts. There will always be some bad facts in every business, as long as human nature is frail.

DON'T NEGLECT HUMAN NATURE

Do not misunderstand me. Nothing is further from my thoughts than to suggest any attempt to prove things are good which are really bad. No one should condone the bad, and it should be, as I believe it is, the constant aim of nearly every electric railway man to make things better. What I do mean is that we should not neglect the human nature of the situation but should make the most of it; that we should tell our story, tell it frankly, tell it fully, and tell it with a view to its being understood and carrying conviction as to the essential truth.

Unless the electric railway men of the country are to be believed in, so that the public will take their advice as to what it should do with reference to electric railways, we are not going to make very much headway in the settlement of our railway problem.

The crowd craves leadership. If it does not get intelligent leadership it is going to take fallacious leadership. We know that the leadership which the mob has often received, not only in this country but in other countries, unless corrected is liable to produce disastrous consequences. Is it not supremely worth while, therefore, that electric railway officers should take account of those fundamental undercurrents of human nature; take practical steps to obtain the confidence of the public and assume the leadership which by right of character and ability they are entitled to exercise?

Men utilize skill to produce emotion and opinion in favor of reform and against the wrong. Why should not the same process be utilized on behalf of constructive undertakings, on behalf of ideas and principles which do not tear down but really build up?

Is it not indeed likely, not only in electric railroading but in all industrial lines, not alone in this country but in all Western nations, where the same problems are pressing, that it will be by men of intelligence and ability, directing through such methods as these the great movements of the people along lines of health and greatness, that ours may be saved that decadent phase which no civilization has yet escaped?

Experience in Weed Burning on Pacific Electric Railway

At a Cost of \$6 per Mile per Treatment This Company Wages a Successful Warfare Against the Weed Pest

BY CLIFFORD A. ELLIOTT

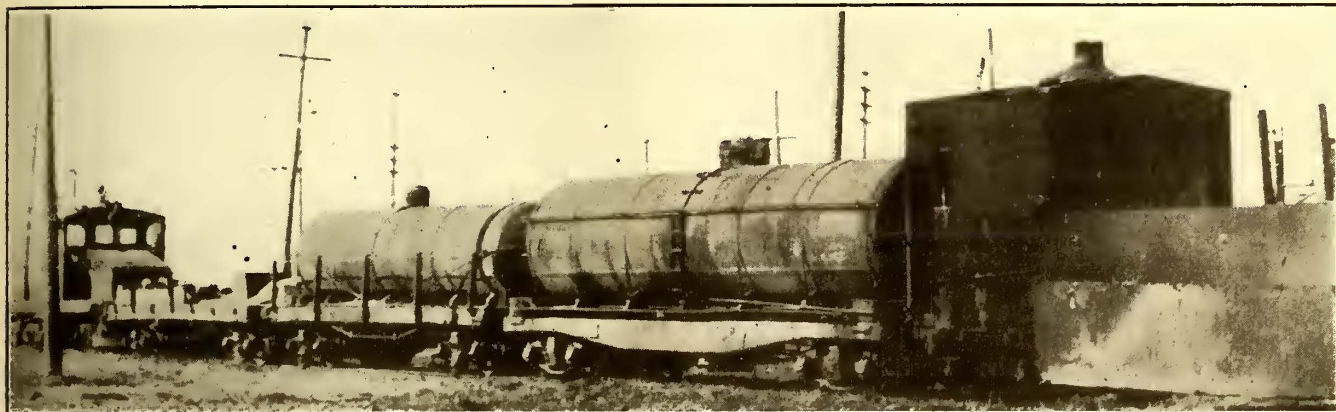
Cost Engineer Maintenance of Way Department, Pacific Electric Railway, Los Angeles, Cal.

CLIMATIC conditions in southern California render the abating of the weed nuisance a serious problem on the interurban lines of the Pacific Electric Railway. Success in this line involved the adoption of satisfactory methods for destroying the weeds and for keeping the track and right-of-way clear of them. The tedious hand method, involving constant pulling or cutting of weeds, is unsatisfactory. In southern California the mild climate gives the weed a continuous season for development. The heaviest rainfall occurs from December to March, during which period very little attention can be given to weeds. During the remaining nine months the work must be vigorously prosecuted.

burned, at an average cost of \$6.75 per mile. The increase in cost for 1916 over 1914 was due to increases in cost of labor, motor-car rental, and oil.

Owing to the frequency of service on the company's lines it is difficult to handle the weed-burner equipment on account of the numerous trips to sidings. On some lines the burning is done at night, but this is more expensive than daylight operation. The weed burner in use at present has a burning speed of from 4 to 6 m.p.h., but recent experiments in superheating the oil, gas and steam indicate that the speed can be increased to 15 m.p.h., with a resulting decrease in cost. Experiments with an improved burner are also being made which it is expected will lessen the amount of oil required.

Most of the company's lines are burned but twice a year, one at about 4 m.p.h., and again, after an interval of approximately ten days, at 8 m.p.h. Of course, conditions vary a great deal with the season and the location. On some lines there is heavy vegetation, comprising many varieties of weeds, and some seasons are dryer than others, so that the vegetation burns more



WEED-BURNING OUTFIT USED ON PACIFIC ELECTRIC RAILWAY LINES

In fighting the weeds the company has for the last four years successfully used a burning outfit which was described in the issue of the *ELECTRIC RAILWAY JOURNAL* for June 28, 1913, page 1169. It comprises a train of four cars—the motor car, the oil-supply car, the water car, and the weed burner. The burner car contains, besides the burner, a boiler and water and fuel pumps. The oil is conveyed into a mixer, being forced through this to the burners as a combined crude oil and steam gas. Steel aprons and deflectors are provided on the sides of the burner to protect the car from damage and also to aid in the distribution of the flame. A light-grade crude oil is used in order to produce an intense heat.

During the first half year this machine was in service 628.4 miles of track were burned at an average cost of \$5.12 per mile. The total costs, segregated into groups, were as follows:

Work train service.....	\$1,142.80
Oil.....	812.31
Repairs, labor.....	295.77
Repairs, material.....	112.00
Track labor, following burner.....	633.18
Engineer and helper on burner.....	223.11
Total.....	\$3,219.17

From June 1, 1913, to June 1, 1914, 1057.31 miles were burned, at an average cost of \$5.37 per mile. From Feb. 1, 1916, to Jan. 1, 1917, 1637.64 miles of track were

readily. In a dry season, however, the expense for track gangs following the burner to eliminate fire hazard is greater. This precaution is necessary to protect the company's property and to prevent the flames from spreading to adjoining fields. In California, the most logical time for the first burning is after the first warm weather after the spring rains have terminated.

On the company's "close-in" lines, through thickly-settled districts, where the appearance of vegetation is objectionable, and there are strict municipal ordinances requiring the abating of the weed nuisance, it is the practice to burn twice a year. On more remote and less important lines, where appearance is not taken into consideration, one clearance a year is usually sufficient to keep the grass below the top of the rail so that wheels will not slide when the brakes are applied.

The water car, following the weed burner, is used to sprinkle the roadbed to extinguish the fires that may start in decayed ties, wooden culverts, cattle guards and trolley poles. A track gang follows the weed burner closely further to safeguard against fire hazard. Unless it is absolutely necessary, the burning is not done on right-of-way adjoining fields of ripe grain, but when it is done extra precautions are taken. Fortunately, most of the burning is done before the harvest season. Fruit trees are occasionally damaged near the right-

of-way, especially where this is narrow, but damage claims in such cases have usually been very small.

Among the advantages of the burning method, as compared with the hand weeding previously used, the cost item is prominent. The average saving is about 65 per cent, and as high as \$20,000 has been expended during nine months for this work by the old method. Again, the section forces can now devote their entire time to other items of track maintenance, the saving in labor being specially important in a time of shortage like the present. Further, the intense heat produced by the burner to some extent chars or sears the tops of the ties, tending to preserve them against the action of the elements. The burner also blackens the roadbed and track, eliminating glare, which is troublesome to the motormen and to some extent to the trainmen. This glare is particularly evident in rock-ballasted track.

The burning outfit which the company has been using was constructed in its own shops, under rights purchased from the inventor, E. E. Allen, and under his direction. These rights have now been taken over by the Wheelock Crude Oil Weed Burner Company of Los Angeles, Cal.

Auto-Bus Interurban Feeders Unprofitable in Puget Sound Territory

Washington Railway Interests Abandon Three Out of Four Routes When a Year's Trial Under Careful Management Shows Deficit Because of Sparse Population and Individual Competition

DURING the past two years the Puget Sound Traction, Light & Power Company has by means of a subsidiary organization, the Washington Auto Bus Company, furnished transportation to various communities not reached by its railway lines. This service as described in the *ELECTRIC RAILWAY JOURNAL* for Sept. 18, 1915 (convention issue) was inaugurated in order that the company might compile definite information on the cost of handling interurban traffic with auto-buses and to see if good service could be maintained economically by this means.

After a year's experience with these buses a report from the subsidiary company states that it is still an open question whether it is better for a large corporation or a private individual to operate such bus lines. The large organization can buy at a slightly lower figure, but by far the largest item of cost in auto bus service depends primarily upon the individual driver and his care or abuse of the machine.

The questions of whether such service, in general, can be maintained economically by the large company is answered in the negative by the experience of the Seattle company. All four of the bus lines which were tried there accumulated a formidable deficit, and three have been abandoned as unsuccessful.

OPERATING AND DEPRECIATION COST

Of the several routes with which the company experimented, the shortest one, 3 miles long, showed an operating and depreciation cost of 11.14 cents per bus-mile. This route connects Edmonds, a town of 1600 people on the shore of Puget Sound, with the Pacific Northwest Traction Company's line from Seattle to Everett. When this service was started there was al-

ready in operation an auto-bus line running direct from Seattle to Edmonds and the Great Northern Railway through service connecting Edmonds and Everett.

A four-cylinder, $\frac{3}{4}$ -ton Studebaker truck, seating eight passengers, was put on this run in June, 1915. This truck was replaced in August by a Ford bus, which operated until Oct. 1, 1916. The route was unpaved, and the grades were very steep.

The monthly earnings credited to the buses on this line varied from \$41.20 to \$124.25 and for the sixteen months from June, 1915, to September 1916, totaled \$1,272.43. This corresponds to 3.78 cents per bus-mile on the basis of 33,657 bus-miles. Operating expenses ranged from a minimum of \$173 to a maximum of \$369 per month. It is interesting to note that the minimum occurred with the Studebaker and the maximum with the Ford. Depreciation for the Studebaker car was charged up at the rate of \$42.36 per month and on the



STUDEBAKER CAR ON AUBURN-BUCKLEY AND PUYALLUP-ORTING LINE

Ford at the rate of \$21.36 per month. Interest on the investment was respectively \$5.45 and \$2.68 per month.

On this basis it cost from \$220 to \$280 per month to operate the Studebaker and from \$202 to \$333 per month to operate the Ford. The net monthly returns ranged from a loss of \$108, using the Ford, to a profit of \$97 also made by the Ford. On this run the net result for the sixteen months' operation was a slight profit, amounting to about \$295. The total distance covered in this time was 33,657 bus-miles. The operating expenses amounted to 9.94 cents per bus-mile and the depreciation to 1.20 cents per bus-mile, or a total of 11.14 cents per bus-mile.

A ROUTE 20 MILES LONG

The bus line connecting the Seattle-Tacoma electric line at Auburn with Enumclaw and Buckley, two thriving little towns with a total population of 3000, was 21 miles long. The distance from Auburn to Enumclaw was 17 miles and Enumclaw to Buckley 4 miles.

When operation was commenced an irregular service had been maintained by private parties but without any relation to the schedule of the interurban trains. Although competitive fares were charged, the railway's buses secured a fair proportion of the business. The operation on this line was continued seventeen months. The route was unpaved at first and over very steep grades.

For the first six months two $\frac{3}{4}$ -ton Studebaker trucks were used with specially built bodies arranged for eleven passengers. These were then replaced with $\frac{3}{4}$ -ton White trucks with a seating capacity of twelve.

The total distance covered on this route was 130,134 bus-miles and the revenue was \$12,839.61 or 9.86 cents per bus-mile. Operating expenses per bus-mile were 13.18 cents; depreciation, 1.76 cents, or an average total operating expense of 14.94 cents per bus-mile.

Monthly earnings varied from \$661 to \$1,177 and operating expenses ranged from \$697 to \$2,000. Depreciation for the seventeen months totaled \$2,292 and interest on the investment \$334. The net monthly earnings ranged from a loss of \$1,364 to a profit of \$172 and the net result from seventeen months of operation was a deficit of \$4,524.

NO NOURISHMENT ON AN INTAKE OF 6.24 CENTS PER BUS-MILE

The Studebaker trucks taken from the Enumclaw-Buckley route were put on the 10-mile line connecting Orting with the interurban railway at Puyallup. This



CAR ON BOTHELL LINE, INTERNATIONAL CHASSIS AND BRILL BODY

route was paved for its entire length and had no bad grades. Through bus service to Tacoma was already operating on this line, so that there was competition from the outset.

Operation was continued for eight months, during which time operating expenses were \$6,557 and depreciation \$995. These figures compared with the total earnings of \$5,515 gave a deficit at the close of the period of operation of \$2,136.

The total distance covered on this line was 59,879 bus-miles. Earnings averaged 6.24 cents per bus-mile, and operating expenses averaged 10.95 cents per bus-mile. As the depreciation was 1.59 cents, the total expense was 12.54 cents per bus-mile.

In the case of each of the three routes cited there was some form of auto-bus transportation already in the field. The new lines therefore had to meet competition from the start. It is believed that if the total available revenues from each route could have been taken in by one bus company there might have been sufficient business to make the venture profitable. However, there could be no profit with competition, it was pointed out. At present there is nothing to prevent a competing line from coming in—practically over night—and seriously injuring or destroying the business of the pioneer line.

LINE EARNS 17 CENTS BUT COSTS 19.23 CENTS PER BUS-MILE

The bus line between Seattle and Bothell, 16 miles apart, has been operating since the latter part of 1915.

At the outset there was considerable competition between rival lines, but by the end of 1916 competition ceased, and since that time the Washington Auto Bus Company has had all of the trade. This line was originally intended to connect Bothell with the interurban line running from Seattle to Everett, but on account of bad roads the routing of the buses was changed, and connections are made at the interurban depot in Seattle.

When operation was begun on this line three buses were put in service. These buses have a "street car" body, built by The J. G. Brill Company, mounted on an International Motor Company's 2-ton Mack truck chassis. The seating capacity is twenty passengers, with six non-reversing cross-seats, two longitudinal seats of two passengers each, and one four-passenger seat extending the width of the body in the rear. These buses were described on page 164 of the ELECTRIC RAILWAY JOURNAL for Jan. 22, 1916.

The passengers carried on this line average 450 to 500 per day in summer and from 300 to 350 in winter, the average fare being 20 cents. All of the route is paved. Revenue and expenses for the calendar year of 1916 are recorded as follows:

Total mileage covered.....	113,040
Total receipts	\$19,213.29
Operating expenses	\$16,551.44
Depreciation, etc.	5,193.30
Total expenses	\$21,744.74
Deficit	\$2,531.45
On a bus-mile basis, receipts averaged 17 cents per bus-mile.	
Total operating expenses (including depreciation), 19.23 cents per bus-mile.	
Expenses per bus-mile, excluding depreciation, 14.64 cents.	

The item of depreciation, which averaged \$470 per month on the four buses, is based on an estimated three-year life for the cars. A recent check of this estimated depreciation shows that the charge is too high and that there will still be considerable value in the buses at the end of that period. At present the Bothell line is operating under favorable conditions and within the next few months it is expected that the accumulated deficit will be wiped out. All of the Bothell buses were overhauled in January, 1917.

The change in depreciation estimate on the Bothell line is not to be taken as probably also affecting the other three lines mentioned. In fact, it is now believed that the allowance made for depreciation on the three other bus lines was too low and that the exact figures for the operating expenses would show an even greater deficit for those lines than the figures given.

Traction Line to Aviation Field Completed

The Kankakee & Urbana Traction Company, Urbana, Ill., has completed a switch ½ miles in length running into the United States Aviation Instruction Field at Rantoul, Ill., 14 miles north of Urbana. The aviation field consists of a plot of land 1 mile square, which has been stripped of all buildings and fences, graded and leased to the Government for a period of from one to five years, with a privilege to the Government of purchasing the land at the expiration of the lease. The aviation field is served by both the Kankakee & Urbana Traction Company and the Illinois Central Railroad and is supplied with water, sewers and electric lights from the village of Rantoul.

The Mounting Costs of Railway Operation

Beaver Valley Traction Company Uses Graphics Liberally to Indicate the Upward Progress of These Costs

A REPRESENTATIVE of the ELECTRIC RAILWAY JOURNAL, calling recently at the office of W. H. Boyce, superintendent of the Beaver Valley Traction Company, New Brighton, Pa., noted a comprehensive set of charts which had been prepared to illustrate the superintendent's annual report. As the charts showed clearly the way in which costs have, on the whole, been rising during the last ten years, permission to reproduce some of them for the benefit of the readers of the JOURNAL was asked and granted. The accompanying illustrations are the result.

The charts are especially designed to show the percentage of the gross revenue and total operating expenses represented by the several items selected for illustration. Fig. 1, the most impressive of all, indicates an increase in ten years of about 14 per cent in the ratio of operating expenses and taxes to gross revenue in the face of a substantial increase in gross. This percentage excludes consideration of the year 1915, when the company had an exceptionally high accident account. This fact is indicated in Fig. 2, which shows also a similar condition in 1909.

The remainder of the charts were selected to show the percentage increases in cost in the four equipment departments, incidentally bringing out the magnitudes of these costs also.

The horizontal scale in each chart represents the fiscal years of the company, which end on March 31, and the

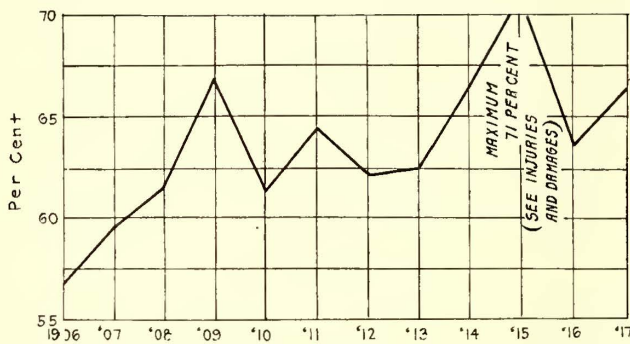


Fig. 1—Operating Expenses and Taxes, in Per Cent of Gross Revenue

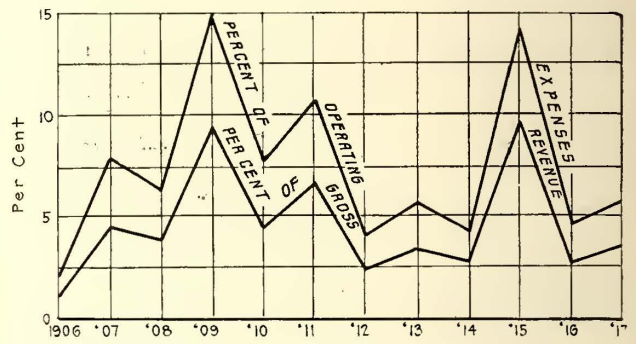


Fig. 2—Cost of Injuries and Damages, in Per Cent of Operating Expenses and Gross Revenue

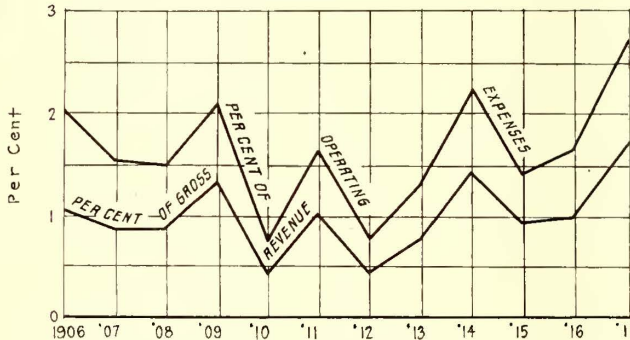


Fig. 3—Cost of Maintaining Overhead Lines, in Per Cent of Operating Expenses and Gross Revenue

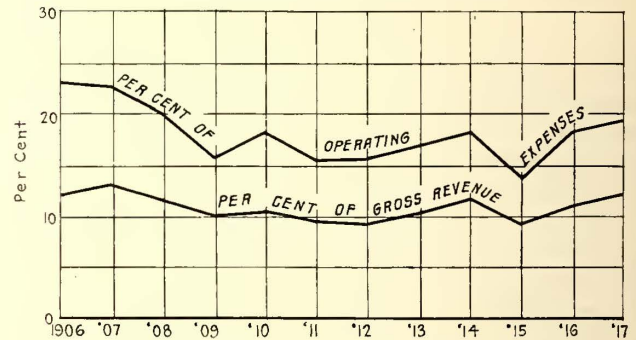


Fig. 4—Cost of Generating and Distributing Power, and Maintenance of Power Equipment, in Per Cent of Operating Expenses and Gross Revenue

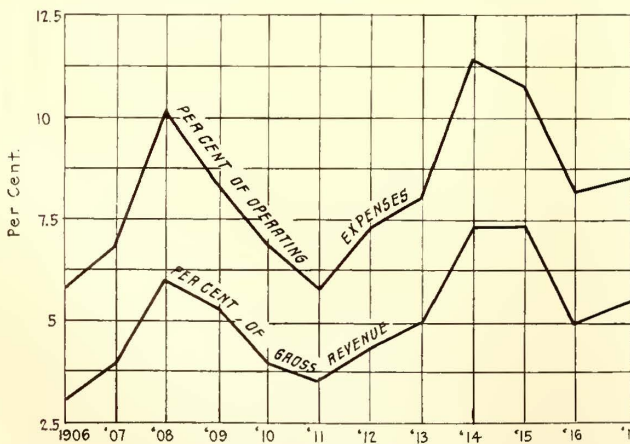


Fig. 5—Cost of Maintaining Way and Structures, in Per Cent of Operating Expenses and Gross Revenue

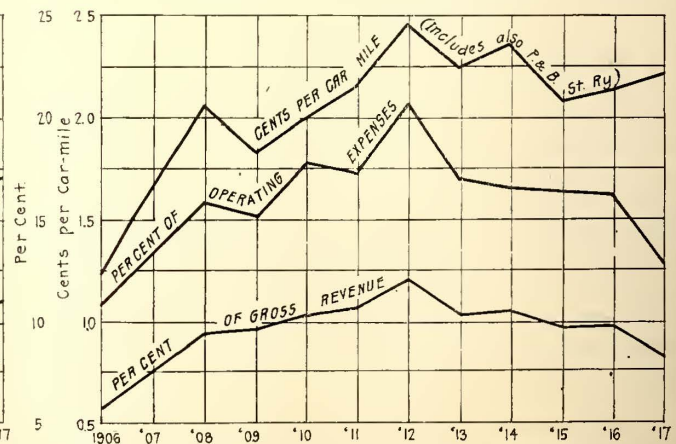


Fig. 6—Cost of Maintaining Rolling Stock, in Per Cent of Operating Expenses and Gross Revenue

costs represented in the vertical scales are computed from the following accounts in the standard classification: Injuries and damages—No. 82 (A to F inclusive); overhead lines—Nos. 17 to 24 inclusive; maintenance, generation and distribution of power—Nos. 30 (A) to 31 inclusive, and 48 (A) to 56 inclusive; way and structures—Nos. 1 to 16 inclusive and 25; equipment (rolling stock)—Nos. 29 (D), 32 (A) to 36 inclusive, 38 to 41 inclusive, 66, 67 and 88. In Fig. 6 there has been included a graph of maintenance cost of rolling stock in cents per car-mile, as most equipment men are in the habit of comparing costs on this basis.

COMMUNICATIONS

Car Nosing

PHILADELPHIA HOLDING COMPANY

PHILADELPHIA, PA., July 30, 1917.

To the Editors:

I have read with much interest the article by S. A. Bullock, entitled "Car Nosing," that appears in the July 28 issue of the JOURNAL. My observation, based on several years of experience in the truck business, is that nosing is a negligible factor with well-designed and carefully-built double trucks, whether of the swing-bolster or rigid-center type. But some designs of trucks might be built by a watchmaker and still exhibit an excess of nosing because the design itself invites such trouble. A zeal for "flexibility" and "accommodation to the track" is at the bottom of the difficulty with these trucks. Such trucks do not avoid or minimize the effect of low joints and other track irregularities. On the contrary, they seek out these defects and register them in the car body—and the passenger body—with exaggerated emphasis.

The foregoing remarks apply to double trucks and to the so-called maximum traction trucks. There is another type from which no amount of gray matter devoted to design nor of care applied to construction will eliminate the objectionable features of nosing and galloping. I refer to the rigid single truck.

This truck was carried over from the four wheels and pedestals that formerly supported the horse car, and in the earlier days of electric traction its inherent unsuitability was not so noticeable—especially since the time when the modern "Public be pleased" policy was only a minor aim with railway managements. But the steady increase of schedule speeds and of car-body lengths soon brought to light the inherent limitations of the rigid single truck, and until the double truck came to be applied to city cars there was nothing to do but let "nature caper"—and "nose."

The one-man car is now the outstanding object in the electric railway industry. It promises to substitute black ink for red on the monthly statements of many a property. Are its full benefits to be realized when mounted on rigid single trucks? I believe they are not. A longer wheelbase than can be provided with such trucks is imperative.

One-man cars with 28-ft. bodies mean an overhang of 10 ft. 6 in. at each end when mounted on rigid single trucks. This involves a total overhang three times greater than the distance between true centers of sup-

port. Unless, meantime, the laws of nature have kindly revised themselves to meet the situation the earlier experience will be repeated and the unavoidable bad riding qualities of such equipment will be exemplified anew—if, indeed, they are not enhanced by modern speed demands and larger car bodies.

J. R. DICKEY.

Publicity Men and the Association

THE DENVER TRAMWAY COMPANY

DENVER, COL., July 27, 1917.

To the Editors:

Referring to the recent meeting of electric railway publicity men at St. Louis, I would like to ask that a small misunderstanding be cleared up.

In justice to the American Electric Railway Association it should be stated that none of the publicity men who first boosted the meeting, including the writer, had any intention in breaking away from the association and forming a separate organization or of affiliating with the Associated Advertising Clubs. There was no opposition whatever, so far as I know, to becoming a section of the A. E. R. A. This is particularly true in view of the very kind invitation from President Storrs and Secretary Burritt, received before the convention, to affiliate with the association.

When I suggested that the publicity "Round Table" be held at the Associated Advertising Club's convention in St. Louis, it was solely because the time and location of that convention seemed most desirable.

The fact that I, personally, have rather firm opinions about the location of the A. E. R. A. convention meetings and the desirability of publicity men not being so steeped in the worries and trials of the more technical operating departments of the business that they get a badly biased slant to their communication between the railway and the public has nothing whatever to do with affiliation and co-operation with the A. E. R. A.

I was in the midst of a two months' siege of illness when the St. Louis convention took place and consequently did not attend. Otherwise, the misunderstanding on this subject would have been settled then.

J. C. DAVIDSON, Publicity Manager.

Woman Labor on French Tramways

PONTOISE, FRANCE, July 4, 1917.

To the Editors:

Most of the French tramways have had to employ women to fill the vacancies in subordinate positions caused by successive calls for men since the beginning of the war. Women were first employed as conductors, and the results have generally been excellent, although the Compagnie Générale Française de Tramways (operating the lines in Havre), does not consider their work as satisfactory as that of men. Some other important companies are of the same opinion, although they have no special criticisms to make. In many commercial lines it is considered that the women do better work than men, notably as cashiers. The employment of women as "motormen" has come about only recently because the authorities were long opposed to it.

Certain large companies, for example, the Compagnie Générale Parisienne de Tramways, as early as the spring of 1915 requested authorization to employ women for electric tramway platform work, but it was not

until eighteen months later, under pressure of circumstances and notably on account of the complete shortage of masculine labor, that the authorities finally recognized the necessity for permitting it. In a number of large cities in the province the hesitation had been of shorter duration because congestion of traffic was much less than in Paris and on this account the danger of accidents was smaller.

All of the Parisian railways, except the Paris-Arpajon Line, have employed women on the cars for more than six months, and they have given general satisfaction. The results obtained have very often exceeded expectations, because on certain lines (Compagnie Générale Parisienne de Tramways, for example) the women employees have by their alertness averaged fewer accidents than their masculine colleagues. These results can be attributed to the very rigorous examination required of candidates. In fact, they are subjected to two medical examinations, the first directed particularly to determine their physical capacity and soundness; the second covering their psychological capacity, notably the strength of their faculties of attention and courage. The candidates' apprenticeship is also conducted with particular care.

LUCIEN PAHIN.

A Publicity Bureau for the Association

DETROIT UNITED RAILWAY

DETROIT, MICH., Aug. 1, 1917.

To the Editors:

Unless I have misread Mr. Burroughs of Baltimore, Mr. Carraway of the Southern Public Utilities Company, as well as my own views, we have been discussing the advisability of an organized department of publicity within the American Electric Railway Association because of our relationship with the public—not because of our relationship with our fellow employees in the transportation business.

It appears to me, therefore, that Mr. Brashears, director of the Public Utility Publicity Bureau of Chicago, in going to the valiant defence of the privately-operated publicity bureaus, in your issue of July 28, was fighting a man of straw with a war tank.

There come to my desk many interesting public utility magazines of varied formation intended wholly for distribution among the working force of the company circulating the respective publication. It is probable that the genius of the Chicago bureau is to be found in several.

But these are not for the public; they are not circulated among the patrons for the reason they do not discuss relationship with the car riders.

Mr. Brashears is correct in stating that courtesy and loyalty are the same in all places. The Sermon on the Mount reads just the same in Detroit as in wicked Chicago and probably instills its wonderful lessons as well in one place as another, although we are a busy city. Job-lot lessons and patent inside sermons may very nicely fill the bill in inculcating proper behavior, honesty and those other qualifications that are company employee problems. The thing to bear in mind is that these are not the public's problems; they are wholly company affairs. The public is not concerned as to just what lessons are given to motormen, conductors, switchboys, cashiers, trackmen, engineers and the host of other employees.

The passenger wants results as affecting him. Or he wants to know why.

The public deals with the company. The public holds the company, not the individuals, responsible and the only way the company can place its case before the public is, in lieu of individual talks, to have some method of publicity that will reach the public, whether by dodgers, by newspaper space, by posters in the cars or by publications distributed through the cars is a matter of the company managements to decide.

It is quite possible that through your privately distributed employees' publication you have converted Motorman Jones to the belief that your company is entitled to 6-cent fares, but how are you going to put up the arguments and convince John Doe the patron that he ought to pay more for the ride?

As you know, Mr. Editor, I have long and vigorously argued for the formation of a publicity section of the national association along the same general lines as are the existing sections. Whether there should be a distinctive bureau or whether the bureau work should be done in connection with the present organization is a mere detail. I do not for one minute imagine that any member company of the national body has any idea that the bureau work, if a plan is carried out, will do the writing for individual companies. Its work will surely be limited to the gathering and giving of information just as is done now. I fail to see where it is more "unfair and unwarranted" to exchange publicity ideas and information than it is to exchange ideas and information concerning pay-enter collections, methods of track construction and the thousand and one other things discussed between company members either directly or through the association headquarters. It is for such purposes the association is organized.

A. D. B. VAN ZANDT,
Publicity Agent.

Color Scheme of Signal Indications Changed on Pennsylvania

The new color scheme of signal indications, by which white lights will be eliminated altogether, was recently placed in effect on all lines of the Pennsylvania Railroad east of Pittsburgh. Owing to difficulty experienced in obtaining deliveries, nearly a year of preparatory work has been required to make this change possible.

The decision to eliminate white from the signal color scheme was reached on account of the increasing use of white lights of various kinds in buildings, driveways, roads and streets close or adjacent to the railroad's right-of-way. Under the new plan, green will replace white for "clear" or "proceed." "Caution" will be indicated by yellow. Red will mean "stop," as heretofore.

In addition to changing the glasses in all the semaphore signals, the following devices have been altered to conform to the new plan of color indication:

Marker lights on the rear of passenger and freight trains; switch lamps and targets; markers for track tanks; "slow" signs; "resume speed" signs, and hand lamps at interlocking and block signal stations.

No changes have been made in those short portions of the line which are protected by "position light" signals, the longest of which is the electrified section from Philadelphia to Paoli, Pa.

A Talk on Capitalization

Denver Tramway Company Issues Pamphlet for General Circulation, Outlining Some of the Elements of Railway Capitalization

SOME very interesting facts on the subject of electric railway capitalization, presented in rather a popular way, are given in a pamphlet just issued for general circulation by the Denver Tramway Company and entitled "Tramway Capitalization." The pamphlet, which contains twenty-four pages, begins by a reference to the time when "public utilities used to figure that their customers ought to get the Grand Prix Award for cantankerous dispositions and unreasonableness in general, and their customers had it all doped out that the 'soulless corporations' were corrupt and contemptible tyrants, ever hunting for chances to step on the necks of their customers, the people." In those days, politics played a large part in the affairs of public service companies, to the detriment of both the companies and the people, but those days have passed and the relations of the corporations and the public are coming more and more to be on a business basis, to be decided by facts and figures and not by "political flimflam and ossified oratory."

The pamphlet then gives a short sketch of a discussion at an informal meeting of some business men in Denver on the subject of "Overcapitalization." The statement was made by one that the Denver Tramway Company was overcapitalized, but when an official of the company, who happened to be present, began to point out the extent of the property which was not prominently in public view, the cost in dollars of some of the recent improvements and other facts which the original speaker had not considered when he made his charge, the criticism was withdrawn.

Figures are then quoted of recent appraisals of different electric railway companies. Detroit, Toronto and Minneapolis are mentioned as cases where recent appraisals showed the value of the company's property far in excess of the capitalization, and the San Francisco Municipal System is mentioned as an example of a brand new city transportation system which owns no power plant, no central loop, no central carhouse, no office building or represents no investment in older form of transportation but, nevertheless, cost to build \$125,300 a mile.

The pamphlet is illustrated with a number of bright "thumb-nail" sketches, and copies were sent to the State and city officials, members of the Legislature, the entire staff of each Denver newspaper, editors of all the Colorado newspapers, and members of different civic bodies.

Subway Construction in Spain Begun

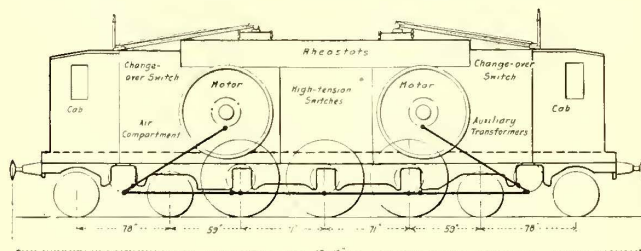
On April 23 work on the subway system in Madrid, Spain, was begun in the Puerto del Sol, which is the center of the Madrid business district. The engineers in charge propose to begin similar construction work soon in eight or ten additional places along the line of the proposed subway and it is calculated that the total number of workmen engaged in this connection will approximate 3000. The period within which it is expected the construction of the subway proper will be completed is fixed at eighteen months from the date work was first commenced and it is expected that an-

other six months will be occupied in laying the rails and completing the stations. American manufacturers who are interested in this opportunity for the sale of their products should communicate in Spanish with the engineer in charge, sending such communications through the United States consulate at Madrid to insure their prompt delivery.

The New Three-Phase Locomotive for Italy

Provision Is Made for Four Running Speeds by Using Cascade Connections and Changing from Six to Eight Poles

MANY interesting features have been introduced in the new type of high-speed, three-phase locomotives recently furnished to the Italian State Railways by the firm of Brown, Boveri & Company of Milan. The traffic for which the engines are designed includes only fast service over heavy gradients and sharp curves, the maximum speed of 62 m.p.h. materially exceeding the average normally found on three-phase railways in Europe. In accordance with Italian practice the three-phase system under which the new locomotives are operated has a voltage averaging from 3000 to 3700 and a frequency ranging between 15 and 17 cycles. Two overhead wires serve as conductors for two of the phases, while the rails supply current in the third phase.



ITALIAN STATE RAILWAYS LOCOMOTIVE—ARRANGEMENT OF RUNNING GEAR AND ELECTRICAL EQUIPMENT

The locomotive has a gross weight of 102 tons and a weight on drivers of 55 tons. Two motors are provided and these operate three coupled pairs of driving wheels 64 in. in diameter. At each end of the frame there is a swiveling four-wheeled truck. Four synchronous speeds are provided. These are obtained by connecting the two traction motors in tandem or in parallel as well as by changing the number of poles. With a mean frequency of 16.7 cycles the following schedule shows the arrangements for each speed:

- 23 m.p.h.—Motors in tandem with eight poles.
- 31 m.p.h.—Motors in tandem with six poles.
- 47 m.p.h.—Motors in parallel with eight poles.
- 62 m.p.h.—Motors in parallel with six poles.

In all connections for changing poles the stator of the primary motor is invariably connected to the line direct. The secondary stator may either be fed direct from the line, or else, by putting the secondary rotor in series with the rotor of the primary motor, the stator of the second machine carries induced current. Both motors have their stator windings star-connected when they work with six poles in tandem and with either six poles or eight poles when they are in parallel. On the other hand, when the motors are running in tandem with eight poles the windings of the secondary stators are changed over to delta connection, so as to

prevent the tension on the adjustable resistance exceeding 2000 volts during the starting period. The alteration in the number of poles is produced by suitably inter-connecting the windings, while the system remains permanently three-phase. This is in contrast with the method employed in the earlier types of Italian locomotives, in which, by suitable transformations, current was made either three-phase or two-phase for speed regulation.

A tractive effort of 20,000 lb. is exerted by the new locomotive at the two lower speeds, increasing up to about 21,000 lb. at the third speed and diminishing to 13,500 lb. at the maximum speed. At starting the maximum value of the tractive effort may reach 27,000 lb. The efficiency of the motors at the high speed is 93.5 per cent with a power factor of 85 per cent.

Provision of four running speeds in spite of the complication was considered to be desirable in order to deal with both express and local trains in heavy and light traffic. Apart from the time-table requirements, however, there were important technical reasons for the adoption of four normal speeds. Had there been only two speeds the losses in the rheostat would have been twice as great as those existing with the present arrangement. This would have entailed not only a considerably lower efficiency when the stops were frequent, but also the inconveniences of larger resistance units.

One of the main objects kept in view in the general design of the engine, which includes the use of a separate jackshaft for each motor mounted at the end of the locomotive frame and connected by horizontal coupling rods to the three pairs of drivers, has been to locate the traction motors above the frame and thus to raise the center of gravity of the engine. This position of the motor necessitated the transmission of power through inclined connecting rods to the jackshaft. In the direct-current locomotives used on some of the other lines of the Italian State Railways, the position of the jackshaft rendered it impossible to have a less inclination than 60 deg. for the connecting rod, but in the present three-phase design this inclination has been reduced to 33 deg. A material advantage arises from this reduced inclination since the stresses on the jacket-shaft and bearings are proportional to the sine of the angle involved.

The rods that connect the cranks on the motors with those on the jackshafts are provided with knuckle pins near the lower ends and single bearings are installed on the jackshaft cranks, these coupling together the diagonal motor rods and the horizontal main rods extending between the jackshaft and the first pair of drivers. Thus all of the connecting rods on one side of the locomotive are in the same plane. Spherical bearings are provided on all rods.

The essential difference in the electrical equipment of the present type of locomotives in comparison with former types used in high-speed service on the Italian Railways consists in retaining three-phase operation at all speeds, as before mentioned, instead of transforming from two-phase to three-phase at various speed values. Phase changing transformers are therefore not required, but on the other hand there is much additional apparatus for altering the number of poles. A further point of difference is the arrangement, when running with the motors in tandem, of coupling up two rotors in series, in preference to feeding the stator of the secondary from the rotor of the primary motor. Lastly

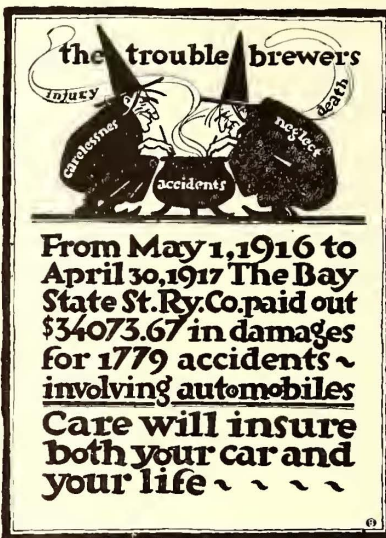
there is the use of a metallic resistance instead of a liquid resistance for starting and for speed regulation.

Campaign to Reduce Collisions with Automobiles in Boston

The Bay State Street Railway is using some new posters this month in an endeavor to impress upon automobile owners the importance of co-operation in reducing collision accidents. The first poster, reproduced herewith, was placed a few days ago on the bulk-

head windows of all Bay State cars, two posters to a car. These were to be kept up two weeks after which the hand lettering was to be routed out from the plate and new facts and figures substituted. The company expects to keep after the automobile drivers until school opens in the fall, when a campaign with school children will be inaugurated.

The details of the children's safety campaign have not



POSTER FOR USE IN BOSTON SAFETY CAMPAIGN
(Size 14 in. x 18 in.)

yet been worked out, but the company's larger posters will probably be reproduced on cards and distributed to the children in the schools. The automobile posters have been used in waiting rooms, etc., as well as in the cars, and copies are being sent to all the newspapers published in the Bay State territory, together with a letter from President P. F. Sullivan.

AMERICAN ASSOCIATION NEWS

"System" Discussed at Manila

At a meeting of Joint Company Section No. 5, held in Manila, P. I., on June 5, J. W. Earle, assistant to the auditor, read a paper on "System." In it he illustrated the importance of organization and an orderly and systematic personal and business life conduces to efficiency and success. Thirty-nine members attended the meeting, and three railway men and two lighting men were elected to membership.

Transportation Terms

During the past season the company sections have been considering a list of definitions of electric railway terms compiled for the purpose in the association office. These had been received from several committees of the Transportation & Traffic Association. Seven of the sections have now sent in comprehensive reports on these proposed definitions, assisting materially in the attempt to clarify the phraseology in an important division of the electric railway field.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?

—Pass It Along

In This Issue :

S. L. Foster Advocates Prevention Rather Than Cure in Overhead Work

Taking Down Feeder Cable by Rapid Means

BY E. H. HAGENICK

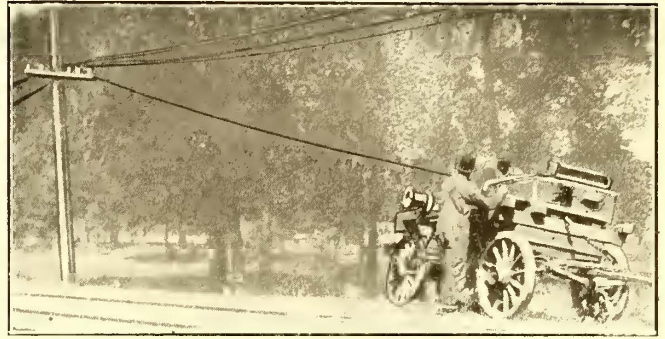
Superintendent of Electric Lines, Omaha & Council Bluffs Street Railway, Omaha, Neb.

Taking down of old cable on the Omaha & Council Bluffs Street Railway has been greatly facilitated by the use of a home-made motor-driven cable reel, which is mounted on an ordinary wagon running gear for easy transportation from one location to another. An old street railway motor is supported at the front of the built-up frame and connected by a train of gears to the reel mounted just behind the motor. The reel is large enough to take 1500 ft. to 2000 ft. of 500,000-circ. mil. cable at a time.

When any length of cable is to be removed it is taken off the insulators and laid on the crossarms. The end of the cable is fastened to the reel, and the motor, supplied with energy from the trolley, is used to pull the cable in and wind it up. The cable is allowed to slide over the crossarms in some cases, but usually it is pulled over idlers fastened to the insulator pins, snatch blocks being used on curves.

For cases in which it is not intended to put up the cable in another location at once, a scheme has been arranged for utilizing this same motive power to wind the cable onto a storage reel. For this purpose two channel arms, extending out behind the wagon, are fastened on the rear of the wagon frame. These support between them a shaft on which this storage wheel is mounted. This shaft is connected by a long chain and sprockets to the motor, and the cable may thus be wound directly on the storage reel.

This outfit also finds many other uses in the line work. A "niggerhead" is mounted on the end of the reel shaft, and is used for raising and setting steel poles, and any gin-pole work, etc. With these various



REELING UP FEEDER CABLE

uses the outfit comes into play frequently. By virtue of this, and its great time-saving features, the investment tied up in it is readily justified.

Keep-Up versus Pick-Up in Overhead Maintenance

Better to Keep Up Rather than to Rush Out and
Pick Up the Overhead Construction

BY S. L. FOSTER

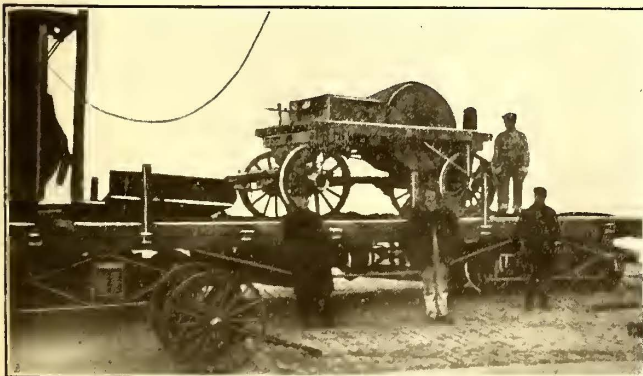
Chief Electrician United Railroads of San Francisco

Maintenance of the trolley wire in approximately continuous service consists either in extremely rigid and repeated inspections and renewals, or in the use of many emergency crews with their numerous expensive essentials, or in some combination of these two.

In cities where great extremes of temperature exist and destructive sleet storms occur possibly many emergency line crews are justified; but in San Francisco, where there are 250 miles of single track with about 600 heavy four-motor cars and the most numerous and steepest grades of any city in the world, not even one day-emergency line crew is maintained. The numerous Eastern crews, idle much of the time, therefore seem inefficient to us. In San Francisco the policy has been to keep up rather than to rush out and pick up the overhead construction. We also expect linemen to do only line work.

The existence of idle men at the scattered houses of a city's fire department is justified since about 75 per cent of the fires are of incendiary origin and no amount of house-to-house inspection could produce results likely to justify the cost of the work. The failures of overhead wires, however, are seldom or never of malicious origin, and to a great extent they can be anticipated by continual, conscientious inspection and renewal of the worn parts.

Three crews of linemen, two with horse-drawn Tren-



POWER-DRIVEN CABLE REEL MOUNTED ON WORK CAR

ton tower wagons and one with a tower car, cover the 250 miles here and attend to all the construction and maintenance, except the pole setting and painting, on which a small crew of Italians is employed. These linemen are never idle winter or summer, being continually occupied in going over and over the lines according, roughly, to a car-mileage basis. Their work is almost exclusively done in the daytime. The foremen call up the office by telephone at regular short intervals, and one of these crews is usually nearer a reported emergency call and more alert than if the men had remained in the quarters waiting for the call. On exceptionally rainy days they overhaul the construction in and about the various carhouses of the company. A three-man night emergency crew is kept at headquarters from 5 p. m. to 7.30 a. m., but the men sleep calmly through much of their watch more often than otherwise. All their repair work is done with a high-speed tower car.

On five days of the week the three day crews inspect, overhaul and repair span by span the lines assigned them. On Saturdays two of the crews in line cars cover all the outside lines in a general patrol and inspection. On Sundays and holidays two small day emergency crews cover ten hours in two eight-hour overlapping watches and usually sit about idly through the day or polish up their equipment.

Possibly this everlasting combing and recombining may cost a bit more sometimes than the laissez-faire and pick-up method would, but the interruptions to the revenue car service are certainly kept down to a reasonable figure.

In the last month of available records, that of May, 1917, the number of trolley-wire breaks causing interruptions to the service was 1.5 per million car-miles. There were a few more breaks at the ends of section insulators, but, being held up by the single-end strain ears, the trolley wire did not fall to the ground and no interruption to the car traffic resulted. Two of these three trolley-break interruptions were from burn-offs of full-sized wire by foreign wires crossing them.

Certain features of San Francisco practice may explain the above policy and results. There is neither snow, sleet, ice nor lightning to contend with. The strain insulators used are made of porcelain under compression, are incombustible and almost infallible and have a long life. The most casual visual inspection will reveal their physical and electrical condition, whereas the more expensive composition strain insulators used in the East have only a limited life and their electrical condition cannot be learned except by an electrical test.

There are no such things as "hot" iron poles in San Francisco, no matter what the weather, as there are always two, usually three, and very often four, insulators in series between the trolley wire and the pole. No solder is used on the trolley wire except for a few short single-end strain ears installed just beyond the ends of section insulators.

Home-made 15-in. clinch ears and solderless splice ears, holding each trolley wire end by one set-screw, simplify the repairs. Cheap steel replaceable wearing plates, often made from the master mechanic's waste from car construction or repairs, are standard for the under side of frogs, and cam-tip ears for the ends of frogs. Section insulators and crossings are also

looked upon with favor as reducing the number of unexpected breaks in worn as well as nearly full-sized hard-drawn trolley wire at the ends of these overhead devices. Phono-electric wire is found economical at points of greatest wear and is being utilized in increasing amounts.

Electric track-switching devices are all connected so as to have ample drainage directly to the sewer, and these devices, together with electromagnetic signaling apparatus and automatic sectionalizing switches, are given a thorough overhauling each month by the shop crew.

When worn trolley wire is taken down it is annealed and used in the fabrication of special underneath rail bonds so that painstaking and possibly dangerous economy in the renewal of worn trolley wire is not so important as it would be if the wire taken down had to be sold as scrap. The anchor guys from wood poles to ground are made of 1/2-in. extra-galvanized steel strand, twice paint-dipped. The diameter of span wires is 3/8 in., and that of pull-offs 5/16 in. and 1/4 in. No trolley strain guys are used. Nothing smaller than 1/4-in. strand is employed anywhere, nor is any solid iron wire used.

During the linemen's strike, when great success was being achieved by us with green men, one of the strikers ruefully admitted the explanation and incidentally complimented the department when he said: "You put up your work too damn strong." The excess in size of the strand used here over usual practice is on account of our damp climate and proximity to the ocean. This difference, however, forms only a trifling increase to the total cost of constructing an electric road and is well justified as a premium in insuring freedom from interruption to revenue traffic.

A modern double-track trolley road may easily cost \$100,000 per mile, with the overhead construction costing \$5,000 of the total, or 5 per cent. Of this \$5,000, the span wire, if 1/4-in., which is used in many places, will cost, at 5 cents per pound, \$12.65. This is one-quarter of 1 per cent of the 5 per cent or one-eighth of 1 per cent of the whole. To substitute 3/8-in. for the 1/4-in. will increase the cost of this \$100,000-per-mile road just \$20.38 or one-fiftieth of 1 per cent. In saving this one-fiftieth of 1 per cent by retaining the 1/4-in. strand for span wires and maintaining emergency crews to rush out to repair it when broken by wild trolley poles, instead of adopting 3/8-in. wire for this exposed part of the overhead and practically eliminating broken spans, seems a very short-sighted policy, even if the lost income from interruptions to the revenue cars and disorganization of schedules be not considered. With the latest practice of using heavy 6-in. trolley wheels and 30-lb. upward pressures the blow from a wild pole resembles that from a sledge hammer and really justifies 3/8-in. spans if nothing else does.

The same line of argument applies pretty generally to all the overhead construction, since it is subject to abnormal stresses and justifies abnormal factors of safety both in construction and maintenance. Considering the fact that the overhead costs only 5 per cent of the initial cost of the construction of the whole road, and absorbs less than 1 per cent of the company's maintenance expense to keep up, and more especially considering the deadly effect its failures have in reducing the company's cash income and in rendering futile

the far heavier expenditure for platform men, power generation and maintenance of tracks and cars, it is plainly an extremely important element in the operation of the road and fully earns these factors of safety.

When a generator burns out it can be disconnected from the busbars and another thrown on the line. When a car breaks down it can be withdrawn from the street and another one brought out. If a rail or a crossing breaks, the operation of the service can be continued, but when a trolley wire breaks the whole system of interdependent elements of operation is paralyzed.

The wisdom of an engineer of many years' experience is apropos here. "If you do a cheap job," he said, "you receive very little credit and get condemned forever afterward as the weaknesses in the construction develop. If you do a good job, you may get a going-over on account of the cost at the time, but you never hear of that piece of work again."

It should be added that some of the few men around the linemen's quarters normally engaged on design, construction or upkeep of appliances, concrete poles, electromagnetic block signal devices, electric track switch parts, etc., are competent to tie up a fallen wire temporarily, and occasionally do this while awaiting the arrival of the line crew. The efficient inspectors of the operating department and busy mechanics from the various carhouses also are of great assistance in emergencies in maintaining the car schedules until the linemen come. In other words, everybody works all the time here except the Sunday and night emergency crews. These emergency men are intelligent and energetic, but these units are inefficient simply because there are not enough breakdown jobs to keep them occupied all the time.

This system of perhaps overdoing the keeping up of the overhead also makes it possible to take all the members of this department off the maintenance work for weeks at a time and concentrate them on a construction job without the car operation suffering appreciably. The necessity for intermittently putting on and laying off men is thus eliminated.

Track Maintenance in War Time*

High Cost of Material and Labor Requires Conservation and the Introduction of Many Labor-Saving Devices

BY P. NEY WILSON

Roadmaster New Haven Division the Connecticut Company,
New Haven, Conn.

When one stops to consider that the maintenance of way costs are often 20 per cent of the total operating expenses of a railway, he is convinced that the importance of this department is generally underestimated. Way engineers and men of the field delight in construction work, but the steady grind of track maintenance is not so pleasant, although many times it is of greater importance; and it should be emphasized that careful thought and planning in the maintenance service saves much trouble and money in the end. Also the abnormally high cost of labor and material at present makes it necessary to resort to labor-saving machinery and new methods in order to meet the pressure along lines of reducing operating expenses. With these facts in mind the writer desires to mention

*Abstract of a paper read before the Connecticut Society of Engineers.

briefly some new developments in maintenance and construction of electric railway tracks.

The conservation of old rails in newly-paved streets, intelligently accomplished, has meant the saving of many dollars to some companies. In the past it has seemed unwise to allow old rails to remain in a newly-paved street, particularly on account of the conditions of the joints. Even if they had been formerly welded, the grinding necessary to remove depressions in the rail ends would leave a sharp vertical curve in the surface at each joint, and these cups would quickly cause loose joints, due to the wheel loads dropping into them. However, with the aid of the arc-welding machine, the cupped rail ends may be built up, ground to a true surface by rotary and reciprocating track grinders; and so long as the rails remain tight, a good joint may be maintained. Innumerable repairs may be made on frogs, switches, curved rails, broken rail joints, etc., where in the past replacement was necessary. Instead of discarding a broken switch or frog, it is frequently possible to repair it by welding, consequently avoiding the expense incident to the purchase of a new piece. It has been definitely shown that in four weeks' constant use the saving effected by this machine has paid for itself outright. The electric arc-welding machine is not a cure-all but it is certainly a valuable machine to any electric railway company.

The kind of rail joint used and the character of the foundation on tangents in paved streets almost entirely governs the life of the structure except, of course, those removals due to relocation, new pavement, etc. The life of a T-rail in paved streets is practically indefinite if the foundation is permanent and the tracks made jointless by welding. These features are worthy of any engineer's best efforts, for a real solution of the problems connected with them insures practically an ideal track.

Since there is no mechanical joint connection that will absolutely hold the rail ends rigidly to the surface and alignment for an indefinite period, one is led again to the consideration and use of welded joints when laying new track. It is also good practice to grind all joints immediately after a track is laid, assuring a smooth even joint at the beginning, since loose joints and attendant pumping action of rails on pavements are avoided when the ends of the adjoining rails are at the same elevation. The International twin steel tie supported by either ballast or concrete foundation presents many good features. It should be emphasized that more care be given to the bearing power of the subsoil because, as previously stated, the foundation is very important. Foundations should be drained wherever possible.

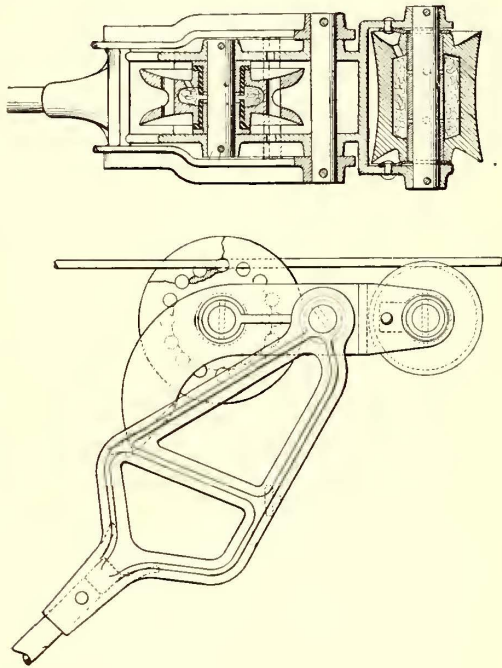
A saving of fully 50 per cent in cost may be attained by substituting pneumatic tie tampers for hand labor. This type of tamper is fast gaining prominence. The introduction of machine drills many times allows a saving in cost of 75 per cent over that of hand labor and the use of a power shovel in excavating for track work as compared to hand labor shows a saving in favor of the power shovel of at least 60 per cent.

While the removal of snow from city streets has little to do actually with the construction and maintenance of track, it has a very great influence on the operating expense, and is one of the responsibilities of the main-

tenance-of-way department. Through the co-operation between the city of New Haven, Conn., and the Connecticut Company, permission is granted to dump snow into the sewers in specified locations. This method of disposal is fully 30 to 40 per cent more efficient than the ordinary method used.

Double-Wheeled Trolley Harp on Cleveland Railway

A current-collecting device which has two wheels, one of which may be used for ice cutting, is shown in the accompanying drawings. It consists essentially of a pilot wheel and the trolley wheel proper. The pilot wheel has the V-shaped periphery of an ordinary wheel, whereas the main current-collecting wheel or roller has only a slightly concave surface. The two wheels are supported in an equalizer frame which is pivoted on a shaft in the harp. Current is collected by both wheels. The pilot wheel serves primarily to keep the trolley on the wire while the roller insures a good contact when the trolley is traveling over special work. The frame

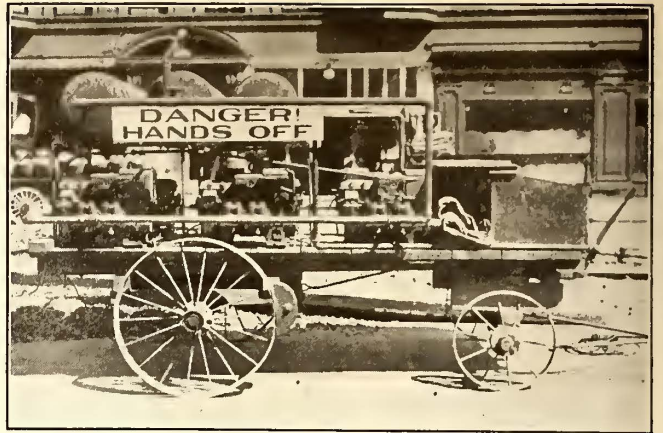


TWO-WHEELED CURRENT-COLLECTING DEVICE, CLEVELAND (OHIO) RAILWAY

rotates somewhat around the pivot shaft to allow the two wheels to follow sudden changes in the elevation of the wire. The movement is limited by stops on the harp, but the tendency is to force one wheel against the wire when the other wheel bounds away.

The pilot wheel is removable and may be replaced by an ice-cutting wheel. This is of the same shape as the pilot wheel, but it has a number of transverse holes at the base of the groove which bring sharp cutting edges in contact with the wire and strip the ice from it. The ice-cutting wheel is insulated from the supporting frame, leaving the back roller as the current-collecting wheel.

This device was invented by James Scott, superintendent of overhead, Cleveland Railway, and has been used to some extent on this property.



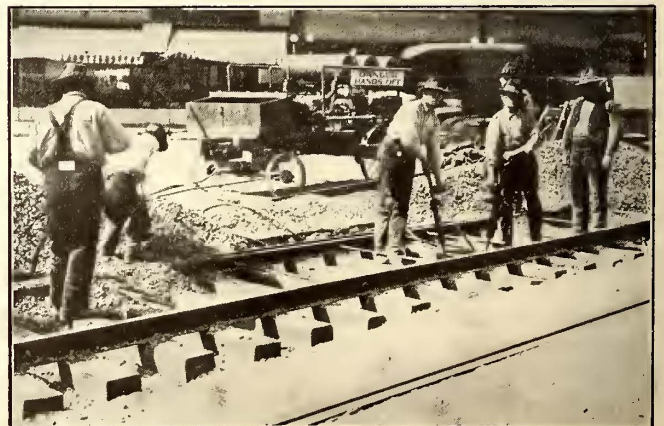
HOME-MADE PORTABLE AIR COMPRESSOR FOR USE WITH TIE TAMPERS

Home-made Compressor Outfit Increases Tie Tamper Savings

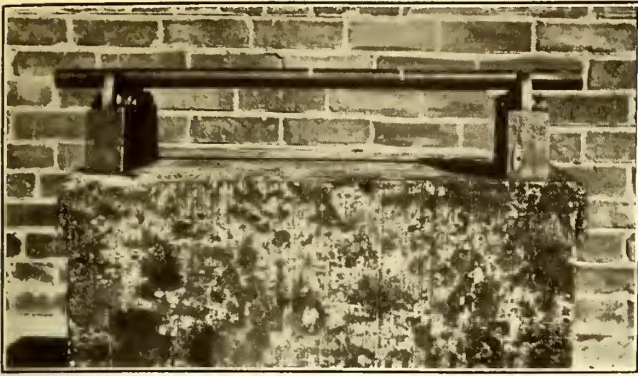
When the matter of using pneumatic tampers was brought to the attention of the San Francisco-Oakland Terminal Railways, the first cost was a prime consideration owing to the widespread need of retrenchment. It was happily suggested, however, that the cost of the compressor, say \$500 or more, could be saved by using some old railway compressors.

The suggestion was carried out by mounting a battery of six 11-cu. ft. capacity pumps on a truck as shown in the illustration. The actual capacity required for the two Ingersoll-Rand tampers used is only 32 cu. ft., but double capacity was installed because the old machines were not good for continuous service at more than 50 per cent loading. These tampers have proved particularly successful in tamping heavy special work. On this railway the machines have allowed six men to do the work which formerly required sixteen. Of the six men one is stationed to flag vehicles while another handles the connection to the trolley wire, leaving the remaining four to do the tamping.

With labor at \$2.50 a day, the relative costs are: Air tamping, \$15; hand tamping, \$40—a saving of \$25 a day. As a matter of fact the tampers paid for themselves within ten days. These tampers are also used for flat tamping of ballast in advance of concreting. They are fitted with chisels when wanted for clipping concrete and with cutters when used in stripping out asphalt.



TIE TAMPING AT OAKLAND, CAL.



SHAFT MOUNTED FOR ECCENTRICITY TEST

Device for Testing Bent Axles and Shafts

Instead of using the customary method of putting armature axles and the like in a lathe to determine whether or not they are bent, W. C. Duggan, machinist, Knoxville Railway & Light Company, Knoxville, Tenn., uses the device shown in the accompanying illustration, which he finds accomplishes the same purpose in much less time.

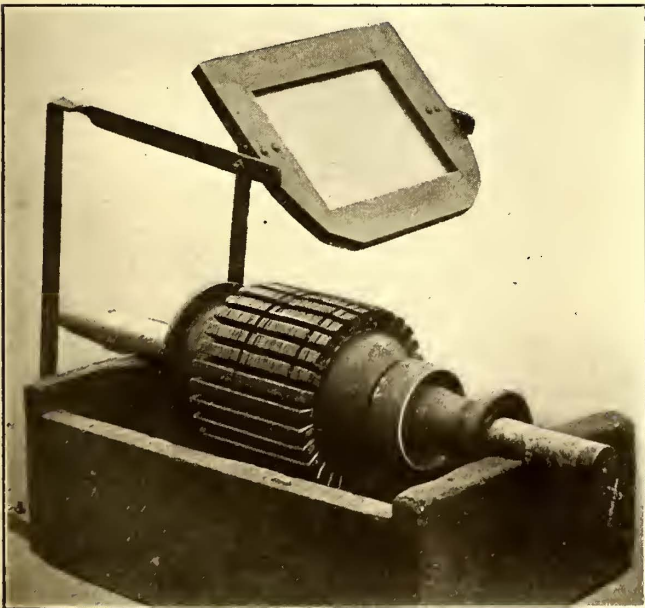
Two pairs of accurately machined 3-in. wheels are mounted on two blocks, and the axle or other shaft to be tested is placed so that it is supported on each end by a pair of wheels. It is then rotated by hand and tested by holding a piece of chalk close to the revolving shaft.

Wireglass Guard Which Did Its Bit for Safety First

BY HENRY MEYER

Master Mechanic Beaver Valley Traction Company,
New Brighton, Pa.

In grinding out the laminated cell slots of armatures the grinding wheels must be of light construction on account of the narrowness of the slot, and this makes them liable to frequent breakage. A guard consisting of a wooden frame which holds a pane of wireglass has



GUARD FOR USE IN GRINDING ARMATURE SLOTS

been rigged up as shown in the accompanying illustration. As will be seen, the glass is cracked, showing that it has already done its bit in stopping a broken section of grinding wheel.

Outdoor Switch Houses for Industrial Loads

An open type of switch-house construction has recently been brought out by the Westinghouse Electric & Manufacturing Company to provide the maximum of accessibility. In the switch house shown in Fig. 1 the oil circuit breaker is mounted on a specially constructed bracket and the meters are mounted on a slate slab. The bracket is so designed that it will take different sizes of breakers. This method of mounting the circuit breaker permits easy inspection of wiring, removal

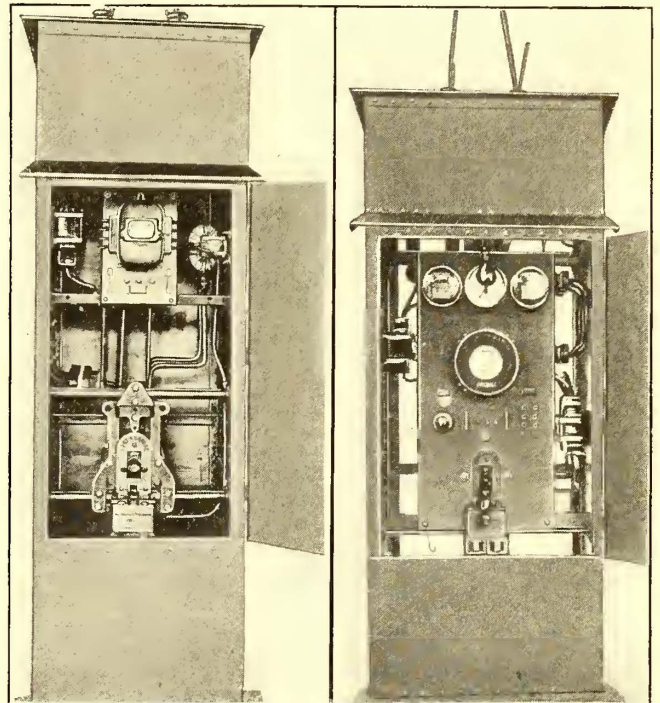


FIG. 1—OUTDOOR SWITCH HOUSE WITH BRACKET-MOUNTED CIRCUIT BREAKER. FIG. 2—OUTDOOR SWITCH HOUSE WITH PANEL-MOUNTED CIRCUIT BREAKER

of oil tanks, inspection of contacts and replacement of fuses which are used for the purpose of protecting the voltage transformers.

A ground-mounted switch house with panel-mounted circuit breaker is shown in Fig. 2. The circuit breaker and instruments are all mounted on one slate slab. While the construction is not as open as that previously described the equipment presents a very neat appearance.

The Detroit United Railway, having found that sprinkling the roadbed of its interurban lines with road oil is a satisfactory means of killing vegetation and laying the dust, has just put in service a 8000-gal. tank car. This car is equipped with a motor-driven pump by means of which oil is pumped from steam railroad tank cars into the railway's car. In operation the car is drawn by one of the motor construction cars, and the oil is distributed over the roadbed by a sprinkler pipe arrangement.

London Letter

Objection to Glasgow War Lottery—Glasgow Surplus for Year £160,000—Bulk Production of Electricity Proposed

(From Our Regular Correspondent)

The Corporation of Glasgow is threatened with an action in a court of law to test the legality of its prize-drawing scheme in aid of war charities. The question is whether or not the scheme is a lottery within the meaning of the acts of Parliament which render lotteries illegal. It is understood that the Lord Advocate has advised that it is contrary to statute, and the Secretary for Scotland, acting on this opinion, is believed to contemplate raising the point by an action at law. Passengers on the Glasgow trams are invited to buy as many tickets as they please at a penny each. The bulk of the money realized is devoted to war charities, a small percentage being retained for prizes which accrue to the holders of certain tickets drawn by lot and declared to be the prize winners. In the first eleven weeks of the scheme an aggregate sum of £16,881 was realized, on which £12,500 was handed over to various charities, £3,278 spent on prizes, which consist of pictures by well-known artists and war savings certificates, and the remainder placed on temporary deposit at the bank. Neither the popularity of the scheme nor the fact that deserving charities have benefited to a large extent has any force in a court of law. The question confronting the corporation is its legal standing in the matter. That seems to be settled by statutory enactment and legal precedent. The only legal form of lottery in this country is that known as the Art Union Drawing, which is specially exempt by the act of 1846 from penalty. The matter has been referred to a committee which has decided to discontinue the sale of the tickets for the present, but is making efforts to interest the necessary authorities in order to have the drawing legalized under the Art Unions act. The scheme as it stands is illegal and must therefore be discontinued, but the benefits derived from it in the interests of war charities are so great that every effort will be made to renew the scheme in some modified form which will bring it within the law.

In the meantime, it is interesting to learn that details of a record revenue for the department are given in the accounts of the Glasgow Tramways for the year ended May 31, which have been submitted at a special meeting of the corporation committee. The surplus for the year amounts to £160,984, and will be handed over to the common good. Last year the surplus was only £43,548, while the largest previous surplus was £68,000, in 1911. On the expenditure side of the accounts there is an item of £92,645, charged to the European war. This represents payments to dependents of employees on active service and war bonuses to workers.

A scheme for the bulk production of electricity for the whole country is now under consideration by the special committee appointed by Sir Albert Stanley, president of the Board of Trade, last March. The form which this scheme will probably take will be the division of the whole country into seven areas, one of which is the metropolitan area. The idea is that a company shall be formed to purchase the existing undertakings in each area and amalgamate them.

Considerable interest is being manifested in the use of coal gas as the propelling power for motor buses. The Bath Electric Tramways, Ltd., is experimenting with vehicles which run from Bath to Frome and from Bath to Midsomer Norton. W. E. Hardy, the general manager and engineer of the company, estimates that 300 cu. ft. of gas are approximately equivalent to 1 gal. of petrol. The cost of the former is 1s. 2d. and of the latter 2s. An important factor in the cost of the adoption of coal gas is the expense of the purchase of the holder. Each gas holder costs between £30 and £40. The use of gas gives more trouble than petrol, and Mr. Hardy regards it as being distinctly a war-time expedient. The innovation has also been introduced on a line between Bishop Auckland

and Durham by the United Automobile Services, Ltd., whose headquarters are at Lowestoft. With petrol cut down, and the use of substitutes forbidden, there was no alternative for the company but to fit up its cars to use ordinary town gas, such as is used in many gas engines, direct out of the town mains. Gas-driven tramway cars have been in use at Neath, South Wales, for more than two years. On the whole, the system is fairly satisfactory. With modern engines of a lighter type there are many advantages in favor of gas-driven cars. The cost works out at 9d. a mile at Neath, and as the gas is obtained from the Corporation Gas Works, it furnishes the ratepayers with a substantial source of revenue. The storage cylinder on the Neath cars is carried on the chassis under the floor of the car. It is recharged after each journey of 4 miles by means of a flexible coupling connected to steel cylinder receivers in the compressing room.

The directors of the Edinburgh Tramway have arranged to confer with the tramway committee of the Town Council regarding the threatened strike of tramway workers in connection with their demand for a war bonus of 7s. 6d. a week. The company, as lessees under the corporation, will make a representation of the position in which it finds itself at present owing to depleted staff and increased costs, and as it is affected by the demand of the employees. The company desires a reduction in the rent paid to the corporation and a reduction in other charges, or a revision of fares. Apart from this conference, there have been no other developments in connection with the dispute.

The action of the Council of Birkenhead in raising the tram fares on all the routes in the borough has been received with mixed feelings. The 3-halfpenny fares on various routes had become popular, no objection being taken to the odd halfpenny. The argument for the increase is that the town is thriving and there is no shortage of money. Capital is required to rehabilitate the overhead equipment and relay the track. The outlay of funds for both kinds of work is computed at £35,000, according to the lowest estimate submitted.

The Council of Bootle has decided to enter into a new agreement for a period of twenty-five years from July 1 with the Liverpool Corporation for the repair and maintenance of the Bootle tramways. The agreement provides that Liverpool shall pay a rental of £500 a year for the first six years and £1,000 a year for the remaining period for the use of the tramways. The Liverpool Corporation will be responsible for the upkeep of the rails and paving within the tramway limits, the corporation of the Bootle to do the final reinstatement work. With regard to the overhead equipment, the Liverpool Corporation is to allow Bootle a sum of £43 a mile a year for maintenance. The equipment is to be handed over to Bootle at the end of the period in usable condition.

There is strong opposition in the Potteries from a number of business men and from all the leading members of the Labor party to the proposal of the Council of Stoke-on-Trent to renew the lease of the Potteries Electric Tramways until 1932. The new agreement proposes that the company shall carry out certain improvements in the permanent way and rolling stock, that it shall not increase fares, and that it shall pay the corporation £1,000 a year during the term of the lease. The North Staffordshire Trades & Labor Council has decided to call upon the Town Council to purchase the tramway undertaking and convert it into an up-to-date service for the convenience of the public of the Potteries.

The circular issued by the London United Tramways to the holders of the first debentures shows that the position of the company with respect to that security is very serious. The earnings so far this year have barely covered expenses, and in consequence of the failure to keep the track and the rolling stock in good physical condition the earning capacity has decreased steadily. It is both difficult and expensive to secure labor and materials to maintain the property, but if renewals had been properly attended to before the war the position would have been infinitely better than it is to-day. The shareholders may have to submit to a scaling down of their capital before the undertaking is placed on a sound financial footing.

A. C. S.

News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

Seattle and Tacoma Strikes Settled

Arbitration Agreement Reached on Aug. 1 and Service Resumed on Aug. 2—Agreement to Run One Year

The strikes of the railway employees of the Puget Sound Traction, Light & Power Company in Seattle and Tacoma, Wash., terminated on Aug. 1. Cars in both cities resumed operation on Aug. 2. The men are to be permitted to organize and affiliate with any union. The company agrees that there shall be no discrimination against union employees, and the men agree to work with non-union employees. The company agrees to reinstate the discharged Seattle employees. The seven discharged Tacoma employees will be reinstated providing the arbitration board of Tacoma railway employees sees fit. The settlement of matters relating to wages and working conditions will be submitted to an arbitration board consisting of Dr. Henry Suzzalo, C. J. Franklin, representing the company, and James A. Duncan representing the employees. The findings of this board or a majority of it are to be effective from Aug. 1 and to be binding on the company and the employees for one year.

DEVELOPMENTS PREVIOUS TO THE SETTLEMENT

The city of Seattle, on July 26 was still without street railway service, although for the first time since the men walked out on July 16, both sides had agreed to conferences. Concessions made by the strikers' general committee on July 25 opened the way for the first actual conference between the railway officials and the strikers. Through the efforts of the King County Council of Patriotic Service, the strikers' general committee was induced to agree to a conference at which five men from Tacoma, five men from the Seattle force, and the officials of the Puget Sound Traction, Light & Power Company, including A. W. Leonard, president, A. L. Kempster, manager, at Seattle, and Louis H. Bean, manager at Tacoma, were present. This conference, held on July 26, lasted about two and one-half hours, and was held behind closed doors. Officials said that nothing definite had been accomplished, but that progress toward peace negotiations was being made. Company officials felt that they gained a point by the conferences, as one of their most persistent demands was that they be permitted to meet a committee of employees without the presence of outsiders.

Following the signing of an alternative writ of mandate by Judge Boyd J. Tallman, noted in *ELECTRIC RAILWAY JOURNAL* of July 21, directing the company to resume operation, the company made an attempt on Friday, July 20, to operate two cars on the downtown streets. A crowd of strikers and sympathizers surrounded the cars, and bombarded them with bricks, rocks and other missiles. The windows in the cars were broken, and the motormen and conductor were badly injured. A second attempt was made on Saturday to operate a car.

Following the riots of July 20 and 21, the company applied to Federal Court Judge Jeremiah Neterer for an injunction restraining strikers and others from interfering with the operation of its cars. Judge Neterer in an opinion rendered on July 26 stated that the situation called for executive action, not judicial, and denied the injunction. The company's petition asked that a sufficient number of U. S. marshals be appointed to protect the company and its employees. Judge Neterer, in his opinion, stated that the company was asking the Federal Court to do what should be done by the executive branch of the State and city, or in other words to "police the city." He declared that this was not the proper function of the court. He also pointed out that "the right to employ labor, and the right of labor to

be employed is inherently and universally recognized by the courts." The opinion concluded: "The court regrets that in times of stress, in an enlightened community of patriotic citizenship, the parties may not, in spite of the provision of the company's franchise, arbitrate all disputes and grievances."

Before taking up the company's application for an injunction, a hearing was given on the city's motion to remand to the State court the city's case asking for a mandate to compel the company to operate cars or submit to the appointment of a receiver. The case was taken under advisement after arguments in behalf of the city.

Mayor Hiram C. Gill stated that he would afford all the police protection possible when the company put forth a serious effort to resume service. He said that every policeman available would be utilized, although he was inclined to the belief that he should not be expected to place men on screened cars operated on Second Avenue, one of the main business streets. On that point he was quoted as follows:

"That is just a mild invitation for disorder that may result in bloodshed. It isn't a *bona fide* effort to resume service. At the present I am inclined to take such steps as are in my power to prevent a recurrence of the riots of July 20 and 21. If the company intends to attempt to resume service on all of its lines, serving the outlying as well as the business districts, I am inclined to believe that I would afford all of the cars such police protection as can be made available."

From July 17 to 23 the police records show that there were 181 accidents in which fifty-three persons were injured, resulting in the death of three. This was the toll taken by the automobiles, motorcycles and trucks which made an effort to transport the population of the city. Forty-three arrests for speeding were made in less than a week.

Division A of the Seattle Municipal Railway reaped a harvest during the strike. Passenger revenues, which have ranged from \$38 to \$45 a day for several years, jumped to about \$340 daily.

On the tenth day of the strike in Tacoma the Tacoma Railway & Power Company was operating seventeen cars on downtown streets. On July 25 Manager Louis H. Bean stated the cable line would be operated immediately. Each car carried an armed guard, but no violence was reported.

Mr. Bean has reiterated his stand on the matter of meetings and conferences with the strikers. He said:

"I will meet at any time and talk upon any subject with present or former employees of this company, but I have absolutely no business with any representative of the Amalgamated Association of Street & Electric Railway Employees of America."

A suit to compel the Tacoma Railway & Power Company to resume service was brought in the Pierce County Superior Court on July 23 by the State Public Service Commission, represented by Attorney General W. V. Tanner, and city of Tacoma represented by City Attorney U. E. Harmon. The filing of a petition for a writ of mandamus or an injunction compelling the company to provide adequate and safe service was followed by a formal order by Superior Judge Easterday, fixing July 26 as the time of hearing of the summary proceedings. The action was brought in the name of the State of Washington, on the relation of the State Public Service Commission and E. F. Blaine, A. A. Lewis and Frank R. Spinning as commissioners. In addition to the Tacoma Railway & Power Company, between 200 and 250 of the strikers, including the seven men whose discharge by the company precipitated the strike, were named as respondents. The employees were made parties to the action in order that they may state their side of the controversy in the hearing that will decide whether or not the company

must proceed with the operation of its cars. Attorney General Tanner concludes that the commission has power to act upon the city of Tacoma's demand that it take a hand in the matter.

When the hearing came up before Judge C. M. Easterday in the Superior Court on July 26 an affidavit of prejudice was filed against Judge Easterday by attorneys for the company and the hearing on the application was set for July 27 in Judge William Chapman's court.

Charging conspiracy and intimidation, the Tacoma Railway & Power Company, in connection with the suit brought by the State Public Service Commission, on July 26 filed in the Superior Court injunction proceedings against F. A. Hoover and Edward McMorrow, international organizers of the Amalgamated Association. The company charges in its complaint that on July 16 union organizers entered into an unlawful conspiracy to compel its employees to cease working, and by threats of violence and other methods of intimidation, induced a large number of men to go out on strike.

The company further charges that the two organizers are engaged in a conspiracy to prevent the operation of the company's cars, and asks that Hoover and McMorrow be enjoined in common with the striking employees named in the original suit.

Strike in Springfield, Ill.

Violence Follows Strike by Which Men Seek to Enforce Demands for Union Recognition and More Pay

A strike was declared on the Springfield (Ill.) Consolidated Street Railway on July 25. Many of the men not long in the employ of the company were induced recently to join a local branch of the Amalgamated Association in that city and they went out to enforce demands made on the company for recognition and for an increase in wages. Most of the men who have been with the company for a long time remained loyal, and with them as a nucleus an effort was made to restore service at once. Considerable disorder followed as a result of the strike. One man was shot and at least two others are known to have been injured.

Shortly after midnight on July 25 A. D. Mackie, manager of the company, obtained an injunction through Circuit Judge E. S. Smith, restraining the strikers from interfering with the company's employees or the operation of cars. A warrant was also issued for Jerre Burdette, a union organizer, charging him with malicious mischief. The following day Burdette was arrested. In the meantime, however, a motorman of the company had been shot, presumably by strikers or strike sympathizers.

The men in Springfield now receive 21 cents an hour for the first year and are advanced until they reach the maximum of 30 cents an hour. The men who went out have demanded recognition of the union and a scale of wages calling for 23 cents an hour as the minimum pay and 35 cents as the maximum.

Extension of Railway in Madras

A project for the extension of the electric railway in Madras has been under consideration for some time past and although not definitely decided on as yet, it seems likely that it will be eventually undertaken. The following from a recent issue of the *Madras Mail* may be of interest in this connection:

"We understand that the extension of the Madras tramways down the Mount Road and along the Bodyguard Lines depends very largely on the question of the widening of the Government House and Penitentiary bridges. Designs for doing this are now being prepared, but up to the present time nothing has been settled as to how the work is to be financed."

Any firms interested in the foregoing should address the chief engineer of the Madras Electric Tramway, Ltd., Vepery, Madras.

Norfolk Booming

Government Activities in and Around Norfolk and Portsmouth Affect Virginia Railway & Power Company

Government activities in and around Norfolk and Portsmouth have resulted in an enormous demand on the Virginia Railway & Power Company for additional service. The community has been transformed over-night from a fairly progressive and thriving municipality to a beehive of industry. Thousands of workers and great crowds of pleasure seekers have forced the company to place into service every available piece of equipment. Lines which heretofore were running through sparsely settled suburban districts on a forty-five minute schedule are now being operated on a two-minute headway.

TWENTY NEW CARS TO MEET DEMANDS

Foremost among the government's enterprises was the taking over of the site of the old Jamestown exposition, situated on Hampton Roads, about 10 miles out of Norfolk, and transforming it into a naval base for use in training the new army. Work of preparing this base was begun on July 5. About 2500 men are employed by the various contractors and it is the contractors' intention to increase this force as fast as the men become available. Travel between Norfolk and the naval base has become enormous. Lines that had been built for the purpose of serving the Jamestown exposition, and since the closing of that attraction used but little on account of lack of patronage, have been overhauled and service is now about on a par with that rendered during the exposition. Rush order has been placed for twenty new steel cars of the latest design, for use on these lines, to take care of the heavy traffic, and it is hoped that this new equipment will be delivered in time to provide service for the section of the new army which is to occupy the site in September.

In addition to the many men employed at the naval base, the navy yard on the Portsmouth side of the river has more than doubled its force in the past few months, and the government has also undertaken extensive repairs and additions to its naval hospital, marine barracks and naval magazine, all on the Portsmouth side, and thousands of men are engaged in these activities. Additional service has been installed on practically all lines to take care of these workers, and it has also been necessary to put on earlier service on some lines to accommodate the men who are reporting for work an hour earlier than usual.

The company has had to meet terrific demands from all sources for increased transportation facilities, and labor troubles for the past two weeks interfered more or less with the elaborate plans for taking care of the situation. However, with the settlement of the strike and the return of the men to work, the program of the company is rapidly maturing and practically all demands for service are being met.

Hearings on St. Louis Compromise

The Board of Aldermen of St. Louis, Mo., on July 27 adjourned until Sept. 21, after a fight to hold it over until Aug. 17. At the meeting on July 27 the public utilities committee reported it would not be able to submit its recommendations regarding the two pending bills to compromise the United Railways litigation for at least six weeks. Mayor Kiel was instructed, in the resolution of adjournment, to call a special session upon ten days' notice if the public utilities committee reported either bill favorably before Sept. 21.

The first public hearing on the two bills that have been proposed for the settlement of the differences between the city and the company was held on July 25. President McCulloch of the United Railways said that the ordinances had been prepared by the representatives of the city. He favored the ordinance providing for the partnership arrangement with the city, being quoted to the effect that "with the city's help we can do many things that we cannot do alone." It is expected that the public hearings will be continued during the summer despite the adjournment of the Council until the fall.

Richmond Company Seeks Relief

The so-called Grundy resolution came up for consideration before the finance committee of the Council of Richmond, Va., on July 17. It was voted to reject the resolution. The measure had for its purpose the granting of relief to the Virginia Railway & Power Company from some conditions under which it operates that have become quite burdensome to the company. The Grundy resolution called for a straight 5-cent fare on all cars, the elimination of school and labor tickets as well as the strip of six tickets sold for a quarter. In return it was proposed by Mr. Grundy to place a franchise license tax of 10 per cent on the gross receipts of the company. T. S. Wheelright, president of the company, said that he was not prepared at this time to report the proposal favorably to the board of directors of the company. He said that the 10 per cent tax would mean about \$100,000 in revenue to the city, but would make the fare return 4½ cents instead of 5 cents. He referred to the jitneys that were cutting into the receipts of the company and suggested that something might be done by the City Council in this direction.

In commenting on the matter in an editorial headed "Our War Time Traction Problems," the *Richmond Leader* said in part:

"Though Colonel Grundy's ordinance died a-borning it does not follow that the city will refuse to remedy any serious injustice from which the Virginia Railway & Power Company may show itself to be suffering by reason of the war. For while we have both corporation baiters and corporation worshippers, in Council and out, we have thousands of citizens in Richmond who will insist upon a square deal for every man and every man's property. These citizens will act the moment they are convinced."

Testimony in Buffalo Arbitration

Conductor Abandons Car in Busy Street—Threat of Strike Unless He Is Reinstated

Considerable testimony has been taken by the board of arbitration appointed on July 21 to hear the grievances between the International Railway, Buffalo, N. Y., and its union platform employees. All of the testimony was in connection with the discharge of a union conductor, who is an officer of the union, for an alleged violation of two company rules. The first charge is that he abandoned his car in the street without waiting for his relief conductor and the second charge is that he neglected to turn in his day's receipts after completing his run.

Bert L. Jones, vice-president and general manager of the Niagara Gorge Railway, Buffalo, N. Y., represents the International Railway on the board; John B. Kolb, a motor-man, appears for the union, and Frank X. Schwab, a wholesale liquor dealer, was agreed upon as the third arbitrator. Thomas Penney, vice-president and general counsel of the International Railway; John O. Weigel, general superintendent of transportation of the company; E. G. Connette, president of the company, and George W. Barker, superintendent of the Cold Spring carhouse, appeared for the railway. The union was represented by its business agent.

It developed during the taking of testimony that the discharged conductor had completed his day's run about 2.30 o'clock on the afternoon of May 31 and left his car standing in the street at a busy intersection without waiting for his relief conductor. The discharged man then went into a near-by lunchroom and ordered lunch. He did not turn in his day's receipts until almost nine hours later when he was located by one of the company's division superintendents. The man was discharged by Edward Schlant, assistant city superintendent of the company, upon the recommendation of company officials.

The union of which the discharged conductor was a member demanded the man's reinstatement. This was refused by the company. A vote was taken and the men agreed to strike on July 21. The company suggested that the entire matter be referred to W. D. Mahon, international president of the union. The union refused to allow its international officer to arbitrate the matter, and it was agreed to appoint a board of three to arbitrate the grievance.

City Dads Sorry

Electric Railway Built Around Town on Refusal of Franchise Renewal

One of the first interurban franchises to be granted in Ohio was that through the town of Berea to the Cleveland, Southwestern & Columbus Railway in 1892. This was the first franchise that the company received and was the first to expire. More than two years ago the Southwestern Company began negotiations with the town for a renewal of the contract, but any grant the town officials were willing to make was so restricted with paving, sprinkling and various other burdens upon the company that E. F. Schneider, general manager of the company, decided, after all negotiations had failed to bring about a reasonable settlement, to build a line around the city. Accordingly before the negotiations for the renewal of the grant ceased the company began to secure options on right-of-way. The town officials evidently thought the company was not sincere in its threat to build around Berea. Finally the options were exercised and track was laid on a 3-mile route encircling the city. All through cars now traverse the line without running into Berea.

A small section of line within the town is operated under a separate franchise and the company is required to run a few cars a day over this. Only certain local cars are backed into the town, but the station located on this piece of track has been closed and a new station built on the new right-of-way. The work of tearing up the tracks of the company within the town was begun by the company, but this was stopped through an injunction secured by the town officials.

BEREA ISOLATED

Berea, with a population of about 3000, is now without a railroad station. Freight which was formerly brought into the center of the town by the interurban must now be hauled a distance of more than half a mile. Property values along the line have declined 25 per cent. Naturally, the people of the town are very much concerned and several attempts have been made to renew negotiations with the company, but the latter has no intention of changing its policy. So far as traffic is concerned, the company has not felt any decrease from cutting Berea off its line. The construction work for the new right-of-way cost the company \$125,000, but it would have been necessary to spend \$60,000 in track renewal had the franchise within the town been renewed.

Fire in Coal Bunkers

A fire which started from spontaneous combustion of the coal in storage in the Newport power station of the Cincinnati, Newport & Covington Railway, Covington, Ky., recently, proved to be very hard to extinguish and resulted in a loss to the plant of about \$10,000.

About 420 tons of coal had been stored for several months in the two bunkers over the boilers, one covering ten boilers and the other four. Natural gas is used as fuel, and the coal is used only in an emergency. The fire was discovered about 9.30 p. m. and was not under control until about 2 a. m. It was almost impossible to get at it with any water until the entire roof and coal-carrying structure over the bunkers had been burned away. The fire departments of Newport, Covington and Cincinnati responded to the call. The boilers were kept in operation during the fire, but the station was otherwise shut down and isolated.

Through the timely work of soldiers stationed nearby considerable damage to the engine room was avoided. Several lines of small hose manned by the soldiers were run from the fire pumps in the station to the engine room, and as the fire broke through the eaves and roof at various times it was quickly extinguished. Meantime the soldiers had torn up tents and spread them over the machines in the engine room to protect them from damage by water. About one-half of the coal in the bunkers was consumed before sufficient water could be got into the bunkers to extinguish the fire. The two-motor electric coal carrier, the telfer over the bunkers, the skylights and roof structure over the bunkers were completely destroyed.

Cleveland to Initiate Terminal Grant

The machinery for initiating the subway and underground terminal ordinance of Mayor Davis of Cleveland, Ohio, has all been arranged. It will be necessary to secure the names of 5000 voters to the petition for submission of the ordinance to the electors.

Munson A. Havens, secretary of the Chamber of Commerce; E. H. Roberts, secretary of the Cleveland Advertising Club, and Fielder Sanders, street railway commissioner, constitute a committee to prepare advertising matter and instructions for those who circulate the petitions.

The plans provide for the presentation of the petitions to the City Council on Aug. 27, the first meeting after the summer vacation. If the Council fails to act favorably on the ordinance before Oct. 6, the question will be submitted to the voters at the regular election on Nov. 6.

The members of the Council who voted against the ordinance on July 16 are basing their arguments on the request of the United States Government that cities should not undertake improvements that are not absolutely needed or issue bonds for non-essential things.

New Contract with Men in Everett

The likelihood of an electric railway strike in Everett, Wash., disappeared July 26 when a three-year working agreement with the Puget Sound International Railway & Power Company, a subsidiary Stone & Webster corporation, operating in Everett, was signed by a committee of the trainmen, and Manager D. C. Barnes, in behalf of the company. The agreement will not expire until July, 1920. The company and the men issued the following statement:

"For the purpose of assuring a continuous and uninterrupted public service to the citizens of Everett and vicinity and to adjust all questions arising between car service men and the company, a three-year contract has been negotiated in which the men agree not to strike in consideration of the wage and working conditions agreed to by the company. No man was asked to sign by any one selected by the company, or by any man with authority over others. Submission of the agreement to the individual men was handled entirely by representatives elected by a majority of the men. Our mutual relations have been entirely harmonious in the past and this agreement insures a continuation of this condition in the future."

Toronto Wage Board Meets

The board of conciliation appointed to adjust the question of wages and conditions of service at issue between the Toronto (Ont.) Railway and its employees held a preliminary meeting at the city hall, Toronto, on Monday, July 30. It was expected that regular sittings would be commenced during the week. The board consists of three members, Duncan McDonald, Montreal, representing the Toronto Railway; D. A. Carey, Toronto, appointed by the men, and Judge Colin G. Snider, Hamilton, who was chosen by the Minister of Labor, Ottawa, and appointed chairman of the board.

Nickel-Penny

The caption above indicates how the Salem News announced the recent fare increase on the Bay State Street Railway, Boston. The News said:

"A very pretty wedding, the culmination of a romance that had its inception at the State House some months ago, took place in this city Sunday, when Nickel, the youngest son of Mr. and Mrs. Silver, was married to Penny, the youngest daughter of Mr. and Mrs. Dollar. The single ring service was used. The wedding was performed by the Massachusetts Public Service Commission on the Bay State cars. The wedding was a public one and was attended by thousands of people as the young couple were very well known here, having visited this city in more prosperous times. The bride was becomingly attired in a copper colored gown. After a brief wedding trip the newlyweds will make their home in this city."

Increase in Wages in Savannah.—The Savannah (Ga.) Electric Company has increased the wages of its trainmen 2 cents an hour.

Jersey Company Increases Wages.—The conductors and motormen in the employ of the Jersey Central Traction Company, Keyport, N. J., have received an increase of 2 cents an hour and will receive time and a half for all overtime.

Increase for Geneva Men.—The Geneva, Seneca Falls & Auburn Railroad, Inc., Seneca Falls, N. Y., has granted an increase in wages to all car men of 2 cents an hour, bringing the scale to 24, 26 and 28 cents an hour. Carhouse men receive an increase of \$5 a month.

Service Resumed in Watertown.—The Black River Traction Company, Watertown, N. Y., has replaced its employees who went on strike recently and has resumed service. The company refused to meet the demands of its old men for recognition of the union.

"Journal" Editorial Republished.—The *Tramway Bulletin*, published by the Denver (Col.) City Tramway, has republished in its issue for June the editorial "What Is Ahead of the Electric Railway Industry?" which appeared originally in the ELECTRIC RAILWAY JOURNAL of June 23, page 1127.

New Offices for Bay State.—The Bay State Street Railway, Boston, Mass., has moved its offices from 84 State Street to 245 State Street, a new office building overlooking the harbor. By the elevated line on Atlantic Avenue, which passes the door, the offices are but a few minutes from South Station.

Cleveland Railway Protests New Tax Valuation.—Again the Cleveland (Ohio) Railway has taken the valuation made by the State Tax Commission to the Common Pleas Court. The commission set a tax value of \$27,048,000, but the company claims its taxable property will not amount to more than \$20,000,000.

Service Resumed at Lima.—Threatened trouble on July 27 caused H. G. Gilpin, general manager of the local lines of the Ohio Electric Railway at Lima, Ohio, to withdraw the cars at night, after operating them successfully through the day. A policeman rode with the motorman on each car. No trouble occurred during the day.

Another Coal Purchase Reported.—The Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., is reported to have purchased a three-quarter interest in a coal mine in Logan County, W. Va., the other quarter being owned by Columbia Power, Railway & Light Company. Production is running at the rate of 300,000 tons a year. Reserves are estimated by engineers at between 9,000,000 and 10,000,000 tons.

Increase in Wages on Syracuse & Suburban Railroad.—The wages of the trainmen in the employ of the Syracuse & Suburban Railroad, Syracuse, N. Y., have been advanced 1½ cents an hour retroactive to May 1. This advance is the same as that fixed in the conciliation award for the men on the Syracuse, Lake Shore & Northern Railway and the Syracuse & Northern Electric Railway, Inc., referred to in the ELECTRIC RAILWAY JOURNAL of July 21, page 116.

Increase in Pay on Utah Line.—Under the terms of an agreement reached between W. A. Whitney, general manager of the Ogden, Logan & Idaho Railway, Ogden, Utah, and a committee of seven employees, the men will receive an increase in pay, varying from 12 to 40 per cent. Changes in working conditions have also been agreed upon. The increase in pay goes to the interurban and city line employees and the shop men. The schedule of the increase will be arranged according to the agreement.

Partial Service Only.—E. E. Downs, president of the Alton & Jacksonville Railroad, Alton, Ill., announced recently that owing to the weakened condition of some of the bridges of the company between Godfrey and Jerseyville and the need for exchanging heavy cars for lighter cars, it would be necessary to discontinue passenger service between Alton and Jerseyville until further notice. The hourly service between Alton and Godfrey will remain practically as it is at the present time, omitting the tripper, which leaves at 5.30 o'clock in the evening.

Increase in Wages by Washington-Virginia Railway.—The Washington-Virginia Railway, Washington, D. C., on Aug. 1 put into effect the following increased wage scale for motormen and conductors: Less than one year, 26 cents an hour; second year, 27 cents an hour; third year, 28 cents an hour; fourth and fifth years, 29 cents an hour; sixth and seventh years, 30 cents an hour; eighth, ninth and tenth years, 31 cents an hour; over ten years, 32 cents an hour. This is the fourth increase in wages since July 1, 1914.

Richmond Bonus to Men Increased.—Announcement was made on July 13 by the Virginia Railway & Power Company, Richmond, Va., to the effect that the bonus of 2 cents an hour to motormen and conductors would be increased to 5 cents an hour, effective on July 16. This is the third raise which has been made voluntarily by the company since the war began and the second increase within the last four months. This last action taken by the company will make an additional increase in the payrolls of approximately \$125,000 for the year.

Women Likely to Replace Men in Detroit.—It is quite likely that in the shifting condition due to the war more women will be employed by the Detroit (Mich.) United Lines. In fact the company now has more women in service than formerly through placing several of them in positions as cashiers in the carhouses, where they are performing the work in a most satisfactory manner. Women may in fact eventually be employed as cashiers on the trail cars—preferred employment because of the ease of the work and the remunerative return for services—if war conditions seem to justify it.

South Bend Strike Declared Off.—The strike of the employees of the Chicago, South Bend & Northern Indiana Railway Company, South Bend, Ind., has been declared off. The strike has long since been a thing of the past so far as the company is concerned. The issues involved were reviewed in the *ELECTRIC RAILWAY JOURNAL* for May 5, page 839; May 12, page 885; May 19, page 930; May 26, page 975; June 2, page 1019. Only the men on the local South Bend lines were affected. A board of mediation appointed by the Governor failed to bring about an agreement between the company and the men.

Organization of Pacific Railway Club.—The Pacific Railway Club, which was organized early this year with headquarters at San Francisco, Cal., has commenced the publication of its proceedings in monthly pamphlet form. A. H. Babcock, consulting electrical engineer of the Southern Pacific Company, is president, and G. H. Binkeley, valuation engineer United Railroads, San Francisco, is first vice-president of the club. The governors include W. R. Alberger, vice-president and general manager of the San Francisco-Oakland Terminal Railways. Headquarters have been opened in the Phelan Building, San Francisco.

Philadelphia Negotiations Progressing.—Negotiations are said to be progressing favorably toward a settlement of the differences between the city of Philadelphia, Pa., and the Philadelphia Rapid Transit Company over the terms for the operation of the city's new high-speed lines by that company. Many of the conditions of the new lease have been considered in conference between W. S. Twining, director of transit for the city, and A. L. Drum, consulting engineer for the company. Nothing official has been made public. The first regular session of Councils will be held on Sept. 20. It is understood, however, that the advisability of calling a special session of the Councils has been discussed.

Transfer Interchange Suggested.—The Port Commission of Seattle Wash., has instructed Attorney C. J. France to draw up a resolution, offering interchange transfer privileges with the public ferry systems to the East Waterway, the West Waterway and West Seattle, to the Lake Burien division of the municipal electric railway and the Puget Sound Traction, Light & Power Company. The Port will retain 40 per cent of the fares, giving 60 per cent to the other parties to the proposed arrangement. The commission is now providing two regular ferry services on Elliott Bay, one to West Seattle, and the other to the West

Waterway, while a third service is being furnished to the East Waterway, to accommodate the 2000 workers at the Duthie shipbuilding plant.

Use of Women for Conductors in Newark Not Yet Formally Considered.—In answering an inquiry put to him by the Newark *Call* about the possibility of the Public Service Railway using women conductors, John L. O'Toole, assistant to the president of the company, is reported to have answered: "You can make as good a guess as we can. The possibility of such an emergency as would call for the employment of women on the back end of cars has been thought of by Public Service Railway, and has been mentioned among the officials in an informal manner, but that is as far as it has gone up to this time. We are just about like every other big concern in these uncertain times, when war happenings may change one condition after another over night. We do not know what is ahead of us, in the same sense that we were able to look ahead in normal times and prepare accordingly. Therefore we must be ready to meet any new condition that may arise in the conduct of the many and varied ramifications of our business."

Promoting Athletics in Baltimore.—Announcements have already begun to be made by the United Railways & Electric Company, Baltimore, Md., in connection with the promotion of social activities among the employees of the company, referred to originally in the *ELECTRIC RAILWAY JOURNAL* of June 23, page 115. The company has canvassed the tastes of the employees with respect to their preference in regard to athletics and an announcement has been made with respect to swimming. Announcements in regard to tennis and quoits will be made later. A blank was sent to the employees with the different amusements listed, and those who were solicited were requested to note on the blank the extent of their interest and the extent of their training. T. A. Cross, president of the company, has expressed a willingness to provide suits and bathroom accommodations at Bay Shore Park for those who take up swimming. Novices and beginners will be instructed and contests will be arranged. Entries for swimming have been divided according to sex and then classified as expert swimmers, good swimmers but not experts, beginners and finally those who have not yet tried swimming. Entries in one class will be permitted to qualify for another class.

Stock Offered to Employees.—The Cities Service Company, New York, N. Y., put a new profit-sharing plan into operation on Aug. 1. The management has set aside \$2,000,000 of preferred and \$1,000,000 of common stock for subscription by the workers on terms governed by the length of service of the subscribers. An employee who has been in the organization less than a year may subscribe for stock equal in par value to 50 per cent of his yearly income, with increases from this level as the period of employment in case of other employees lengthens. An employee, for instance, who has been with one of the subsidiaries between three and four years, may take stock equal to 80 per cent of his income. Limitations have been placed on the high-salaried men to prevent too large subscriptions. The money invested by a subscriber will be used to buy both preferred and common stock. Payments will be due in sixty equal monthly instalments, making the stock fully paid for in five years. The employee who subscribes gets the common stock at par, which has a current market value of about \$280 a share, and the preferred, with a current value of \$85 a share, is also taken at par. An investment of \$300 on these terms gives a subscriber stock with a market value of about \$450.

Program of Association Meeting

National Association of Purchasing Agents

The annual congress of purchasing agents, under the auspices of the National Association, will be held at Pittsburgh, Pa., on Oct. 9, 10 and 11. The program includes business sessions for the mornings and visitation and inspection of industrial work during the afternoons. The secretary of the association is E. B. Hendricks, 129 Lafayette Street, New York, N. Y.

Financial and Corporate

Annual Report

Northern Ohio Traction & Light Company

The comparative income statement of the Northern Ohio Traction & Light Company, Akron, Ohio, for the calendar years 1915 and 1916 follows:

	—1916—		—1915—	
	Amount	Per Cent	Amount	Per Cent
Operating revenue:				
Railway department.....	\$3,981,588	77.0	\$3,127,035	80.4
Electric department.....	1,188,853	33.0	763,714	19.6
Total	\$5,170,441	100.0	\$3,890,751	100.0
Operating expenses, taxes and depreciation:				
Operating expenses.....	\$2,602,837	50.3	\$2,092,499	53.8
Taxes	268,141	5.2	220,511	5.6
Depreciation	295,000	5.7	60,000	1.6
Total	\$3,165,978	61.2	\$2,373,010	61.0
Gross income.....	\$2,004,463	38.8	\$1,517,741	39.0
Income charges.....	619,520	12.0	628,309	16.1
Net income.....	\$1,384,943	26.8	\$889,432	22.9

The gross earnings of the company in 1916 showed a gain of \$1,279,690 or 32.9 per cent, while the operating expenses, taxes and depreciation advanced \$792,968 or 33.4 per cent, so that the gross income increased \$486,722 or 32.1 per cent. In addition to the \$295,000 for depreciation of road and equipment included in expenses, a profit and loss charge of \$350,000 was made for this item. Similar provision was also made for \$290,000 for injuries and damages, in addition to \$198,616 included in expenses, and \$30,000 was set aside for contingencies. Refinancing costs written off totaled \$94,929. After taking in the prior surplus, making such charges and paying \$271,106 in preferred and \$450,000 in common dividends, the surplus as of Dec. 31, 1916, amounted to \$1,106,624.

The increase in gross earnings was mostly caused by a gain of \$782,732 or 26.7 per cent in passenger earnings, \$30,590 or 28.0 per cent in freight earnings and \$425,137 or 55.6 per cent in light and power earnings. All divisions of expenses showed increases, the amounts being as follows: Maintenance of way and structures, \$244,206 or 79.3 per cent; maintenance of equipment, \$12,132 or 3.4 per cent; power operation and maintenance, \$244,699 or 61.5 per cent; conducting transportation, \$122,750 or 17.9 per cent; general, \$121,549 or 29.2 per cent, and taxes, \$47,630 or 21.6 per cent.

The total expenditures for additions and improvements during 1916 were \$1,483,753. In this amount was included \$348,902 for track, roadway and structures, \$501,060 for power houses, substations and equipment, and \$357,498 for cars and equipment. The gross railway earnings per mile of road in 1916 were \$22,547, and per mile of single track, \$16,296.

Duluth Company Liable for Paving

The Supreme Court of Minnesota announced a decision on June 29, holding that the Duluth Street Railway must pay the extra cost in paving streets in cases where an additional width in the pavement was made necessary by reason of the presence of the street railway tracks and the operation of cars. The test case was brought on the Ninth Street paving job. This pavement was laid 42 ft. wide from curb to curb where the electric railway tracks are. For a portion of the distance paved there are double tracks and over the rest there is a single track. The court held that the company was liable to pay for 10 ft. of the 42 ft. paved where it had double tracks, and for 5 ft. where it had a single track. The city had contended that the company should pay for 16 ft. where a double track was laid. The sole question raised was the construction of the company's franchise of 1881. Section 6 provides that in cases "where other than animal power are used the company shall be required to pay only so

much of the expense as is made extra by reason of the street railway company." The city contended that the company should be required to pay for the additional width of the street pavement made necessary by reason of the presence of the tracks and operation of the railway. The company contended that it should be required to pay only the extra cost of the pavement over what it would cost to lay the same pavement if the rails were not there. Since 1881 the company has made payment on the theory that it was not liable for any additional width of the street than that around the rails. The franchise, under which the test suit was brought, covers the downtown, west end and east end sections. The company is operating under separate franchises at Lakeside and West Duluth, and the conditions that obtain in these portions of the city were not involved in the suit.

Suit Over Cars Withdrawn

The Public Service Commission for the First District of New York has been advised by its counsel that the writ of certiorari, obtained by the New York Railways for the purpose of reviewing the determination and order of the commission upon the application of that company for approval of an issue of bonds to finance the acquisition of 175 new "stepless" cars, has been withdrawn by the company and the proceeding instituted by the service of the writ has been discontinued. The matter has been held open pending the making up of a detailed balance sheet of the company, inasmuch as there was unadjusted a large number of unsettled claims growing out of the receivership, the value of which was indeterminate. It was said at the offices of the commission that it was deemed not unlikely that the New York Railways will later apply for leave to present additional evidence, covering matters which have come to its knowledge in connection with the making up of that balance sheet, as basis for approval of the issuance of more than \$640,000 of bonds thus far approved. The company has lately expressed its interest in the establishment of a fair and adequate rule whereby the 4 per cent bonds may be used for needed development of the property.

Suit Over Bridge Rights Likely

Seattle Mayor Directs Corporation Counsel to Enforce Collection of Part of Cost of New Bridge

Mayor H. C. Gill of Seattle, Wash., has directed Corporation Counsel Hugh M. Caldwell to bring action "as soon as possible" to enforce collection from the Puget Sound Traction, Light & Power Company of the \$60,917 fixed by the City Council as the company's share of the cost of the construction of the new Fremont Avenue Bridge, and the two other charges assessed, the \$333 a month for the operation of the bridge and the 1 cent per kilowatt-hour for power consumed by cars in crossing the bridge. The Mayor charges that the Puget Sound Traction, Light & Power Company has refused to comply with the provisions of the ordinance specifying what the company should pay and that although it has used the bridge continuously since its opening on June 15, "it still refuses to recognize its obligations to pay."

The offer of the company to pay \$625 a month and one-third the cost of operation to the city as a rental for the use of the new Fremont Avenue Bridge was refused. The proposal that the rental be submitted at once to arbitration was also rejected by the special committee of the Council. Mayor Gill and Councilmen Moore and Erickson joined in making the suggestion that the company accept the compromise of \$900 a month rental, the city to furnish the current to be used in operating the cars across the bridge at 1 cent per kilowatt-hour. A. W. Leonard, president of the company, and James B. Howe, general counsel, declared that this amount was much too high, particularly in view of the low return that the company has received for many years past on its investment. President Leonard's proposal that it be made a condition of the arbitration that a decision be reached within thirty days after the appointment of the board, and that his company meanwhile would make a payment of \$1,000 as the first month's rental was rejected by the committee.

Albia Light & Railway Company, Albia, Iowa.—The Albia Light & Railway Company, which was reorganized last year by Guy M. Walker by issuing to the holders of the old bonds 70 per cent of their holdings in new bonds and 30 per cent in 6 per cent preferred stock, has declared the first quarterly dividend of 1½ per cent on the preferred stock, and announces that the funds are already on hand out of which to pay the second dividend three months from now. Bondholders, who deposited with the protective committee, are now getting practically the same income return from the new securities as they were getting from the old securities before the receivership.

Boise (Idaho) Railway.—The Boise Railway has been incorporated with a capital stock of \$200,000 by B. W. Oppenheim, W. E. Pierce, Thomas R. Hamer and Donald Miller as the successor to the Boise Railroad, Ltd., the property of which was sold under foreclosure recently as noted in the *ELECTRIC RAILWAY JOURNAL* of July 21, page 120, to David Miller and W. E. Pierce. Mr. Miller owns 1996 of the 2000 shares of stock. Mr. Miller is president of the company, Mr. Pierce vice-president and Mr. Hamer secretary and treasurer.

Boston (Mass.) Elevated Railway.—The Massachusetts Public Service Commission, which on May 21 authorized the West End Street Railway to issue \$1,581,000 of three-year 6 per cent bonds to meet a similar issue which matured on Aug. 1, has sanctioned an increase to 7 per cent in the interest rate because of the inability of the company to find a ready market for the 6 per cent bonds at par. The board said: "Under the terms of the lease of the West End Street Railway by the Boston Elevated Railway all issues of bonds of the West End Street Railway must be sold at not less than par. It now appears that the West End Street Railway, after inviting bids, has been unable to sell the bonds at the rate of interest authorized by the order of May 21, and since it appears that in order to enable the company to sell bonds the rate of interest must be increased." The bonds are being offered by Lee, Higginson & Company at 102 and accrued interest, to yield 6¼ per cent.

Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.—The directors of the Hagerstown & Frederick Railway, Frederick, Md., have voted to acquire control of the Chambersburg, Greencastle & Waynesboro Street Railway and its allied interests, including the Waynesboro Electric Light plant and the Mercersburg, Greencastle and Waynesboro turnpike.

Cleveland & Chagrin Falls Railway, Cleveland, Ohio.—Common Pleas Judge Phillips at Cleveland has appointed Robert D. Beattie, secretary and general manager of the Cleveland & Chagrin Falls Railway, receiver for the company. The appointment was made at the request of the Guardian Savings & Trust Company, Cleveland, Ohio, representing the holders of \$251,900 of first mortgage 6 per cent bonds of the company. The trust company alleged that the continuous operation of the road would be interrupted if a forced sale of the property were permitted. The trust company makes the claim that the railway is not in a position to pay the judgment of \$50,000 awarded to a Mrs. Stroup and that the case in which it was rendered is pending before the court of appeals in a proceeding to have the common pleas ruling reversed. The \$50,000 verdict, which precipitated the receivership, was obtained by Mrs. Stroup in a damage suit to recover for personal injuries, which she said she sustained on July 19, 1915, when an automobile in which she was riding was wrecked by a car of the railway.

International Traction Company, Buffalo, N. Y.—E. H. Rollins & Sons and Parkinson & Burr, New York, N. Y., are offering for subscription at 98¼ and interest, to yield 6.65 per cent, \$2,000,000 of collateral trust 6 per cent three-year gold notes of the International Traction Company, dated Aug. 1, 1917, and due Aug. 1, 1920. The International Traction Company owns the entire stock of the International Railway. The notes are authorized to the amount of \$5,000,000 and are outstanding to the amount of \$2,000,000. The outstanding notes are further secured by a supplemental indenture made by other interests pledging with the trustee \$2,667,000 of refunding and improvement mortgage 5 per cent gold bonds of 1962 of the International Railway.

Lisbon (Portugal) Electric Tramways.—The result of operations of the Lisbon Electric Tramways, Ltd., for the calendar year 1916 was a net profit of £51,020. During the year the company carried 76,620,194 passengers as compared to 67,101,249 in 1915. The operating expenses increased out of all proportion, however, owing to the higher cost of coal and other supplies and labor. Efforts were made to secure an increase in fare, but owing to city and government opposition the attempt was temporarily abandoned. Steps in this connection are being taken this year.

Northumberland County Traction Company, Sunbury, Pa.—By a decree of presiding Judge Cummings Field in the Northumberland County Courts, the property of the Northumberland Traction Company is ordered to be sold unless a mortgage of \$400,000 is satisfied before Aug. 6. The Philadelphia Trust Company, trustee for the bondholders, is the plaintiff. Interest accrued amounts to \$89,055 and sale is ordered to be made in Philadelphia.

Rochester, Syracuse Eastern Railroad, Syracuse, N. Y.—The sale of the Rochester, Syracuse & Eastern Railroad, which was included in the system of the Empire United Railways, Inc., will take place on Aug. 28. It is expected that the property will be bid in by the bondholders and the reorganization take place at once. The bondholders' protective committee's plan for reorganization has been accepted.

Southern Illinois Railway & Power Company, Harrisburg, Ill.—The property of the Southern Illinois Railway & Power Company, of which John I. Beggs, St. Louis, Mo., is president, has been sold to the Middle West Utilities Company for \$720,000, subject to \$740,000 of first mortgage 5 per cent bonds. The company operates railway lines between Eldorado, Wasson, Muddy, Harrisburg, Domstock, Ledford and Carrier Mills, Illinois. It owns 17 miles of track.

Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio.—The Ohio Public Utilities Commission has approved the consolidation of the Steubenville & East Liverpool Railway & Light Company, the East Liverpool Traction & Light Company and the Ohio River Passenger Railway under the name of the Steubenville, East Liverpool & Beaver Valley Traction Company. The Steubenville & East Liverpool Railway & Light Company and the East Liverpool Traction & Light Company are authorized to dispose of their lighting plants to the Buckeye Power Company, and the latter is authorized to issue \$3,750,000 stocks and bonds for the purchase of the plants of the two companies. The proposed consolidation plan was referred to in the *ELECTRIC RAILWAY JOURNAL* of July 7, page 343.

Electric Railway Monthly Earnings

HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.						
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., June, '17	\$503,651	*\$245,200	\$258,450	\$217,165	\$41,285	
1 " " '16	476,959	*210,273	266,686	217,661	49,025	
6 " " '17	3,134,312	*1,455,087	1,679,224	1,303,145	376,079	
6 " " '16	2,961,214	*1,290,407	1,670,807	1,291,038	379,769	
PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.						
1m., May, '17	\$23,265	*\$18,201	\$5,063	\$7,472	†\$2,409	
1 " " '16	24,203	*16,706	7,496	7,158	337	
12 " " '17	310,441	*231,374	79,067	86,778	†7,128	
12 " " '16	299,054	*182,072	116,982	88,806	28,175	
PENSACOLA (FLA.) ELECTRIC COMPANY						
1m., May, '17	\$25,313	*\$15,644	\$9,669	\$7,801	\$1,868	
1 " " '16	23,844	*13,373	10,471	7,709	2,762	
12 " " '17	291,587	*170,101	121,485	92,990	28,495	
12 " " '16	274,438	*152,313	122,125	88,147	33,978	
PHILADELPHIA & WESTERN RAILWAY, UPPER DARBY, PA.						
1m., June, '17	\$52,185	\$27,948	\$24,237	\$12,526	\$11,711	
1 " " '16	45,420	20,295	25,125	12,530	12,595	
12 " " '17	538,137	266,770	271,366	150,472	120,894	
12 " " '16	491,488	234,818	256,669	150,349	106,320	
PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.						
1m., May, '17	\$474,433	*\$265,308	\$209,125	\$177,102	\$32,023	
1 " " '16	445,223	*256,694	188,529	181,925	6,604	
12 " " '17	5,647,205	*3,057,131	2,590,074	2,178,108	411,966	
12 " " '16	5,457,872	*3,068,941	2,388,931	2,196,617	192,314	
PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.						
1m., May, '17	\$762,662	*\$460,938	\$301,724	\$191,342	\$110,380	
1 " " '16	644,795	*415,238	229,556	181,454	48,101	
12 " " '17	8,689,133	*5,290,269	3,398,863	2,248,576	1,150,287	
12 " " '16	7,670,305	*4,911,848	2,758,457	2,196,064	562,392	

*Includes taxes. †Deficit.

Traffic and Transportation

Compromise in Fare Case

Middlesex & Boston to Give Six Months' Trial to Modified Fare Schedule Establishing 6, 7 and 8-Cent Fare Units

At a hearing before the Massachusetts Public Service Commission on July 26 it was announced that the Middlesex & Boston Street Railway, Newtonville, Mass., and most of the leading municipal representatives who appeared in the pending fare case had agreed to give a modified rate schedule a six months' trial. The conferees included representatives of Wellesley, Framingham, Lexington, Newton, Waltham and Ashland. General recognition of the company's need of additional income appeared to exist among the representatives of the principal cities and towns concerned, and the plan agreed upon is based upon the establishment of fare units according to the density of traffic. The hearing on this case, held on June 11, was reviewed on page 1114 of this paper for June 16.

The plan is not expected to solve the company's financial problem, according to a statement by A. A. Ballantine, counsel for the road, but it is accepted for the trial period as a step in the right direction. It is estimated that an increase in revenue of about \$65,000 will result from the new schedule. Six, 7 and 8-cent fares are to be charged.

DETAILS OF THE TRIAL SCHEDULE

On the Newton Corner-Newton Lower Falls line, the Newton Corner-Norumbega Park line and on the six principal lines in Waltham the fare unit will be 6 cents, no tickets being acceptable. When transferring from any of these lines to a 7-cent line, 1 cent will be charged for a transfer. A free transfer will be issued to those who transfer from one of the 6 or 7-cent lines to another. On the main lines of the company in Commonwealth Avenue, Newton, running west of Lake Street, Chestnut Hill, and on the crosstown lines in Newtonville the fare unit will be 7 cents, with free transfers to the 6-cent lines. On the Newton lines books of twenty tickets will be sold for \$1.20. No transfers will be given on such tickets.

On the Newton boundary-Needham Junction line and on the Needham-Wellesley line the unit of fare will be 8 cents with free transfers from the latter to the main line at Wellesley Square. On the Newton Lower Falls-Natick-Framingham line including the Framingham-Hopkinton line, the cash fare is to be 7 cents, with tickets sold at the rate of twenty for \$1.20. No transfers are to be issued on these tickets and passengers wishing to transfer from the Wellesley line to the Needham line must pay 2 cents for a transfer. The fare on the Cochituate and Saxonville ends of the lines in this district will be 8 cents and also on the Westboro-Hopkinton line. The company desires to establish a 7-cent fare unit on the Lexington lines with an 8-cent unit on the Lexington-Woburn line. School tickets are to be sold on all lines at one-half the unit of fare.

Far-Western Jitneys to Secure Bonds

Jitney drivers in the State of Washington will soon be able to obtain the \$2,500 bond required by State law, according to Stanley G. Morrison, president of the Morrison Company of Seattle, general agent for the Republic Casualty Company of Pittsburgh, who will write the bonds. Bonds have been issued in Spokane and Everett, and filed with the Industrial Commission at Olympia. No bonds were issued in Seattle and Tacoma before the electric railway strike ended, and the temporary methods of transportation ceased. They will be issued only to members of the Auto Drivers' Union.

The Republic Casualty Company has a capital stock of \$500,000 and a surplus of \$263,000. The admittance of the company to do business at this time is of unusual interest as the recent strikes in Seattle and Tacoma have opened a

great field of activity to the jitney. The last company that handled jitney insurance business terminated in a receivership. The jitney men tried to organize a mutual company but were unable to furnish the required security.

Jitney men in Portland, Ore., are to be bonded by the Golden State Indemnity Company of San Francisco, a company organized by jitney, taxicab and "for hire" car owners about one year ago. It is a stock company organized under the laws of Oregon, and its bonds have been approved by City Commissioner Wells. E. W. Rossman, secretary-treasurer of the Chauffeurs' Union, states that the company is fully able to write the bonds of all the jitney men in Portland. He states that the report of the operation of the company for the past six months shows that it paid all indemnity losses and expenses and had a surplus of \$4,242. The requirement of bond of \$2,500 applies to all jitneys, taxicabs and "for hire" cars in Portland.

Two Fare Units Proposed

Springfield Street Railway Asks Massachusetts Commission for Right to Establish Intermediate 6-Cent Fare Zone

In a petition to the Public Service Commission of Massachusetts, filed on July 30, the Springfield Street Railway requested authority to establish a two-unit fare program, differing considerably from previous plans to increase revenue which have been submitted to that body. The present fare unit on the system is 5 cents. It is proposed to retain this unit in the urban center of Springfield within a radius of 2 miles. Beyond this general limit a 6-cent zone will be established, followed by a second 5-cent fare zone. Thus, the sections of higher traffic density will receive a lower rate, while the suburban territory lying between Springfield and the important surrounding cities of the central Connecticut Valley will bear its proper share of the cost of service. Retention of the 5-cent fare in the urban zone of 2-miles radius also will enable the company to meet jitney competition more satisfactorily, although efforts have been under way for some time to secure an ordinance which will put the jitney traffic under satisfactory regulation.

The proposed 5-cent fare limits outward from the city are the intersection of Berkshire Avenue and Boston Road, on the State Street trunk line; the New England Westinghouse plant, East Springfield; East Longmeadow town line; Agawam Bridge; Westfield line, fare limits as at present, but transfers to be withdrawn beyond town line; Chicopee city line and Springfield Country Club. The fare will be increased to 15 cents from Springfield to Holyoke, 10 cents being charged to the Holyoke city line. A second 5-cent fare is to be collected at the Connecticut State line on both the Springfield-Hartford interurban routes. For Chicopee and Chicopee Falls, where the regular fare is to be 10 cents, the company proposes to make a concession by selling commutation tickets in lots of twelve for 96 cents. In general, the fare unit is to be raised to 6 cents on the country lines.

PRESIDENT WOOD DESCRIBES COMPANY'S NEEDS

President C. V. Wood supplemented the petition by a statement to the effect that the company is now selling transportation at less than cost and that it must obtain increased revenue or go into bankruptcy. He pointed out the following percentage increases in the price of materials since 1914: Car axles, 145; car wheels, 26 to 40; coils, 87; cold-rolled steel, 208; high-speed steel, 345; trolley wheels, 67; wire, 135; steel poles, 130; rails and coal, 100 each. Mr. Wood's statement was, in part, as follows:

"By pocketing your pride you can make last year's old straw hat do for this year, but when our rail or wire is worn out we must replace them regardless of cost. To continue to sell transportation at less than cost means bankruptcy for us, which in turn means a receiver, who will only operate such cars as show a paying return. This means a large reduction in the service. To sell transportation at a fair profit means satisfactory service for you. It will attract investors, who provide the money for new equipment and extensions, all of which means prosperity for both of us. We need additional revenue and we need your co-operation in securing it; you need satisfactory service—think it over."

Atlantic Shore Asks Increase

The Atlantic Shore Railway, Sanford, Me., has applied to the Public Utilities Commission for authority to increase its revenue by adding three fare zones. The new schedule, which becomes effective on Aug. 18, provides for an additional fare zone between Biddeford and Kennebunkport town house, one between West Kennebuck and Sanford and one between Wells and York Beach. Under this arrangement the fare between Biddeford and Sanford would be increased 12 cents, and also that between Biddeford and Portsmouth, the fare in each zone being 6 cents instead of a 5-cent unit as formerly.

It is hoped by the management that the new schedule will reduce the road's deficit, which is increasing from month to month because of the high operating cost. The business of some parts of the Atlantic Shore line shows a steady increase, while on others it is falling off owing to the great increase in the number of automobiles that are owned and operated along its lines. Besides an increased cost of from 20 to 200 per cent for materials required in the service, the increases in wages have amounted to 31 per cent within a comparatively short time. These facts are held to be legitimate reasons for higher rates.

Regulation for Auto-Bus Lines

Regulations for the control of auto-stage lines competing with electric railways and steam railroads, and giving intermittent service in competition with established stage lines, were discussed recently before the Public Utilities Commission of Utah. It was argued on the part of established auto-stage lines that regulations should be made to limit competition with concerns and individuals engaged in regular service, and automobile owners should be prevented from engaging in transportation business except on particular occasions, such as on paydays at the mines and smelters. It was suggested that the commission establish a schedule of rates to be charged.

H. F. Dicke, general manager of the Utah Light & Traction Company, Salt Lake City, declared it to be unfair to allow the auto transportation companies to enter in direct competition with the electric railways and not require them to share a portion of the expense of paving. The matter of requiring the auto-bus companies to file a bond or to take out liability insurance for the protection of the public was also discussed. Liability insurance was held by some to be preferable to a bond on the ground that recovery for accident would be quicker and more assured.

Niagara Gorge Inquiry Closed

Engineers Find Failure of Retaining Wall Due to Improper Construction and Effect of Excessive Moisture

The Niagara County investigation into the wreck on the Niagara Gorge Railroad, Niagara Falls, N. Y., near the Whirlpool Rapids on July 1, which was reviewed, in part, on page 79 of the *ELECTRIC RAILWAY JOURNAL* for July 14, was closed on July 25. The last part of the testimony was introduced by Julius Freshee, city engineer of Lockport; Charles O. Gettman, a civil engineer of Buffalo, who has been retained by the railway to reconstruct the retaining wall at the scene of the washout, and other engineers who investigated the retaining wall after the wreck. All of the engineers agreed that "the cause of the wreck was due to improper construction of the retaining wall, and the effect on it of excessive moisture and seepage."

Mr. Gettman was the principal witness at the continuation of the inquest. He said he examined the embankment on the day after the wreck and found the soil on which the retaining wall was built to be crumbled rock and earth that through the years had slid from the sides of the gorge to the river to form the bank. He said there was practically no bedrock on which the wall could have been constructed and gave as the cause of the accident "instability of fill owing to excessive moisture." The fill behind the dry stone wall was Rochester shale, a

plastic earth that when moist would seep through crevices. It was Mr. Gettman's opinion that the wall collapsed from the force of the moistened plastic fill and that it did not wash out from the base. He said there were slight traces of Portland cement. Charles R. Barnes, electric railway expert for the Public Service Commission, and his assistant, R. G. Winans of Albany, both asked Mr. Gettman if, in his opinion, it was good practice to use a dry stone wall in such a place, to which he replied in the negative. The witness said the company's tracks have been moved back farther from the water's edge since the accident and have been temporarily "shored up."

After the completion of the inquest officials of Niagara County and inspectors for the Public Service Commission made a trip over the Great Gorge route from Lewiston to Niagara Falls. The decision in the case has been reserved.

Pennsylvania Jitney Men Fined

The Public Service Commission of Pennsylvania has announced that it has imposed fines of \$100 on ten jitney operators in Scranton who had failed to obey the order of the commission requiring them to cease rendering service. The commission announced that suit will be brought in the Dauphin County Court in case the fines are not paid.

These cases were called to the attention of the commission by complaints filed against the operators. Hearings were held and orders issued by the commission that the men cease operating. An appeal was taken to the Superior Court and at the May term the decision of the commission was upheld. The jitney operators in question have refused to obey the ruling and the commission is now proceeding to enforce its order. This action of the commission indicates the beginning of a vigorous policy on its part to enforce its determinations against jitney operators, and it is expected that it will be followed by similar action in other parts of the State.

Six-Cent Fare Hearing

A petition by the Norton, Taunton & Attleboro Street Railway, Norton, Mass., successor to the Norton & Taunton Street Railway, for authority to establish a general fare increase was heard by the Massachusetts Public Service Commission on July 27. Lothrop Withington of Boston represented the company. It is proposed to raise the fare unit throughout the system from 5 cents to 6 cents.

At the hearing the company introduced evidence to show that its finances are in an unsatisfactory condition. The gross operating revenue decreased from \$66,261 in 1914 to \$64,927 in 1916; gross operating expenses increased from \$55,568 to \$64,900; taxes rose from \$1,655 to \$1,732; maintenance of way increased from \$6,009 to \$10,724; maintenance of lines increased from \$1,398 to \$1,655, while the cost of conducting transportation increased from \$17,458 to \$17,812. General and miscellaneous expense increased from \$3,908 to \$7,236 and damages increased from \$418 to \$1,080. It was stated that the company's power plant is considered too large for its service and studies have been made of the cost of buying power.

The hearing was closed, and the commission suspended the proposed fare increase until Sept. 1, pending a decision in the case.

Charge for Transfers Likely.—The Fitchburg & Leominster Street Railway, Fitchburg, Mass., considers charging 1 or 2 cents for transfers instead of a 6-cent fare in order to meet rising operating costs, according to a statement made recently by W. W. Sargent, general manager of the company.

Service Reduced Because of Labor Shortage.—The operating schedule of the Cleveland (Ohio) Railway has been reduced seventy-five trips a day, most of which were run during the rush hours. Officials of the company state that this became necessary because of a shortage of men. Street Railway Commissioner Sanders said that it would mean quite a saving to the company.

Bridgeton & Millville Fare Hearing.—The Public Utility Commission of New Jersey has fixed Sept. 13 as the date for a hearing on the application of the Bridgeton & Millville Traction Company, Bridgeton, to discontinue issuing strip tickets effective Aug. 6. The tickets are sold at the rate of six for 25 cents and fifty for \$2. The commission also suspended the effective date of the proposed change till Nov. 6 unless it decides in the meantime that the increased rate is reasonable.

One-Man Cars Suggested in Muscatine.—One-man cars have been suggested for Muscatine, Iowa, by officials of the Clinton, Davenport & Muscatine Railway, Davenport, as a method of reducing operating costs in that city, and the matter is now being considered by the City Council. J. G. Huntoon, general manager of the company, states that the road is being operated at a loss and that some means must be found to relieve the situation. A more frequent service is promised in return for permission to operate one-man cars.

Railways Lose Against Auto Buses.—Judge Trexler in the Superior Court has upheld the Public Service Commission of Pennsylvania in its recent decision granting certificates of convenience for the operation of auto-bus lines between points in Schuylkill County. The Union Traction Company, Philadelphia, and the Pottsville & St. Clair Electric Railway, Pottsville, had protested against issuance of the certificates. The court held that the bus lines were justified inasmuch as the electric railway cars are seriously overcrowded during the rush hours.

Withdrawal of Tickets Refused.—The Supreme Court of New Jersey has decided against the Trenton & Mercer County Traction Corporation, Trenton, N. J., in its move to abolish the selling of six tickets for 25 cents. In an opinion by Justice Swayze filed in the Supreme Court of that State he upholds the jurisdiction of the State Board of Public Utility Commissioners. The ruling, however, can be appealed to the Court of Errors and Appeals. The company has pending in the federal courts an action testing the ticket sale on constitutional grounds.

Chicago & North Shore Adds Freight Service.—Freight service from Milwaukee to the Great Lakes Naval Station and intermediate points, including Waukegan, Racine, Kenosha, Zion City and Libertyville, was begun on Aug. 1 by the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill. The freight traffic on this road from Milwaukee to Burlington and East Troy and intermediate points, which was begun about a year ago, is much heavier than was expected, and is opening to Milwaukee merchants a field not reached before. The traffic department expects also to announce soon such service from Milwaukee to Watertown.

More Skip Stops Proposed.—Resolutions presented to the Common Council of Detroit, Mich., and now in the hands of the committee on public utilities for consideration will, if adopted, give skip-stop operation on several of the main lines of the Detroit United Railways in addition to those now enjoying this time-saving plan. The resolutions provide for the extension of skip stops to the following lines: Grand River, Michigan, Gratiot, Baker and Mack. As noted recently in the *ELECTRIC RAILWAY JOURNAL*, this company put skip-stop operation into effect on its Fort line on July 1 and on its Hamilton line one week later. This form of service had been in use on two other lines of the system for several months.

Booklet to Commemorate Brady Medal Award.—The Connecticut Company, New Haven, Conn., has issued an attractive booklet describing the safety work of the company in commemoration of the award of the Anthony N. Brady medal to it last year. Data as to the company's operating conditions, and an account of the efforts made to reduce accidents both to the public and employees are the salient features of the text. By way of illustration a picture of the company's model steel car is inserted as a frontispiece and maps of the Connecticut Company's system are inserted in the back. The front and back covers contain respectively full-size embossed reproductions in gold of the two faces of the medal.

Universal Transfers Asked in Philadelphia.—The Northwest Business Men's Association has filed a petition with

the Public Service Commission of Pennsylvania asking that a universal transfer plan be adopted by the Philadelphia Rapid Transit Company. It is pointed out that free transfers are issued at some points, while at a much greater number of intersecting points a 3-cent transfer charge is made and that this often works an unjust discrimination. The petition concludes that "the rate of fare to all passengers who find it necessary to transfer from one of the cars of the common system to another car of the common system, in order to make a complete journey, should be a charge of not more than 5 cents."

St. Louis Traffic Statistics.—The report of the United Railways, St. Louis, Mo., for the quarter ended June 30, filed in the office of the City Register, shows fewer trips, more mileage and more passengers carried than in the corresponding quarter of 1916. The number of trips was 1,622,314, which was 18,800 fewer than last year. The mileage was 10,197,198, an increase of 161,851. The passengers carried were 63,262,929, of whom 1,107,288 were half fares. There was an increase of 2,210,276 whole fares and a decrease of 154,289 half fares. The net increase is 1,055,987. On week days the average number of cars in use was 1278, against 1259 last year; on Saturdays 1184, against 1199 last year, and on Sundays 808, against 795 last year. The city's share of the mill tax is \$63,262, against \$61,206 last year.

Controlling Autoists in St. Louis.—A campaign against reckless speeding of autos has been started in St. Louis, Mo. The *St. Louis Star* is supporting the movement, which has the co-operation of City Judge Hogan, Judge Kruger of the Criminal Court and the coroner. Chief of Police Young has instructed all patrolmen to arrest reckless drivers, and car men of the United Railways have been asked to report the license numbers of such violators. Richard McCulloch, president and general manager of the United Railways, has suggested that licensing of all drivers be based on mental and physical examinations and that accidents be a cause for revocation of permits. Mr. McCulloch said also that the extensive parking of automobiles in the downtown section of the city is not justified and is a great menace to safe transportation.

Judgment Obtained for Jitney Accident.—In a recent decision of the Washington State Supreme Court, the Pacific Coast Casualty Company, a jitney bonding company, was held liable for the death of a little girl caused by a 5-cent-fare automobile. Richard Burner, father of the child, sued the owners of the machine and the Pacific Coast Casualty Company, which had issued insurance policy on the car, for damages. Judgment of \$1,500 was obtained in the King County Superior Court, but the court ruled that the bonding company was not liable because, according to terms of the policy, it was responsible only to "persons injured." The Supreme Court held that the child was not guilty of contributory negligence, that the automobile was running faster than allowed by law, and that its brakes were defective. It held also that the bonding company was liable and affirmed the decision of the lower court in regard to the owners of the car.

Traffic Suggestions for Louisville.—A committee of the Louisville (Ky.) Automobile Club, working on a new traffic ordinance for Louisville, believes that if drivers of vehicles are permitted to make a right-hand turn when semaphores are set against them, congestion of traffic will be relieved. Now they must stop unless the semaphores register "Go." The same committee has recommended the following as a section of a traffic ordinance to control the glaring-head-light evil: "It shall be unlawful to use on a vehicle of any kind operated on the public streets of the city of Louisville, or on any street, alley or highway, whether the same has been dedicated to public use or not, within the limits of the city of Louisville, any lighting device of over 4 cp., equipped with a reflector, unless the same shall be designed, deflected or arranged so that no portion of the beam of reflected light, when measured 75 ft or more ahead of the lamps, shall rise above 42 in. from the level surface on which the vehicle stands under all conditions of load. Spotlights shall not be used except when projecting their rays directly on the ground or at a distance not exceeding 30 ft. in front of the vehicle."

Personal Mention

Charles Ruff, master mechanic of the Lincoln (Neb.) Traction Company, has resigned.

W. J. Trythall has succeeded C. B. Brunner as claim agent for the Phillipsburg (N. J.) Transit Company.

Donald Miller is president of the Boise (Idaho) Railway, which is the successor to the Boise Railroad, Ltd.

C. D. Rogers, Boston, has been elected president of the Bristol & Norfolk Street Railway, Randolph, Mass.

J. J. Callaghan has been appointed superintendent of the Oshawa (Ont.) Railway, to succeed D. A. Valteau.

William Hazen has been appointed roadmaster for the Sarnia (Ont.) Street Railway to succeed R. M. Miller.

R. J. Semsch has been appointed auditor of the Wisconsin Railway, Light & Power Company, La Crosse, Wis.

E. J. Lauder has been elected vice-president of the Grand Forks (N. D.) Street Railway, succeeding C. C. Cowran.

A. S. Guelich has been appointed auditor of the Charleston (W. Va.) Interurban Railroad to succeed H. G. Freed.

H. E. Clark has been elected vice-president of the Indiana County Street Railway, Indiana, Pa., succeeding S. L. Eyre.

A. W. Criss was recently appointed superintendent of maintenance of way for the Butte (Mont.) Electric Railway.

Thomas R. Hamer has been elected secretary and treasurer of the Boise (Idaho) Railway, newly incorporated as the successor to the Boise Railroad, Ltd.

M. S. Sloan, general manager of the New Orleans Railway & Light Company, New Orleans, La., has been made vice-president and general manager of the company.

J. B. Blaidlock has resigned as master mechanic of the Atlantic City & Shore Railroad, Atlantic City, N. J., to become connected with the Lincoln (Neb.) Traction Company.

Mrs. Sara W. Kulp has been elected president of the Shamokin & Edgewood Electric Railway, Shamokin, Pa., succeeding G. Gilbert Kulp. Mrs. Kulp is the widow of ex-Congressman Monroe Y. Kulp, who had considerable interest in the stock of the company.

Lawrence N. Siler, a mechanical and electrical engineer of The J. G. White Management Corporation, New York, N. Y., has been assigned to the engineering staff of the Manila Electric Railroad & Light Company, Manila, P. I., which is being operated by the Management Corporation. Mr. Siler is a graduate of Cornell University.

Byron T. Burt, who for the last two years has been vice-president and general manager of the Rutland Railway, Light & Power Company, Rutland, Vt., has been appointed assistant to the chief executive of the Mexican Light & Power Company, Mexico City, Mex. Mr. Burt will assist in the management of the engineering and operating departments.

H. K. Sherman, general storekeeper at the Albion shops of the Michigan Railway for the last three years, has been appointed purchasing agent to succeed G. B. Ross, deceased. Mr. Sherman was formerly purchasing agent of the Michigan United Traction Company and previous to that time was assistant to the purchasing agent of the Toledo Railways & Light Company, Toledo, Ohio.

H. R. Gore has resigned his position as auditor of the Eastern Pennsylvania Railways, Pottsville, Pa., to accept a position with Haskins & Sells, public accountants, New York, N. Y. Prior to being assigned to that company he served as auditor of the Kentucky Public Service Company, Bowling Green, Ky., both of these utilities being under the management of The J. G. White Management Corporation, New York, N. Y.

E. P. Peck, heretofore superintendent of the department of tests and repairs of the Georgia Railway & Power Company, Atlanta, Ga., has been assigned to the new office of superintendent of operation. Mr. Peck now has super-

vision not only over tests and repairs, but also over the electrical equipment and operation of all stations and substations in the Atlanta district, and has general direction of the load dispatching of the entire system.

H. H. Lunsford, who resigned on Feb. 1 as superintendent of the Southwestern Traction & Power Company, New Iberia, La., has accepted a position as district superintendent of the United States Insurance Association of Ardmore, Okla., industrial department. Mr. Lunsford was formerly connected for several years with the Shreveport (La.) Traction Company as superintendent. In his new position he will be located at Okmulgee, Okla., and have jurisdiction over several towns in that district.

W. C. Austin has been transferred from the staff of traveling auditors of The J. G. White Management Corporation, New York, N. Y., to the position of auditor of the Eastern Pennsylvania Railways. This utility furnishes railway and electric service in Pottsville, Pa., and vicinity, and is operated by the Management Corporation. For a number of years Mr. Austin was treasurer and auditor of the Otsego & Herkimer Railroad, now the Southern New York Power & Railway Corporation, Cooperstown, N. Y.

John Kelley, who for the past twenty-three years has been chief district claim agent for the Bay State Street Railway, Boston, Mass., with headquarters at Quincy, has resigned on account of ill health. Mr. Kelley was instrumental in the establishment of the Weymouth & Braintree Street Railway and was its first president. He was at one time town moderator of Braintree and is prominent in the veteran firemen's organizations. Mr. Kelley will be succeeded by Robert Jones, who will have his headquarters at Brockton.

August W. Munster has been appointed purchasing agent of the Boston & Maine Railroad, which operates the Portsmouth (N. H.) Electric Railway and the Concord & Manchester Electric Branch, Concord, N. H., with office at Boston, Mass., succeeding B. S. Hinckley, who resigned to engage in private business. Mr. Munster is a graduate of the Massachusetts Institute of Technology, class of 1904. He was formerly employed in the mechanical departments of the Northern Pacific Railway and the New York, New Haven & Hartford Railroad, and has been general storekeeper of the Boston & Maine since 1911.

G. W. Palmer, Jr., has resigned as first vice-president of the American Electric Railway Engineering Association on account of ill health. Mr. Palmer is electrical engineer of the Bay State Street Railway, Boston, Mass. He held a similar position in 1907 with the Boston & Northern Street Railway, when he was appointed chairman of the committee on car and car-house wiring of the Engineering Association. Since that time he has served on the committees on power generation, standards and power distribution and on the committee on electrolysis since its creation. Mr. Palmer was elected to the executive committee in 1913, second vice-president of the association in 1915 and first vice-president a year later.

Clyde Taylor, general counsel for the Kansas City (Mo.) Railways, has been elected vice-president of the company. Mr. Taylor has been general counsel of the Kansas City system since the resignation of John H. Lucas in April, 1916. He was formerly assistant counsel associated with Mr. Lucas during the receivership and reorganization of the Metropolitan Street Railway, Kansas City, the predecessor of the Kansas City Railways, Mr. Taylor was graduated from the University of Michigan. After practicing law for a time he acquired some experience in legal work for railroads, insurance companies and other corporations before he became connected with the Kansas City Railways. He will assume the duties of president in the absence of Col. P. J. Kealy, doing military service.

J. H. Prior, who has been chief engineer of the Illinois Public Utilities Commission, has left the service of the commission to open an engineering office in Chicago. He was assistant chief engineer of the commission previous to his appointment as chief engineer about two years ago. Mr. Prior was educated at the Armour Institute of Technology and the University of Chicago. In 1905 he was appointed engineer of design for the Chicago, Milwaukee & St. Paul Railway, and for the following nine years he was engaged

in the designing of all classes of railroad structures for that company. During one year of that period Mr. Prior made valuations of the company's structures in Minnesota and South Dakota as required by regulatory bodies in those states.

Obituary

G. B. Ross, purchasing agent of the Michigan Railway, Jackson, Mich., died at Saginaw on July 18. He formerly served as purchasing agent of the Saginaw-Bay City Railway, and in April, 1914, he was transferred to Jackson as purchasing agent for the Michigan Railway and the Saginaw-Bay City Railway.

Jesse Hough, former storekeeper for ten years in the maintenance of way department of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., died at his home in that city on July 23. At the time of his death Mr. Hough was sales representative of the National Lock Washer Company. He was fifty-seven years of age.

Frederick W. Mott, a pioneer in electric railway work, died at his home in St. Louis at the age of sixty-eight. Mr. Mott was born in New York, but moved to Missouri early in life and afterward became State Senator. He was vice-president and manager of a horse-car line in Carondelet, Mo., now a part of St. Louis, and later was instrumental in organizing the Carondelet Electric Light & Power Company.

Edward F. Wittler, one of the early electric railway promoters in Seattle, Wash., died on July 26 at his home in that city at the age of sixty-six. Mr. Wittler was connected with the Yesler cable line in Seattle before the fire of 1889, which completely destroyed the property. The line was immediately reconstructed by Mr. Wittler and his associates. He later organized the Union Trunk Line system, of which he became president. Mr. Wittler was born in Germany and came to the United States when fourteen years of age.

Albert F. Ganz, professor of electrical engineering in the Stevens Institute of Technology, Hoboken, N. J., died suddenly on July 28. Mr. Ganz was born at Elberfeld, Germany, in 1872. He was graduated from Stevens Institute in 1895 and became an instructor of physics and applied engineering there soon afterward. He was made professor and head of the department of electrical engineering in 1902. Professor Ganz contributed generously to the development of engineering and was widely known for his research work on electrolysis. He was a fellow in the American Institute of Electrical Engineers and a member of several other engineering societies.

Wilner E. Johnson, engineer of car construction, New York Municipal Railway Corporation, died of heart failure on July 27, after having had a sudden attack on May 23. Only those who were intimately associated with Mr. Johnson appreciated the ability of the man of quiet, unassuming disposition, who began his apprenticeship as a draftsman at the Fifty-second Street shops of the Brooklyn Rapid Transit Company fifteen years ago, and who rose in that period to the successive positions of chief draftsman in 1907, engineer of car equipment in 1911 and engineer of car construction of the allied New York Municipal Railway Corporation in 1913. What his employers thought of him is indicated by the fact that when his health failed in 1909 he received nine months' leave of absence with pay. In 1912, under the direction of his department head, W. G. Gove, Mr. Johnson made a most striking study of car design in relation to speed of passenger interchange—a study which has since become a model for many others. Mr. Johnson's largest achievements for his company were the detailed working out of the Brooklyn center-entrance surface car and the New York Municipal side-door car; but also as a member of the American Electric Railway Association's committee on equipment in recent years he spared no effort to make the committee's researches of real value to the industry at large. Mr. Johnson, besides being a member of the American Society of Mechanical Engineers, also took great interest in the American Society for Testing Materials, specializing in the manufacture and treatment of steel.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Boise (Idaho) Railway.**—The Boise Railway has been incorporated as the successor to the Boise Railroad, Ltd., sold under foreclosure recently. Capital stock, \$200,000. Incorporators: B. W. Oppenheim, W. E. Pierce, Thomas R. Hamer and Donald Miller.

FRANCHISES

Ithaca, N. Y.—The Ithaca Traction Company has filed a petition with the Public Service Commission asking permission to construct an extension of its railway in the village of Cayuga Heights and for approval of the exercise of a franchise received from that village.

East Cleveland, Ohio.—The East Cleveland Chamber of Commerce has recommended that the new franchise, approved by the City Council, be opposed by the electors at a referendum election. The Cleveland Railway, on the other hand, has stated that it will relay its track through the town and make all the improvements called for by the franchise as soon as possible, if a favorable vote is cast. The officers of the company desire to get the matter out of the way.

Salt Lake City, Utah.—A franchise for the construction and operation of a branch line of the Salt Lake & Utah Railroad has been granted the company by the Board of County Commissioners. The branch, in addition to connecting Magna with the main line of the electric railroad, will furnish means of transportation through sugar beet lands contiguous to the West Jordan sugar factory.

TRACK AND ROADWAY

San Francisco (Cal.) Municipal Railway.—The contract for the placing of ties and the laying of tracks for the Twin Peaks tunnel has been awarded to Eaton & Smith for a consideration of \$81,000.

Valdosta (Ga.) Street Railway.—This company has started work on tearing up the line from Pine Park to the Strickland Cotton Mills in preparation to putting in the belt line which is to connect with the West Hill Avenue line at Pear Street and with the North Patterson Street line at Ann Street. The additions and changes in the lines will open up a large amount of territory in the western part of the city, which is thickly settled.

***East St. Louis, Ill.**—A company has been organized to operate an electric railway over the Free Bridge at St. Louis, Mo. The new company contemplates leasing the right-of-way of the Southern Traction Company, which is now in the hands of a receiver. The latter company has a franchise to operate from Belleville, Ill., to East St. Louis. The incorporators are William P. Lantz, Clyde Allen and Albert E. Meints, East St. Louis, and William B. Tate, St. Louis.

Rockford & Interurban Railway, Rockford, Ill.—This company is considering the extension of its city lines in Rockford for the use of the interurban lines so that the cars of the latter can obtain entrance to the Koehler Building, corner of Mechanic and Galena Streets which the company is desirous of leasing for a freight and passenger depot.

Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind.—The city line of this company in Crawfordsville, Ind., will probably be extended south from Wash Avenue to Crawfordsville Junction on Oak Street, a distance of about half a mile.

Frankfort, Ky.—P. C. Phillip, representing an Eastern corporation which is not designated, has just completed an

inspection of the route and conditions relating to the proposed construction of an electric railway from Frankfort to Shelbyville, Ky. Two routes are proposed. Mr. Phillip made a thorough inspection, talked to representatives of organizations in both Shelbyville and Frankfort and returned East to report to his company.

Kentucky Traction & Terminal Company, Lexington, Ky. This company has completed the transfer of its track from the north side to the center of Georgetown Street as far as the city limits, and is now running cars over the new track.

Berkshire Street Railway, Pittsfield, Mass.—It is expected that this company's extension from Lee to Huntington will be placed in operation by Aug. 1.

Kansas City (Mo.) Railways.—Work will soon be begun by the Kansas City Railways on its line from Eighteenth Street and Central Avenue to Kansas Avenue. The new line will connect with the west factory center of Armourdale. It will cross the new Eighteenth Street viaduct.

United Railways, St. Louis, Mo.—The United Railways has begun cutting down trees on the De Mun tract, preparatory to building the extension of its tracks to the Hamilton Avenue line. The extension will give additional transportation facilities to Hillcrest, which is at the northwest corner of Skinker and Clayton Roads.

Southwest Missouri Railroad, Webb City, Mo.—It is reported that this company, which is constructing an extension from Galena to Baxter Springs, will extend its line to Oklahoma City.

Moncton Tramways, Electric & Gas Company, Ltd., Moncton, N. B.—This company is reconstructing some of its track in Moncton in connection with paving being done by the city.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—An extension will be built by the Trenton & Mercer County Traction Corporation to the heart of Trenton Junction. The line now extends to the outskirts of the village and the Philadelphia & Reading Railway has granted the company permission to lay its tracks in a tunnel to be built shortly.

New York State Railways, Syracuse, N. Y.—An automatic block signal system has been installed by the New York State Railways on its East Syracuse line on the single track between Greenways and the factory of the Benedict Manufacturing Company. The installation represents an expenditure of about \$3,000.

Black River Traction Company, Watertown, N. Y.—This company contemplates the construction of an extension of its system following the completion of the Court Street bridge. The extension may include a line up Washington Street with a loop to the State Street branch, provided the necessary consents can be obtained from the property owners.

Ohio Traction Company, Cincinnati, Ohio.—Hamilton County Commissioners and the Ohio Traction Company have reached an agreement to the effect that the Glendale line will be moved to the center of the Springfield Pike from Carthage to the north corporation line in Wyoming. In return for this work the company will be permitted to use the new bridge over Millcreek at Woodlawn, provided it pays the cost of the equipment. The matter of paving between the tracks is to be settled by the company and the village of Wyoming.

Wellston & Jackson Belt Railway, Jackson, Ohio.—A communication from the Hocking Valley Railway states that steam service has been substituted for electric on the Wellston & Jackson Belt Railway, a subsidiary company.

Youngstown & Sharon Street Railway, Youngstown, Ohio.—Work has been begun by the Youngstown & Sharon Street Railway reconstructing its track on East Boardman Street with "Trilby" girder rail.

Oklahoma Union Railway, Tulsa, Okla.—A communication from the Interurban Construction Company, which has the contract to build an extension of this company's line from Tulsa to Sapulpa, states that about one-third of the line is completed and it is expected that the entire line will be completed by Oct. 1.

Klamath Falls (Ore.) Municipal Railway.—Construction work has been begun by Robert E. Strahorn, Portland, on the Klamath Falls Municipal Railway from Klamath Falls to Dairy, 20 miles. [June 30, '17.]

Texas Electric Railway, Dallas, Tex.—The City Commission of Dallas has granted the Texas Electric Company the right to construct tracks and buildings for an interurban express station at Young, Market, Wood and Jefferson Streets.

Virginia Railway & Power Company, Richmond, Va.—Arrangements are being made by the Virginia Railway & Power Company for the reconstruction of a large portion of its trackage in the Barton Heights-Ginter Park section at an early date. Double-track work along First Street to the Barton Heights viaduct is practically completed.

Seattle (Wash.) Municipal Railway.—The construction of the proposed elevated municipal railway on Railroad, Whatcom and Spokane Avenues, from Washington Street to the West Waterway, Seattle, will require the vacation of franchises held by the Chicago, Milwaukee & Puget Sound Railway and the Oregon-Washington Railroad & Navigation Company on Railroad Avenue, from a point 100 ft. south of King Street to Yesler Way. A committee will be appointed by the Council to negotiate with the two companies for revocation of such franchise, and for acquiring common user rights on tracks owned by the Columbia & Puget Sound Railway. A report from the Seattle Municipal Street Railway states that it will construct an extension of Division "A" to Ballard within the next six months.

Washington Water Power Company, Spokane, Wash.—Heavy steel rails for restoring its tracks on Monroe Street between Riverside Avenue and the Monroe Street bridge will be installed at an early date by the Washington Water Power Company, preliminary to the paving of the street.

Tacoma (Wash.) Municipal Railway.—Work will be begun Aug. 1 on the construction of the new municipal line to the Todd shipyards.

SHOPS AND BUILDINGS

Sand Springs (Okla.) Interurban Railway.—Fire recently destroyed a large portion of the carhouse of the Sand Springs Interurban Railway, containing an electric motor car and six trailers. The loss is placed at \$25,000.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—The Department of Buildings, Seattle, recently granted to the Puget Sound Traction, Light & Power Company a permit for the construction of an oil storage tank, 100 ft. in diameter, at 1321 Greeley Street, to cost \$28,000. The tank will be of reinforced concrete, and will have capacity of 15,000 barrels.

POWER HOUSES AND SUBSTATIONS

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—This company will probably be in the market for a locomotive crane and 400 ft. of coal conveyor for use in its coal storage yard. In March the company purchased two seven-retort Taylor stokers, in May six 500-kw. transformers, and in June soot blowers for twelve boilers, flow meters for five boilers and a 20,000-gal. water softener.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The City Commission of Trenton, N. J., has adopted a resolution giving the Trenton & Mercer County Traction Corporation until Oct. 15 to remove its transmission cables and poles throughout the city under penalty of seeking individual indictments by the Mercer County Grand Jury. The commission claims that the company has been maintaining the transmission cables and poles without having obtained the necessary franchises.

Western Washington Power Company, Seattle, Wash.—The Hebb power site on the White River, owned by the Mountain Development Company, has been purchased by the Western Water Power Company, a subsidiary of the Puget Sound Traction, Light & Power Company, at a cost of about \$1,000,000. The plant will be held for the present as an auxiliary and a reserve plant.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent
 Rolling Stock Purchases Market Quotations Business Announcements

Plain Talk About Deliveries

A Manufacturer of Electric Railway Materials Discusses the Problems of Meeting Deliveries

BY A RAILWAY SALES MANAGER

I have read with exceptional interest the article in the *ELECTRIC RAILWAY JOURNAL* entitled "Settling for Defective Equipment" (page 1211, June 30, 1917). Other articles on this important subject would be of service to manufacturers and purchasers. You have made a suggestion in the first article whereby the purchaser, if he compiles his losses accurately, is entitled to a fair adjustment for delayed shipments. I think, in fairness to the manufacturer, it would be well to bring out another phase of the manufacturing industry, which a great many of the purchasers do not appreciate.

RAW MATERIALS NOT CONTROLLED

The majority of manufacturers do not control their own raw materials and so they have to depend upon the purchase from other raw material producers, thus, when making promises of shipment, the manufacturers must base these on the promises given by the raw material manufacturers, and in most cases the delays of shipments of electric railway materials are due to failure to receive raw materials on time.

On the other hand, if a standardized product is being sold, then delivery failures are largely up to the manufacturer if he does not carry in stock reasonable quantities of the production materials. However, in the case of turbines, large railway motors, special control, etc., there is a belief among many of the manufacturing representatives, especially of the factory and engineering sections, that the railway industry as a whole should share pro rata with the manufacturers its portion of the development cost. Therefore if the manufacturer agrees to produce something that will effect considerable economies, he should not be penalized, if, due to no fault on his part, he did not meet the promised shipments.

It should also be borne in mind that manufacturers as a rule do not delay shipments merely because of lack of attention. Most manufacturers have to wait a long time for their money, and in order to turn over their funds as rapidly as possible, they are more anxious than the purchaser to make prompt shipments; but in a great many cases the raw material producers are working on a tonnage basis, and while they will give promises of shipments of special material, they do not apparently hesitate to incur delays of thirty or sixty days if it is found that in this way their tonnage rate will be maintained or increased.

SPECIAL DESIGNS CAUSE DELAYS

A great many of the raw material producers, during the past year or so, have been very slack in keeping to their promised shipments, especially so if the apparatus is any way special. This has imposed a very severe hardship on the manufacturers. Some producers when the manufacturer complains, will politely tell him that they would prefer to cancel his order and not bother further about it, etc. The best information or advice usually obtainable is—"We are quite sure that we can make shipment on a certain date, but in these times, this, that or the other may interfere with it, etc."

With this set of conditions confronting him the manufacturer in turn will allow a margin of thirty to sixty days on the producers' promise and will make promises to his customer that the fabricated product will be shipped at a certain time, only to find later on that he has been delayed

several weeks and sometimes months by the raw material producers.

PENALTIES FOR DELAYS WON'T HELP

Of course, it might be argued that the manufacturers of the apparatus could in turn hold the raw material producers for damages, etc., but one must bear in mind that if the purchasers of the apparatus once started a systematic method of holding manufacturers for damages on account of delays in shipments, the manufacturers would naturally protect themselves in price and by longer deliveries. It is a well-known fact that the average factory will deliver according to promised shipping dates as nearly as possible. However shipping ahead of time in many instances results in holding up payment until the regular shipping date arrives because the purchaser had not provided for funds to make payment until he had received shipments. This works a financial hardship on the manufacturer.

I think the broad-minded spirit that you have suggested in your recent article is a splendid one, and I think a great deal could be written regarding the attitude of many purchasers on the question of claims of defects, etc., when as a matter of fact they are largely due to improper methods of maintenance and care, but the manufacturer has not backbone enough to tell the purchaser plainly where the difficulty lies, because he is immediately confronted with the statement that he is merely trying to step from under his responsibility and is making a big fuss over nothing.

Railways Near Cantonments Order Cars

Numerous Inquiries for Supplies—Prompt Deliveries Required on Rolling Stock Purchases—Large Demand for Second-Hand Equipment

The demands made upon electric railways in the vicinity of cantonments for immediate service, including in many instances the furnishing of light and power, are being met promptly. A number of the railways affected placed orders for equipment some time ago and are now receiving cars from the car builders. Other companies are now in the market for cars and a number of orders have been placed with deliveries promised in from four to five months. In cases where the companies cannot get deliveries in sufficient time for properly handling the traffic or have not the necessary funds to purchase new equipment, they are either remodeling old cars or buying second-hand equipment.

To take care of the traffic conditions that have been increased by the location of the new naval base at Pine Beach, the Virginia Railway & Power Company has just placed an order for twenty new steel cars. The contract calls for the delivery of these cars not later than Nov. 1. The Columbia (S. C.) Railway, Gas & Electric Company is building four semi-convertible cars for cantonment service and expects to buy four new cars. Among the companies which have purchased second-hand equipment are the Washington, Baltimore & Annapolis Electric Railroad. This company, as noted in the July 21 issue, has just purchased fifty-four trailer cars from the Long Island Railroad and has also placed an order for eight electric locomotives to be used for service to the cantonment at Admiral, Md. The Union Light & Power Company of Kansas City, Mo., recently purchased five trailers for its Fort Riley service and will place them in commission as soon as they are required. The Montgomery Light & Traction Company of Montgomery, Ala., has purchased six new all-steel, pay-as-you-enter cars and are therefore prepared to furnish a good

service to the camp nearby. The San Diego (Cal.) Electric Railway is remodeling twelve 40-ft. cars and these are expected to be finished by the time the camp is opened. A number of railways have purchased passenger trailer cars, these companies including the Kankakee & Urbana Traction Company and the Scioto Valley Traction Company.

The majority of the companies are furnishing light and power and in most cases this necessitates the building of a transmission line and the installation of transformers, etc. Although in these times the railways are striving to get along on just as little as they possibly can, the railway supply men are receiving a number of orders on account of equipping cars for cantonment service, and all this helps to liven up what otherwise might be considered a quiet season.

Railways Acquiring Coal Lands

In addition to the railways noted in last week's issue as purchasing coal mines or coal lands, the Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., is reported to have purchased a three-quarter interest in a coal mine in Logan County, W. Va., the other quarter being owned by Columbia Power, Railway & Light Company. Production is running at the rate of 300,000 tons a year. Reserves are estimated by engineers at between 9,000,000 and 10,000,000 tons.

According to the latest report of the United States Geological Survey on the weekly production of bituminous coal and the causes of loss of working time, a slight increase in the percentage of full-time capacity realized in actual output is reported for the week ended July 14. The output amounted to 77.4 per cent as compared to 76.5 per cent for the week ending July 7. The per cent of full time lost on account of car shortage for the week ending July 14 was 15.9, on account of labor shortage and trouble, 3.4, and on account of mine disability, 3.9.

Car Service Plans of War Board

Plans for the solution of present transportation problems have just been adopted by the Railroads' War Board, according to Fairfax Harrison, chairman of the board. It concerns the prompt movement of the thousands of cars required by the government to transport lumber and other supplies to the shipbuilding yards, the army cantonments and other mobilization points. The government will hereafter give advance notice to the War Board's Commission on car service whenever orders are placed for more than ten carloads of materials or supplies. It will also issue, where necessary, through its authorized representatives, orders to the railroads on which the supplies are to be shipped, instructing them to provide the number of cars ordered within the time specified and at the shipping points designated.

Effect of War on Canadian Exports

Reports were prevalent a few weeks ago that the entry of the United States into the war in Europe had stimulated to a considerable degree electrical trade with Canada. While such reports may have been true for other manufacturing industries, a careful investigation has disclosed no material increase in electrical exports to Canada. In fact, in some instances it was found that America's entry into the war was a signal for decreasing trade. A number of projects were scheduled for development shortly, but simultaneously with the entrance of America into the war these plans were either abandoned or postponed indefinitely.

Of course, it must not be lost sight of that some of the larger American manufacturers have established Canadian factories or have connections in Canada in which they have substantial interests whereby goods of Canadian manufacture but identical in design with American goods are marketed in Canada. These plants, which are largely financed by American capital and buy probably most of their raw materials from the United States, have been established in Canada as a means to compete in the Canadian market without the necessity of having to pay import duty.

Costs of Office Supplies Increase

A great deal has been written in these columns about the increases in the costs of electric railway equipment, but these costs are not the only ones which cause worry in the purchasing departments of the railways. One of the large railroad systems which operates a number of electric lines has called attention to the increases in office supplies. A good grade of water-marked bond paper two years ago sold for 7 cents a pound, but it is not possible to get this paper at double the price to-day. A few important items, all of which have been purchased in large quantities, are listed, showing prices paid two years ago, prices paid at the present time, and the percentage increase for the two years.

	1915	1917	Per Cent Increase in Two Years
Copy ink, dozen quarts.....	\$2.25	\$8.00	255
Blue ink, dozen quarts.....	2.00	4.50	125
French ink, dozen quarts.....	2.25	8.00	255
Mucilage, dozen quarts.....	2.50	4.40	76
Blotting paper, 100 lb.....	7.00	14.60	108
Manila wrap	3.60	10.05	179
Plain, per thousand.....	.51	1.27 1/2	149
Special mimo, per thousand...	.55	1.25	127
Carbon, per thousand.....	2.50	3.80	52
Paste, dozen	2.75	5.20	89
Pencils, copy grade.....	3.00	6.00	100
Folders, cap size, thousand..	3.40	7.20	112

\$7,000,000 of Porcelain Supplies Purchased in 1916

The value of porcelain electrical supplies marketed in the United States in 1916 was \$7,034,420, an increase of \$2,363,218 over 1915, according to the United States Geological Survey Department of the Interior. These wares were reported from ten states of which Ohio was the leader, reporting wares to the value of \$2,181,026. New Jersey was second, with \$1,674,093, and New York third with \$1,623,433. These three states reported 78 per cent of the value of the entire output.

NEW YORK METAL MARKET PRICES

	July 26	Aug. 3
Prime Lake, cents per lb.....	26	29
Electrolytic, cents per lb.....	26	29
Copper wire base, cents per lb.....	36	36
Lead, cents per lb.....	10 1/4	10 7/8
Nickel, cents per lb.....	50	50
Spelter, cents per lb.....	8 3/4	8 3/4
Tin, Straits, cents per lb.....	62 1/2	63 3/4
Aluminum, 98 to 99 per cent, cents per lb.....	57	56

OLD METAL PRICES

	July 26	Aug. 3
Heavy copper, cents per lb.....	24	23 1/2
Light copper, cents per lb.....	21	20 1/2
Red brass, cents per lb.....	19	19
Yellow brass, cents per lb.....	16	15 1/2
Lead, heavy, cents per lb.....	8 1/2	8 1/2
Zinc, cents per lb.....	6	6
Steel car axles, Chicago, per net ton.....	\$45.50	\$45.00
Old car wheels, Chicago, per gross ton.....	\$32.50	\$31.50
Steel rails (scrap), Chicago, per gross ton.....	\$43.00	\$43.00
Steel rails (relaying), Chicago, per gross ton.....	\$59.50	\$60.00
Machine shop turnings, Chicago, per net ton....	\$17.50	\$16.50

CURRENT PRICES FOR MATERIALS

	July 26	Aug. 3
Rubber-covered wire base, New York, cents per lb.	36 1/2	36 1/2
No. 0000 feeder cable (bare), New York, cents per lb.	36 1/2	36 1/2
No. 0000 feeder cable (stranded), New York, cents per lb.	33 3/4	33 3/4
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, Bessemer, Pittsburgh.....	\$38.00	\$38.00
Rails, heavy, O. H., Pittsburgh, per gross ton....	\$40.00	\$40.00
Wire nails, Pittsburgh, per 100 lb.....	\$4.00	\$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb....	\$5.00	\$7.00
Steel bars, Pittsburgh, per 100 lb.....	\$4.50	\$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$8.35	\$8.35
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	\$9.55	\$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	\$4.85	\$4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	\$4.65	\$4.65
Cement (carload lots), New York, per bbl.....	\$2.22	\$2.22
Cement (carload lots), Chicago, per bbl.....	\$2.31	\$2.31
Cement (carload lots), Seattle, per bbl.....	\$2.60	\$2.60
Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.12	\$1.13
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.13	\$1.14
White lead (110 lb. keg), New York, cents per lb.	12 3/4	12 3/4
Turpentine (bbl. lots), New York, cents per gal.	42	42 1/2

ROLLING STOCK

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., is in the market for twelve one-man cars.

San Diego (Cal.) Electric Railway is remodeling twelve 40-ft. cars to be used in connection with the cantonment near its property.

Northern Ohio Traction & Light Company, Akron, Ohio, through Hodenpyl, Hardy & Company, has placed an order for four 50-ft. freight trailer bodies and also for freight trailer trucks to equip these cars.

Virginia Railway & Power Company, Richmond, Va., has placed an order for twenty new steel cars with the St. Louis Car Company for delivery between Oct. 15 and Nov. 1. These cars will take care of the increased traffic caused by the location of the new naval base at Norfolk, Va.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., noted recently as being in the market for ten double-truck cars, has specified the following details for this equipment, which is being built by the St. Louis Car Company:

Number of cars ordered.....10	Fenders.....H. B. life guards
Date of order.....April, 1917	Gears and pinions.....Nuttall
Date of delivery.....Sept., 1917	Hand brakes.....Peacock, no staff
Builder.....St. Louis Car	Heaters.....Peter Smith Electric
Type.....Semi-convertible	Headlights.....Ohio Brass ZP.
Seating capacity.....52	Journal boxes.....Symington
Weight (total).....33,900 lb.	Lightning arresters.....West.
Bolster centers.....17 ft. 0 in.	Motors..West. No. 506—C2,
Over bumpers.....42 ft. 0 in.	inside hung
Over vestibule.....41 ft. 0 in.	Paint.....Builders standard
Width over all.....8 ft. 7 in.	Registers.....International
Rail to trolley base...11 ft. 3 in.	Sanders...Keystone traps and
Body.....Semi-steel	Ohio brass valves
Interior trim,	Sash fixtures...O. M. Edwards
Birch stained light cherry	Seats, style.St. Louis reversible
Headlining.....Agasote	Seating material.....Rattan
Roof.....Arch	Springs.....Standard steel
Air brakes.....West. D-H-10	Step treads.....Feralun
Axles.....Baldwin	Trolley catchers.....Ohio brass
Bumpers.....Channel	Trolley base.....U. S. No. 15
Trimmings,	Trolley wheels.....Moore Jones
Bronze statuary finish	Trucks, type..9 cars, Bald-
Conduits.....Crouse-Hinds	win No. 66-18-C; 1 car, St.
Control type.....West. K-12A	Louis Car No. 119-B.
Couplers.....None	Ventilators.....Garland
Curtain fixtures...Ring No. 88	Wheels...9 cars. 30-in. rolled
Curtain material...Pantasote	steel; 1 car, 30-in. Davis
Dest. signs.....St. Louis Car	Special devices...Forsyth Bros.
Door mechanism...St. Louis Car	beadless brass sash, with brass
Fare boxes.....Cleveland	side weather stripping

TRADE NOTES

J. H. Flynn has been appointed manager of the bucket department of the Blaw-Knox Company, effective July 1.

Thomas Henderson has retired from the Coxe Traveling Grate Company to become chief engineer for the Benjamin Iron & Steel Company.

Alfred Spangenberg has resigned from the S. L. Moore & Sons Corporation, Elizabeth, N. J., to accept a position as superintendent of the ordnance shop of the Mead-Morrison Manufacturing Company.

Stephen Gardner for thirteen years connected with the sales office of the Westinghouse Electric & Manufacturing Company, has resigned to accept a position as treasurer of Greenlee Foundry Company and its allied companies.

Davis-Bournonville Company, Jersey City, N. J., announces that on Aug. 1 it will open a school at its plant for the instruction in oxy-acetylene welding and cutting practise of purchasers of its equipment.

Singer, Reed & Taylor, Pittsburgh, Pa., have opened offices at 304 Wabash Building and will handle the sale of iron, steel, alloys and scrap metals.

National Association of Purchasing Agents, New York, N. Y., will hold its annual congress at Pittsburgh, Oct. 9, 10 and 11. The program includes business sessions for the mornings and visitation and inspection of industrial works during the afternoons.

John F. Card, for the last eighteen years superintendent and designing engineer of direct-current machinery for Fairbanks, Morse & Company at Three Rivers, Mich., has resigned to go into the manufacturing business on his own account.

W. J. Gillingham has been elected vice-president of the Hall Switch & Signal Company with headquarters in New

York City. He has been connected with this company since 1900, holding the positions of general agent, resident manager and general sales agent respectively.

Phillips Wire Company, Pawtucket, R. I., announces that the business operated as the Phillips Insulated Wire Company will hereafter be conducted under the name Phillips Wire Company. The location of the business, policy and management will be the same as heretofore.

Ingersoll-Rand Company, New York, N. Y., announces that at a meeting of the board of directors on July 25, J. H. Jowett, formerly general sales manager, was elected vice-president and that L. D. Albin, formerly assistant general sales manager, was appointed general sales manager. Mr. Jowett and Mr. Albin will continue to make their headquarters at the company's New York office, 11 Broadway.

Laclede-Christy Clay Products Company, St. Louis, Mo., announces that it has recently acquired the long-established plant and good-will of the Beaver Valley Pot Company of Rochester, Pa., and will operate this department hereafter as the Laclede-Christy Company of Pennsylvania, Rochester, Pa. The company intends that its new product, L-C Beaver Valley Pots, shall enjoy an equal reputation with the L. C. company's tank blocks, bottom blocks, checkers and bonding clay.

NEW ADVERTISING LITERATURE

General Electric Company, Schenectady, N. Y.: A leaflet descriptive of automatic control for small direct current motors.

Crocker-Wheeler Company Ampere, N. J.: Bulletin 181 superseding bulletin No. 156. Contains detailed information on motor-generator sets for all classes of service to which they are applicable.

Portland Cement Association, Chicago, Ill.: A booklet on "Bulk Cement," advising the common sense and economy in the use of this product. Describes and illustrates the various uses of this material and includes a number of users of bulk cement.

Chicago (Ill.) Pneumatic Tool Company: Bulletin No. 137 on its Chicago giant rock drill. Contains dimensions, weight, shipping measurements, prices, details of parts and illustrations of a number of jobs which have been completed with this type of drill.

Edison Storage Battery Company, Orange, N. J.: Bulletin No. 600 on Edison storage batteries for industrial transportation. Describes and illustrates various applications of this battery. Contains general data and dimensions of batteries with details of costs.

Horne Manufacturing Company, Brooklyn, N. Y.: Bulletin on Sterling trolley bases, also a new bulletin describing miscellaneous electrical equipment that this company has acquired since taking over the Lord Manufacturing Company's business on the first of the year.

Crouse-Hinds Company, Syracuse, N. Y.: Bulletin No. 303 on Imperial floodlight projectors and reflectors. Gives in detail its type SD projector which is made in three sizes to be used with 9 $\frac{1}{2}$ -in. 12-in. and 16-in. reflectors and its type SC projector made only for use with a 16-in. reflector. Special and diffusing lenses are included. Mountings, lamps, resistances and special parts are described and listed. Full page illustrations showing scientific and practical arrangement of floodlight projectors for factory protection are given.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.: Reprint No. 56 of the "Norfolk & Western Electrification from the Railroad Viewpoint." Contains two papers, the first "An Unusual Railway Electrification," by A. H. Babcock, consulting electrical engineer of the Southern Pacific Company. This paper was delivered before a recent meeting of the San Francisco section of the American Institute of Electrical Engineers. The second paper is by C. H. Quinn, chief electrical engineer of the Norfolk & Western Railway, which was read before the New York Railroad Club at its annual electrification meeting. In one of the final paragraphs on the results of electrification comparisons are given of electric and steam operation, showing the many economies in favor of the electrification scheme.