

Electric Railway Journal

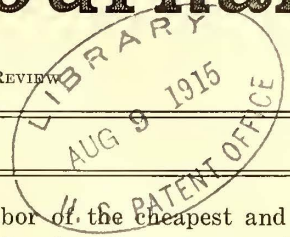
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GUARDING ADMISSION TO OPERATING DEPARTMENT The second article of Dr. H. E. Fisher on the medical methods of the Elevated Railroads of Chicago, published elsewhere in this issue, presents a strong and vividly illustrated argument for the thorough physical examination and rigid method of selection of trainmen. Although the importance of accepting for railway operating service only those who are physically fit is generally recognized in theory, this principle has not always been carried out in practice owing to the lax methods employed in examining applicants for physical defects which are not at first apparent. It is pure folly, from a financial standpoint, for any railway company to entertain the possibility, through slipshod physical examinations, of risking the lives and safety of its patrons in the hands of motormen afflicted with heart trouble or any other ailment liable to produce sudden disablement. Rejection may be a hard blow to the motorman who has previously served without mishap on another road which was less particular, but his former experience cannot counteract the unfairness of the latent danger to the public and loss to the company. The operating department cannot be treated like an old clothes basket but should avail itself of the services of an experienced medical man who is not so overburdened with other work that he cannot render conscientious examinations. We understand that Dr. Fisher's first article, which appeared in our issue of June 26, attracted wide attention from operating and medical men connected with electric railway systems. The one this week should be equally instructive.

TRACK CONSTRUCTION AND WORKMANSHIP Essential to permanent track construction in which extreme care has been exercised in the choice of materials and design is skilled workmanship. Frequently this important element is neglected to minimize first cost, but greatly to the disadvantage of the life of any installation. Slighted workmanship, like the use of inferior materials, must be paid for by increased maintenance costs. Perhaps the pavement, which is a burden the track must bear although it is of no value in the operation of a street railway, is the most typical example of slighted workmanship. As a rule, in pavements which are laid by railway companies, extraordinary care is exercised in the selection of the materials to be used and in the strictness with which concerns furnishing materials are required to adhere to dimensions and finish. After extreme diligence has been exercised in this respect, however, many companies conclude that nothing further is necessary to secure first-

quality results. Often labor of the cheapest and most unskilled kind is employed to lay the pavement. While the choice of materials and strict adherence to dimensions will, to a certain extent, affect the workmanship obtained from inferior labor, it will not produce the results that skill will obtain with the same material. A wide variation in the life of various types of pavement, not particularly as regards wear but as regards maintenance, is found on different properties. Undoubtedly this result may largely be attributed to the character of workmanship in laying the pavement rather than to the choice of materials and design. Common labor without experience should not be expected to produce a first-quality pavement, and neither should ordinary laborers who become skillful pavers be expected to become permanent employees at minimum day wages.

THE COST OF PEAK-LOAD POWER

A reference was made in an editorial in the issue of July 31 to generated energy that cost more than 50 cents per kilowatt-hour, and although this applied to a combined lighting and railway load subject to extreme seasonal variations as well as to high interest charges on distribution equipment, the extraordinary cost is well worth consideration in connection with properties operating only electric railways. Of course, such a figure is hardly possible in plain railway service, but it is a fact that even under normal conditions the generally accepted value of 0.8 cent per kilowatt-hour is wholly inadequate to express the cost of some of the energy that is consumed. Consider, for example, the daily peaks of a railway load in which the load line is of the same general form day after day. Upon the basis of the charges that are common for purchased power, these being probably as low or lower than those that would be involved if the railway generated its own power, and with a peak measured arbitrarily by averaging maximum morning and evening hours, all of the energy consumed in excess of the average demand of the adjoining hours would cost at least 2 cents per kilowatt-hour. If the afternoon peaks exceeded the morning peaks, one-half of the excess would cost 3.7 cents per kilowatt-hour, these costs being based on the customary rates of \$1 per month per kilowatt of demand, plus 0.4 cent per kilowatt-hour for energy actually consumed. It is through the seasonal variations, however, that power costs reach a real maximum, as the peak for one winter month will usually exceed those of adjoining months by several per cent. Under this condition the excess energy consumed during the daily peaks of the high month (even assuming inappreciable

variations from day to day and between night and morning) will cost some 25 cents per kilowatt-hour. The one thing, in fact, that saves the situation is that the energy which thus has to be supplied at high cost constitutes only a small proportion of the whole.

SPECULATION BY DIRECTORS

The New York Times *Annalist* in recent issues has been publishing an unsigned symposium of ideas in regard to the duties of directors in relation to buying and selling shares of stock of their own corporations. We were interested to find that although each of the men consulted had a fairly well-defined opinion regarding the proper practices in such a case, none came out with a ringing statement of a clear-cut standard of conduct to govern market transactions by directors. Each man expressed his personal opinion—some favored unlimited buying but condemned short selling, and others upheld all acts not known to be injurious to other stockholders. Almost all, however, seemed to be struggling in an apologetic manner with a subject about which little has been said publicly by corporate leaders and for which none desired to be the first to define the limits demanded by sound ethics. It seems to us that where so few positive statements are available and where none desires to sign his name in defense of acts that he thinks might be condemned, there is an opportunity for missionary work of a clear-speaking sort.

Two examples occur to us of the laudable in directorate affairs. In the above-mentioned review President Shaughnessy of the Canadian Pacific Railway was not loath to state emphatically under his own name that from the beginning of his company it was understood that no director should speculate in the stock market or take advantage of any information secured in advance of other stockholders by virtue of his membership on the board. No qualifications can be found in this platform. The second incident which we have in mind is the recent resignation of William B. Hibbs from his directorship of the Washington Railway & Electric Company and other public utility corporations. As a broker Mr. Hibbs was called upon to buy and sell securities of the several companies of which he was director, thus being placed in an embarrassing position and sometimes subject to criticism. His withdrawal is not proof that he could not maintain a rigid separation of his functions as broker and director but rather a praiseworthy recognition of the broad ethical precepts making the maintenance of such a position inadvisable.

The vital point underlying these examples—and a point also which the quoted directors in the *Annalist* by their very anonymity seemed to emphasize—is that there is in existence, though not entirely crystallized, a sound public opinion against the propriety of speculation or even the appearance of possible speculation by directors. Little hesitation would be shown by the public in condemning directors who used their office for personal aggrandizement to the detriment of other stockholders. For this reason publicity would be an

acid test for all acts of directors. If every director were required by law to publish to the stockholders all his transactions in the corporation's securities, so that it might be known whether he profited by prior sales or otherwise while other owners lost, the temptation of speculation would, we think, be removed. While such a provision may never become law, we would advise directors to hold it up before themselves for their moral guidance. He who would recoil from such a public test would do well to set up ethical standards of a more certain propriety.

NEW TECHNICAL TERMS IN HEAVY ELECTRIC TRACTION

The coinage of new technical words and phrases and the addition of new meanings to existing electrical terms are going on at a tremendous rate, for every new development brings with it an array of new equipment and operations which must be discussed. The new terms are likely to be suggested hastily, but so urgent is the need for them that the first proposal may easily find its way into popularity, and usage fixes it for a time. Take, for example, that flexible and ubiquitous word "jitney." Of uncertain origin it appeared in the West as synonymous with nickel. Next it becomes an adjective largely appropriated by a certain, or rather uncertain, type of motor car, then by buses of more pretentious size. Next it becomes a noun again, meaning a certain type of vehicle. What it will mean next, nobody knows.

Another word is pantograph, which is occasionally spelled "pantagraph," although the former spelling is preferred by both the Century and Webster's dictionaries. This word comes from two Greek words meaning "all" and "write," and is the name of a very old instrument for the mechanical copying of engravings, diagrams, plans, etc., either upon the same scale or upon a reduced or enlarged scale. With this meaning it occurs in a number of languages in substantially its English form. Recently the word has been applied to a collapsible frame used in collecting current for certain types of electric cars and locomotives, the form of which suggested the form of the drawing instrument, although the significance of the name is lost. This is said, not to criticise the new use of the word, for the word may be as good as any for the purpose, but to point out the trifling nature of the origin of a new meaning for an established word. This is the way of all but dead languages, and we must reckon with it.

At the recent A. I. E. E. convention, C. J. Hixson discussed, among other subjects, the need for careful definition of terms used and needed in connection with electric railway contact systems. In general we agree with his suggestions, but not when he states that "common usage seems to have already classified trolley wire collectors into wheel trolleys, roller trolleys and slider trolleys." Now with all respect to common usage, whose absolute sway in the formation of language the ELECTRIC RAILWAY JOURNAL respectfully owns, it seems that the A. I. E. E., which presumably has considerable in-

fluence with common usage in its field, ought to remonstrate before it is too late. "Slider trolley" breaks loose from all convention and ignores the history as well as the later uses of the word "trolley." Trolley was originally a costermonger's cart, then a small truck or car for running on tracks in a rolling mill, then a little truck for collecting current from overhead wires, finally specializing, according to the Century dictionary, into "a metal roller or pulley arranged to travel over, upon, and in contact with an electric conductor suspended overhead and connected with a flexible conductor or trolley pole for conveying the current into the motor circuit on an electric car." The "Electric Railway Dictionary," published in 1911, also preserved the distinction between a revolving contact device for use by cars, like the trolley, and a sliding contact device, like the bow collector and the conduit plow.

We admit that engineering usage in the past has been somewhat loose in this matter, and we ourselves may not always have been consistent in the use of all of these terms. Nevertheless, it has always been the aim of this paper to exert its influence in the direction of exact and correct terminology, and it appreciates the rapidly increasing efforts which are being made by technical societies to conserve effort and prevent misunderstandings by means of careful definition. In the early stages of an art a certain amount of looseness of expression can be pardoned, but as methods and apparatus become more standardized it is the duty of all to unite upon a common nomenclature. It is to be hoped that the A. I. E. E. standards and railway committees will consider Mr. Hixson's suggestions and recommend such terms as will enable us to say exactly what we mean in a reasonable number of words.

THE BLUE HILL FARE DECISION

A consistent policy with respect to the encouragement of electric railway earnings is evidenced by the recent decision of the Massachusetts Public Service Commission in the Blue Hill Street Railway fare case, abstracted elsewhere in this issue. Recognition of the needs of struggling companies by the board was so well set forth in its notable Middlesex & Boston decision last fall (ELECTRIC RAILWAY JOURNAL, Nov. 7, 1914, page 1055) that the finding just announced in the Blue Hill case is the logical outcome of the former. In certain aspects, however, the Blue Hill case has unusual features, and the treatment of these by the commission is most illuminating.

The road is a small one, serving probably less than 20,000 local residents in the outer suburban territory lying around Mattapan Square, Boston, the Blue Hills, Milton, Canton and Stoughton. Its total trackage is about 20 miles, and the length of the main line only about 12 miles. Built by Stone & Webster fifteen years ago and ever since managed by these interests, the property has rendered valuable service to the public, but it has never been able to earn a dividend, despite the most careful operation. With a gross annual revenue of about \$93,000 the company meets its operating ex-

penses and bond interest but has been unable to make any consistent appropriation for depreciation. On pleasant Sundays in the summer it is almost overwhelmed with traffic, but at other times earnings are small, due to the low density of population, to the increasing use of automobiles and to steam railroad competition.

The company asked the commission for a fare increase which would yield an estimated additional revenue of about \$11,000 per year, the most important feature of the proposed tariff being the establishment of an 8-cent fare unit in place of the existing 6-cent rate. A short investigation was sufficient to demonstrate the company's need of additional revenue, but in carrying out its proper conception of responsibility to the public the commission made a very careful study of the finances of the road, setting forth its reasoning and deductions with as much care as though the system were twenty times as large. Instead of authorizing the use of an 8-cent fare unit, however, the commission added a fourth zone and thus made the fare from terminal to terminal 21 cents instead of the previous 18. The establishment of this zone enabled the board to standardize a 5-cent fare unit in three zones, retaining the 6-cent unit in the zone nearest Boston, which compensates for various inequalities in distance or traffic as outlined in the abstract. The establishment of two-part tickets for use at all hours between certain residential and industrial points on the southern part of the road was deemed preferable to the issuance of workmen's tickets good only at night and morning. Such a differential fare arrangement is most interesting, and would seem to be highly appropriate under the conditions as a means of providing for short rides at relatively low cost to the passenger while affording the company the increased income essential to its service.

As in the Middlesex & Boston case, the board dismissed reproduction cost as the touchstone of value upon which to figure rates, adhering to the actual investment for this purpose, safeguarded as the public has been by the Massachusetts anti-stock-watering laws for many years. In this connection, the remarks of the commission upon accrued depreciation are well worth reading, for the board emphatically holds to the idea that the public should pay for the wear and tear upon the property, and for its deterioration in its service, no matter whether that depreciation is met early or late, by a road honestly and capably managed, and which has been unable to set aside funds for this important function by reason of its paucity of revenue. Another interesting point is the selection of a sum representing the principal upon which the return is to be earned on a total lower than the company has shown to be correct but which still demands a substantial increase in rates before the proper charges can be met. By taking a sum thus so much to the advantage of the remonstrants to the increase and clearly demonstrating the inadequacy of the existing rates, the board leaves no opening for disagreement among those opposed to the increase as to the justice of its finding.

Examining the Physique of Chicago Elevated Employees

The Author Treats of the Methods Employed for Determining Physical Fitness and Emphasizes the Importance to the Traveling Public of Thorough Physical Examination of Applicants and Employees

BY H. E. FISHER, M. D., SURGEON ELEVATED RAILROADS OF CHICAGO, ILL.

After the sight, hearing, color perception and mentality of an applicant or employee of the Elevated Railroads of Chicago have been examined he should pass a series of practical physical tests. To give a thorough examination, it is essential to have the applicant stripped, at least down to the waist line. This permits the examiner to have a better opportunity to obtain information which otherwise would be lost. It is not always practicable or feasible to strip a man, but it is important that he bare his chest and abdomen. In the examination of the heart and lungs it is necessary to get down to the skin surface to hear clearly the various chest sounds. It is folly and poor practice for a physician to try to examine a man's heart or lungs through a number of layers of heavy clothing. These deaden the chest sounds, and the delicate murmurs of the heart and the râles of the lungs are lost. The right and wrong ways to examine the heart and lungs are shown in the two accompanying illustrations.

I recently had the foregoing fact illustrated in the case of a man who had been examined and accepted for promotion to motorman on a high-speed interurban railroad. Later I had an opportunity to examine this man for a position as guard. With his chest bared, a dangerous organic heart lesion was found by using a stethoscope, much to the embarrassment of the applicant.

Failing to understand how a railroad examiner would pass such a dangerous risk for the hazardous work of a motorman, I questioned the applicant. He informed me that the doctor had made the heart examination with his ear and through the clothing, and I quickly understood how the heart lesion had been overlooked. That error in technique on the part of the medical examiner might have resulted in a serious accident in case the motorman had heart failure while driving his car. This applicant offered strenuous objection to baring his chest when I examined him because, no doubt, he was aware of his heart condition and knew that an examination with the chest exposed would result in his being refused employment.

EXAMINATION OF HEART

In the medical office of the Elevated Railroads of Chicago the applicant's or employee's heart is carefully examined with the latest instruments. The condition of the heart valves, presence or absence of heart lesions, character of the heart and pulse beats, position of the heart apex, whether normal or displaced, the relative size of the heart and any pathological changes in the heart as indicated by the various characteristic sounds are carefully recorded.

A rapid beating of the heart found at the time of



CHICAGO ELEVATED PHYSICAL EXAMINATION—IMPROPER METHOD OF EXAMINING HEART AND LUNGS



CHICAGO ELEVATED PHYSICAL EXAMINATION—PROPER METHOD OF EXAMINING HEART AND LUNGS

examination may often be attributed to some heart defect when, in fact, it is due to the nervous state of the applicant when the heart tests are made. It is always better practice to put off the heart tests until near the end of the examination. By that time the applicant's excitement has disappeared and the real status of the heart can be obtained.

Any heart lesion is good cause for rejection of an applicant. It is imperative that the heart be normal or nearly so to minimize the risk to the passengers. All motormen should have normal hearts to avoid the chance of their losing control of their trains due to a heart failure. Some may say strictness in this particular is unnecessary because the installation of the "dead man's control," which, if an accident occurs, will bring the train to a stop. Too much reliance for the protection of passengers and property, however, should not be placed in mechanical devices, because they sometimes fail at the critical moment.

In re-examination of old motormen a weak heart should receive careful consideration. Such a man is a dangerous risk to put in charge of the front end of a train. He should be relieved of his responsibility and be appointed to a less hazardous position where he can make a good living. Sentiment in this respect and willingness to take a chance that an old motorman's heart will not fail him open the way to a serious accident. It is far better to reduce one motorman with a defective heart than to allow him to continue work which may not only result in his own death but jeopardize the lives of the passengers on his train. Some medical examiners, upon finding a motorman's heart defective, believe it can be remedied and recommend a leave of absence to undergo treatment. When the motorman's heart has improved he is permitted to resume his former duties. To my way of thinking such practice courts disaster and should not be tolerated.

When an employee returns from sick leave on account of rheumatism, gout, contagious or infective diseases his heart should be examined before he is permitted to resume his duties. All employees who have been sick for more than one week are examined before they are allowed to return to work.

PULMONARY LESIONS AND RUPTURES

In the examination of the lungs the presence of pulmonary lesions, such as tuberculosis or chronic bronchitis, are sought. An applicant suffering from tuberculosis should be rejected and urged to secure medical advice and treatment. Those affected with this disease should not be permitted to serve the public, because they are a constant menace to the good health of others. Experience has shown that there is no better habitat for the tuberculosis germ to get in its deadly work than in a closed car, especially in the winter time. The danger of this disease to those afflicted with it is increased when they work where they are exposed to quick changes of temperature and humidity.

Recently the author was asked to allow an employee who had been under the care of a physician for tuberculosis to return to work as a guard. The employee's physician had advised that the outdoor life on the elevated railway would be of great benefit, and besides the employee needed money and it was necessary for him to return to work. Permission was granted to try the work for a short while, but the employee was obliged to give it up because his physical condition grew worse. This example is typical of all cases of this kind. Outdoor work on a street car in the Central States, where weather and temperature changes come in rapid succession, is not beneficial for those with tuberculosis, and they are always a menace to the public.

Continuing with the examination of an applicant, it is also important to ascertain whether a rupture is present. Tests for rupture are so easily performed and so quickly accomplished that there is no excuse for allowing this part of the examination to be slighted. Neglect in this particular has led to suits for damages for a rupture alleged to have been received in an accident after an employee had entered the service, when in fact the rupture was of long standing and should have been discovered before he was given employment. It is true that surgeons often can distinguish between a recent rupture and one of long standing, but this is not always reliable. It is far better practice to be on the safe side and examine each new man thoroughly before he is engaged.

In regard to the claims for damages for ruptures alleged to have been received while in the employ of a company, the author knows of three cases which are being tried at the present time in the courts. In two of these cases no examination was made at the time of giving employment, and in the other case the surgeon did not examine for rupture. Medical testimony, also, bears out the point that the ruptures were of long standing and not of recent origin, but this was insufficient to throw the cases out of court.

All shopmen, road department men, electrical men and ordinary laborers who are permanently engaged should receive a careful physical examination at the time they enter the service and at three-year intervals thereafter. This will furnish a record of their physical condition, and in case any employee meets with an accident, proof is at hand to determine whether the accident caused the injury, whether they were predisposed to such an injury, or that the defect was present when they were first employed by the company.

Employees in the electrical department, particularly linemen, should have practically normal hearts. Experience has demonstrated that a man with a weak or defective heart cannot stand an electrical shock so well as a man with a normal or strong heart. A shock which would not necessarily be fatal to a normal heart has in many cases been sufficient to cause the death of men with defective hearts.

PHYSICAL CHARACTERISTICS AND AGE

Trainmen, and in fact all employees in the transportation service, should be at least twenty-one years of age and at least 5 ft. 6 in. in height. The only exception to this age should be in the shops where apprentices are employed. In the train service a man of youthful appearance does not command respect. Passengers like an older man, and, moreover, the rowdies are more prone to start trouble when a boy is in charge of the train. Youths are not disposed to be careful of themselves and passengers and are inclined to take greater risks than their seniors. Some may contend that this is a debatable question and claim that young men often make better trainmen than old men. I am satisfied that this is not generally true, but of course there will be instances where boys were geniuses, born to be trainmen. The older men are conscientious in the discharge of their duties, because in most cases they have families dependent on them and they cannot afford to take risks which might jeopardize their position or their pay envelopes. Before the age of twenty-one years few men look upon life seriously, and the youthful trainmen often do not care whether they hold their jobs or not. Moreover, younger men of the class from which trainmen are selected are not always as steady workers as older men, and they change from one position to another.

Undersized men, while a valuable asset in other walks of life, are not desirable in the train service. Trainmen

of this class have difficulty in reaching the bell and register cords, and they are obliged to stand on the seats to open ventilators. In a crowded car the small men may occasionally find it impossible to see their signals, fares or streets over the heads of their passengers. On a crowded car platform the short conductor is often unable to see that passengers have safely alighted but takes a chance and gives a hasty bell signal which may cause an accident. Moreover, the small man is often imposed upon by those prone to make trouble, because trainmen of diminutive stature do not command the respect that trainmen of normal or large size do. Although the small man frequently has greater courage than the large man, the disadvantage to which he is put on account of his size more than counterbalances this advantage.

OTHER MATTERS TO CONSIDER

Tests of the various nervous reflexes should be made to ascertain the absence or presence of serious nervous diseases. It is useless to dwell on the subject of rail-

may necessitate the payment of damages. On the other hand, care in this respect might have obtained a record of an old fracture which really contributed to the break because the leg was not so strong as, without the previous fracture, it should have been.

INFECTIOUS OR CONTAGIOUS DISEASES

Personal appearance was discussed in my first article, published in the issue of the ELECTRIC RAILWAY JOURNAL for June 26. In this article it was also stated that men with infectious or contagious diseases should not be employed. This suggestion applies particularly to those afflicted with venereal or specific diseases, because they may be conveyed to passengers with transfers or money. Any man in the acute stages of a venereal or specific disease should be relieved from duty and advised to secure competent medical treatment. In the case of employing new men, should their examination show diseases of this nature, they should be disapproved. These conditions reduce the efficiency of the man and are often the cause of fainting fits or convulsions. Any man addicted to alcohol or drugs, especially when there

MEDICAL EXAMINER'S CERTIFICATE

1 Name of Applicant _____ Address _____

2 Address of Applicant _____

3 Age _____ Yrs. Weight _____ Lbs. Height _____ Ft. _____ Inches Color _____ Sex _____

4 General Development _____ General Appearance _____

5 Chest Measure (Full Inspiration) _____ Inches (Full Expiration) _____ Inches

6 Abdominal Measure _____ Inches

7 Patellar Reflex _____ Right knee _____ Left knee Reflex Elbow _____ Right _____ Left _____

8 Blood Pressure _____ Systolic _____ Diastolic _____

9 Note any Defect in the _____

10 Hands and Arms _____ Spine and Joints _____
 Feet and Legs _____ Groin _____
 Head, Face and Neck _____ Skin _____
 Eyes and Eye Lids _____ Blood Vessels _____

11 Heart _____ Number of Pulse Beats _____ per Min. _____ Number of Respirations _____ per Min. _____
 Character of Pulse _____ Lung _____ Character of Respirations _____
 Position of Aortic Beat _____ Auscultation _____ Percussion _____

12 Lungs _____

13 Abdomen _____ Appearance _____ Pupillary Reflex _____ Right Eye _____ Left Eye _____
 Size _____ Sight _____ Right Eye _____ Left Eye _____
 Percussion _____ Hearing _____ Right Ear _____ Left Ear _____

14 Special Senses _____

10 REMARKS: General Intelligence, Cachexia, etc _____

14 Test of Urine Passed by Patient in Presence of Examiner _____
 Color _____ Odor _____ Appearance _____ Reaction _____
 Specific Gravity _____ Albumen _____ Sugar _____ Sediment _____

REMARKS: _____

17. Reason, if Application is not Recommended for Approval: _____

I certify that I have carefully examined the applicant named herein, and that the above is a correct description of his physical condition, and I hereby _____ recommend the approval of his application, (do or do not) _____

Place and date of examination _____ 191__ Signature _____ Medical Examiner.

CHICAGO ELEVATED PHYSICAL EXAMINATION—FORM OF TRAIN SERVICE EXAMINATION

road employees who have perfect use of their limbs. No man should be taken into the train service who has lost a leg or an arm or who is crippled so that he cannot get about freely. Agility is the watchword of "safety first." Men who have lost a leg or an arm in the service should be given employment, possibly as flagmen at street crossings, providing, of course, that their sight and hearing are good. Flagmen whose duties include the operation of crossing gates should have unrestricted use of their legs and arms. Experience has demonstrated that accidents often occur at crossings guarded by crippled men and, in addition, the company may be held for negligence because its employee was not in good physical condition.

All applicants should be carefully examined for old fractures or broken limbs. Frequently a trivial accident will result in breaking an employee's arm or leg which

MEDICAL EXAMINER'S CERTIFICATE

1. Name of Applicant _____ Address _____

2. Employed as _____ Applicant for Position as _____

3. Age _____ Years. Weight _____ Lbs. Height _____ Ft. _____ Inches. Color _____ Sex _____

4. General Development _____ General Appearance _____ Mentality _____

5. Chest Measure (Full Inspiration) _____ Inches. (Full Expiration) _____ Inches. Abdominal Measure _____ Inches.

6. Note any Defect in the _____

7. Hands and Arms _____ Spine and Joints _____
 Feet and Legs _____ Groin _____
 Head, Face and Neck _____ Skin _____
 Eyes and Eye Lids _____ Blood Vessels _____

8. Abdomen _____

9. Heart _____ Number of Pulse Beats _____ per Min. _____ Number of Respirations _____ per Min. _____
 Character of Pulse _____ Lung _____ Character of Respirations _____
 Position of Aortic Beat _____ Auscultation _____ Percussion _____

SIGHT			HEARING		
ACUTENESS OF VISION WITHOUT GLASSES	RIGHT EYE	LEFT EYE	ACUTENESS OF HEARING	RIGHT EAR	LEFT EAR
Distance in feet at which standard test type is read			Number of feet at which audiometer is heard		
Line of standard test type read correctly			Ease with which conversation is heard		
Field of vision (good or defective)			Range of hearing (good or defective)		

COLOR SENSE						
TEST WITH WHICH COLOR IS TESTED	NUMBER OF COLORS SELECTED AS SIMILAR	WILLIAMS' UNITS	R	G	B	REMARKS
A-Creen		Large Diaphragm				Clear
B-Blue or Pink		Medium Diaphragm				Caution
C-Red		Small Diaphragm				Danger

Color Perception (good or defective) _____

Remarks _____

Reason if application is not recommended for approval: _____

I certify that I have carefully examined the applicant, and that the above is a correct description of his condition, and I hereby _____ recommend the approval of his application. (do or do not) _____

Place and Date of Examination _____ 191__ Signature _____ Medical Examiner.

CHICAGO ELEVATED PHYSICAL EXAMINATION—FORM FOR ALL OTHER EMPLOYEES

is an authentic history of such indulgence, has no place in railroad service because he is not reliable.

When there is a history of fainting spells, epileptic fits or convulsions, applicants should not be admitted to service. In the case of old employees all fainting attacks should receive very close observation, and any man unable to give a sufficient reason for fainting should be relieved from duty. More than one attack of fainting by the same employee should be cause to remove him from the service. Fainting spells and epileptic convulsions are dangerous risks both to the employees and the passengers entrusted to their care. Men subject to this weakness are liable to become unconscious at a critical time and cause an accident. A railroad keeping in a hazardous occupation an employee with a history of fainting fits is playing with fire and courting trouble. Every case of initial fainting should be closely

investigated to justify the employee and not deprive him of his usual means of livelihood unless there is ample reason for it.

FORMS USED

The form used by the Elevated Railroads of Chicago to record the physical examination is shown in one of the illustrations on page 218. This form is prepared in duplicate, one copy for the examiner and the other copy for the superintendent. The latter copy is filed with the employee's original application for employment.

The other form shown is a combined form used for all employees other than those in the train service. Reference to my previous article will show the standard requirements for physical examination. Where a company benefit association is in operation all employees and applicants should have a urine analysis, thorough examination being made to discover any constitutional and systemic diseases.

On the Elevated Railroads of Chicago all employees in all departments except the ticket agents and the clerical forces are examined. This practice furnishes a complete record of each employee's present and past medical history. Thorough and systematic examinations insure a better class of employees, greater efficiency and tend to reduce the number of accidents and injuries. Such a practice is therefore a protection to both the employees and the corporation, and should be the cardinal safety-first measure.

Bus Competition with London Tramways

At a recent meeting of the London County Council it was stated that motor bus competition existed on 100 miles of the Council's tramway routes. The number of bus-miles run annually over these routes was roughly estimated at 20,000,000, the cost being estimated at 16 cents per mile. The number of men employed by the buses was estimated to be 1500, while the additional number of men required on the tramways to carry the passengers now taken by the motor omnibuses over the routes in question would be only 460, the additional number of cars being 184. Attention was directed to the loss to the country of the services of more than 1000 men, whose labor was uselessly performed under the existing conditions.

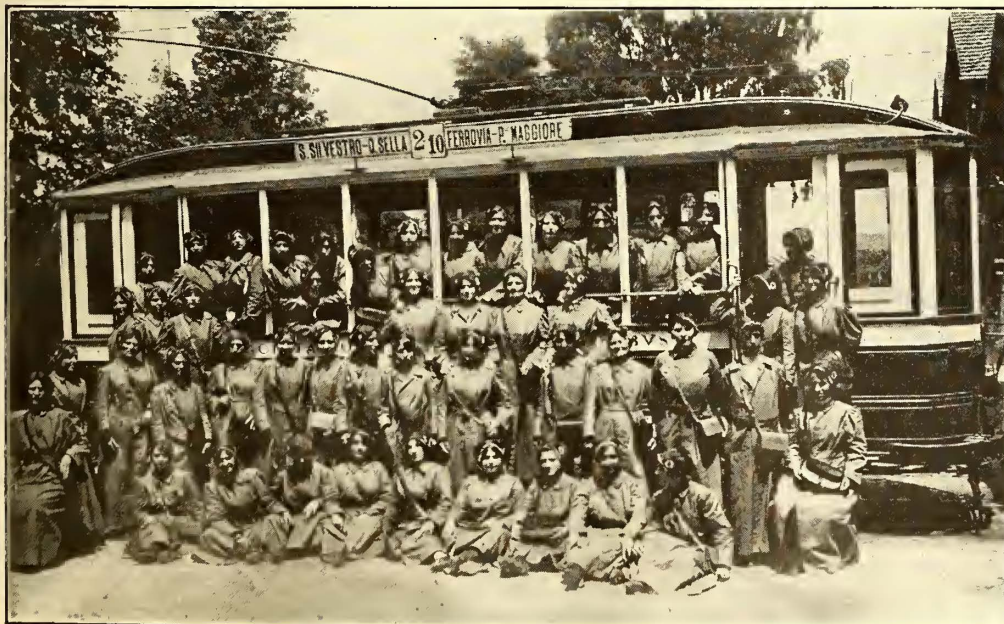


CONDUCTORS AND CARS USED IN ROME

Women Conductors in Rome

The European war in which Italy is now engaged has made its draft, as in other countries, upon the able-bodied men in the country, and a large number of the men employed by the different tramway companies have enlisted under the colors and have gone to the front. Under these circumstances the tramways have turned to women as conductors, and the accompanying views show some of those employed on the Società Romana Tramways-Omnibus, which operates the tramways in the Eternal City.

As shown in the engravings, the women wear a neat uniform with badge and carry the usual pouch for holding the pad of fare receipts used by the European countries for the various lengths of ride paid for under the zone system of fares. According to the management of the Rome tramways the service of women conductors have been very satisfactory.



GROUP OF WOMEN CONDUCTORS AT ROME—CONDUCTOR IN UNIFORM

Economics of the Jitney Bus Movement*

Factors Contributing to Its Development, Regulation and Cost of Operation—Effect on Owner, Railway and Public—Possibilities at Higher Rate of Fare

BY F. W. DOOLITTLE, DIRECTOR BUREAU OF FARE RESEARCH

It was not until late in the summer of 1914 that jitney bus transportation was recognized as a type, and it is probably true that a very considerable impetus was given to this business by the extent of unemployment existing at that time. While no accurate and comprehensive figures are available showing the number of buses in service from time to time, a rather careful examination of such data, as are available indicates that we may date the origin of the industry as of Sept. 1, 1914. Its extent increased very rapidly until Jan. 1, 1915, after which it fell off slightly, reaching the previous high point again on March 1. Since that time, with the advent of more favorable weather conditions and the increase in tourist travel, the number of buses in service has increased slightly. The maximum number in service at any time appears to have been about 6000. Various factors have contributed since the latter part of 1914 to the growth of the jitney business, and these will be enumerated and discussed more fully later. It is apparent, however, that unemployment in the skilled trades, the accumulation of a large stock of second-hand cars normally idle, wide advertising in the newspapers of this novel method of competition with street railways, and the appeal to a large number of people made by an opportunity to ride in a car, as is customary on the part of their more prosperous neighbors, are the principal reasons for the very rapid growth in the number of jitney buses in operation during the later months of 1914 and the early months of this year. At present, the total number of buses in operation in the cities where the development has been under way the longest is practically stationary where no regulation has been attempted, and where there is some form of control the number is somewhat less than it has been in the past. In this connection, however, it is of considerable import that while the number of vehicles has remained for some weeks practically stationary, the personnel of those interested in this industry has been changing at a rapid rate. In one instance, out of some thirty men meeting to organize a jitney owners' association none was present at a meeting of a similar number of men held a month later, although in the meantime the number of jitneys in operation had remained about the same.

What the influence on electric railways of this type of competition may be it is difficult to predict. The jitney bus competes for business with the street car, but it competes also to a considerable extent with the taxicab and the somewhat more common method of transportation—walking. However, in certain cities there has been, since the advent of the jitney, a marked decline in electric railway revenues, traceable no doubt in part to general industrial conditions, but probably more largely to jitney competition. In small towns where the traffic is light and the length of haul short, the advantage of the jitney bus is greater than in large cities, and it may be expected to offer more serious competition to the smaller electric railways. Figures for a recent month from three cities, comparable except for size, show that for populations of 400,000, 40,000 and 20,000 the decreases in passenger revenues were

respectively 15, 40 and 60 per cent. It is, of course, impossible to say how much of this loss was due to competition from jitney buses and how much to industrial depression, and the facts are given only for what they are worth. A somewhat detailed study of the situation, as will be shown later, indicates to the writer that this type of competition will not be permanent, because the jitney operators are exhausting their capital to make a wage which would not be attractive were industrial conditions better. The permanence of any industry, the returns from which are not sufficient to maintain the physical property as well as to pay operating expenses, is to be seriously questioned; and it is evident in some quarters that the continued existence of the jitney bus as a transportation factor has been due to the advent of the second or even third generation of investors in the industry following the exhaustion of the capital of their predecessors.

FACTORS AFFECTING THE DEVELOPMENT OF THE JITNEY BUS BUSINESS

Taking the matter up more in detail we will examine the factors which apparently were principally effective in promoting the development of the jitney business. From the standpoint of the owner and operator of the jitney bus, the most favorable factors have been as follows:

1. Small investment is necessary to engage in the business. The practice maintained by automobile salesmen of accepting in exchange for a new car an old one at a fair figure has been made possible by the point at which the price of the new car was fixed. These second-hand cars then, taken in exchange on new cars, have been available to purchasers at a very low figure and they have also been used in the jitney business by automobile dealers who hire operators to conduct the business on a salary or on a percentage basis.

2. The industrial conditions existing during the past year, particularly during the latter months, were such that a large number of skilled laborers found themselves out of employment. Frequently these men had accumulated a small amount of capital which they have invested in new low-priced cars or in second-hand cars. A very striking instance of this occurred in a New England city where, immediately following the closing of the mills, a large number of former employees entered the jitney business. It is altogether likely that a return to better industrial conditions would eliminate from the jitney bus business a large number of men who are now willing to accept a smaller wage than they are accustomed to, or who have found that the hazards of jitney operation are less to their taste than those of the employment for which they have been trained.

3. There frequently arise conditions under which an individual is willing to make certain sacrifices in order to obtain immediate returns on a prior investment. Such is no doubt the situation in the case of a considerable number of jitney owners. These men, during more prosperous times, acquired cars which they have not for some months felt they could properly afford. To these men the opportunity to obtain a quick return on this capital invested in an otherwise unproductive piece of equipment has proved strongly attractive. They

*Abstracted from an article in *The Journal of Political Economy*, Chicago, July, 1915.

have entered the field in spite of the fact that under the customary conditions of operation they will, before a great while, have so depreciated the car as to make its remaining value negligible.

In the foregoing we have considered individuals who could weigh the somewhat involved principles of depreciation and the accounting which should properly accompany wasting assets. There are, however, a large number of individuals to whom the future is a closed book, and these probably constitute a major portion of those who have attempted to carry passengers for various distances at a fixed charge of 5 cents. One of the unfortunate phases of this experiment in transportation is that it appears to be likely that a considerable number of those who have engaged in it have been deprived of their accrued capital through their failure to recognize the fact that profits are properly computed only after the integrity of the investment has been assured in addition to the payment of operating expenses.

4. There has been for many years no more popular subject for the newspapers of this country than the public utilities. Any institution which affects as vitally as does the average public utility, and to as wide an extent, the members of a community, carries with it a news value. As a result the competition offered to electric railways in many cities by the jitney buses has secured a publicity which the competitors of other industries could not have obtained. It is immaterial that many newspapers have conducted so-called campaigns against the public utilities in their communities, for whatever affects any considerable number of the people has perforce a place in the newspaper read by those people. An additional factor of publicity has accrued through the very obvious advertising that the jitneys have done for themselves by their movements throughout the communities in which they operate. A ride in an automobile for 5 cents has been until recently something to occasion comment, and the appearance on the streets of a city of a large number of these cars carrying their advertisements on their wind shields has brought this new industry to the attention of a very considerable part of all the people.

From the standpoint of the patron of the jitney bus, there have been three factors favorable to the rapid growth of the habit of their use:

1. The novelty of going to and from one's work in an automobile, riding, as some of the jitney operators have felicitously expressed it, "on rubber and on air," has no doubt influenced many to use this form of transportation. This factor is, however, one which will decrease as time goes on. Many industries have been built up and have thrived for a short period, particularly in the amusement field, on the principle that novelty is as salable as more substantial commodities.

2. For a large part of the population of our cities, in spite of the constantly decreasing cost of automobiles, their use as a customary means of transportation is rare. No doubt a strong influence in the development of the riding habit has been the personal satisfaction which has come to the patrons of the jitney bus through a feeling, more or less definitely conceived, that they are, by adopting this means of transportation, bridging for the time being the gulf between themselves and their more fortunate neighbors in the matter of automobile riding.

3. The jitney bus is able under an unregulated status to offer certain conveniences which cannot be furnished by street railways handling passengers in larger groups. In the first place, the jitney operator is free to run his car to the curb and in fact on to a side street as an accommodation to his patron. He can vary his route

at will, and there is a certain convenience resulting to passengers from this. It should of course not be overlooked that what is a convenience to one passenger may be an inconvenience to another, but with the small numbers ordinarily handled in an automobile the conflict of interest is not so certain nor extreme as is the case with the larger numbers handled in one group by electric railways.

Under the head of convenience may be mentioned the higher speeds of automobiles. This is due to three factors: the design of the automobile, its ability to detour, and the smaller number of stops necessary to receive and discharge a few passengers than many. The progress being made throughout the country in the adoption of the designated stop scheme by electric railways is tending to lessen the difference in running time of jitney buses and street cars.

The smoking privilege has very largely been curtailed on electric railway cars because only a minority of the passengers would be favored by its retention. In open automobiles smoking is presumably less offensive to those who do not indulge than it would be in a closed street car. Here, again, the possibility of conflict of interest is less in the case of the small groups riding together in automobiles than in the case of the larger number riding together in the street car. It should not be overlooked that at certain seasons of the year throughout the country, and for a major portion of the year in certain sections, considerably greater pleasure results from a ride in the open air than in a street car.

Some of the privileges and conveniences here enumerated are likely to be curtailed by regulation, but it is evident that there will always be at certain times and for certain individuals conditions which lead them to prefer the jitney bus as a means of transportation. On the other hand, while the factors here mentioned as favorable to the development of the jitney business, both from the standpoint of the owners and operators and from that of the patrons, have been developing, other factors have been exerting apparently a greater force toward the elimination of this means of urban transportation.

From the standpoint of the owner and operator these unfavorable factors may be classified as follows:

1. *Regulation.*—A rather interesting statement of the necessity for regulation indicating the point of view of a number of city governments is contained in the message of Mayor Rose of Los Angeles to the City Council, Dec. 23, 1914.¹ The statements there made are rather typical and their appeal to local interest accounts, in a measure, for the rapid growth of regulation.

The communities in which jitney buses have been most rapid in their growth have attempted to regulate them in a variety of ways. The principal features covered in the earlier ordinances have been followed in the later ones, and the most complete and carefully thought-out regulatory provisions have been based on a consideration of the following factors:

(a) *Responsibility:* To accomplish this there has been generally required of the jitney owner a bond for the protection of individuals who are injured through the carelessness or negligence of the driver.²

(b) *Safety:* This has been promoted by fixing the requirements for drivers in such a way as to eliminate those least fit to operate cars. In certain cities a special examination of drivers is required, and in most cities which have adopted regulatory measures a complete means of identification of drivers is required for the

¹See ELECTRIC RAILWAY JOURNAL for Jan. 2, 1915, page 76. [Eds.]
²In one of the Pacific Coast cities each of the three bonding companies there represented has, since the advent of the jitney bus, refused to issue indemnity insurance for such vehicles, and in another city, somewhat smaller, the rates for such policies have been increased from an annual fee of \$50 to one of \$250.

use of the police department. Jitney operators are, of course, subject to police regulations as to traffic rules.

(c) *Reliability*: It has been deemed necessary for the convenience of the public that routes and charges be fixed, and many ordinances contain provisions to this effect. The tendency, early observed in many cities, to use the jitney for immoral purposes has led to certain provisions being made with regard to the lighting of closed cars.

(d) There appears in most regulatory ordinances provision for the licensing of jitneys and fees of various amounts have been imposed. In general these fees have not been particularly large, although there is a growing tendency to require these carriers to contribute by the means of special taxes to the extra burdens imposed upon the police and street departments in the cities in which they operate. These burdens imposed by regulations have eliminated a considerable number of the less efficient and less desirable jitney operators from the field, some because of their unfitness to operate a car and others because the added financial burden made it impossible for them to pay current expenses.

2. *Community requirements*.—Closely related to regulation, although properly classified under a separate head, are the requirements which the communities have imposed upon the jitneys in the way of contribution to public funds. Many cities have taken this step having in mind the fact that the money collected for transportation by the street railways is assessed for general purposes, and any diversion of this transportation income from street railways will lessen the amount thus contributed unless the agency to which the payments are diverted has imposed upon it burdens similar to those imposed upon the street railways. In certain cities as high as 15 per cent of the money paid to street railways for transportation finds its way into the coffers of the city, and it is apparent that any considerable lessening of the street railway's income will constitute a serious decrease in funds accruing to the city from this source.³ An interesting phase of this matter is that of paving requirements. In the days of horse-drawn vehicles it was held that since this transportation agency in its use of the public streets for gain damaged the paving to a considerable extent, it should contribute to the funds necessary to lay and maintain paving by means of payments in the nature of a direct tax. Upon the change in motive power whereby the cable and later the electric motor replaced the horse, no corresponding change was made in the assessment against the railway for paving, so that at the present time street railways face the anomalous situation of being required to install and maintain a large amount of paving which they damage not at all, the tax being an inheritance from a time when they did contribute in some degree to the wearing out of pavement. Up to the present time no considerable progress has been made in the matter of assessing against the jitney buses an equitable share of the costs resulting from the wear of paving. It is evident, however, that in those communities in which the jitney has made serious inroads into the revenues of the electric railways the city treasury will shortly be under the necessity of obtaining from some other source funds for paving maintenance

³Detailed figures of such loss of revenue are given herewith:

Company	Estimated Annual Reduction in Gross Income Due to Jitneys	Loss in Taxes to State 5 1/4 Per Cent	Total Loss to Public 12 per cent
San Francisco	\$920,000	\$48,300	\$110,400
Los Angeles	730,000	38,300	87,600
Oakland	300,000	15,700	36,000
Sacramento	37,000	1,900	4,400
Miscellaneous (estimated)	513,000	26,900	61,500
Total probable	\$2,500,000	\$131,200	\$300,000

If the public is not to be the loser this sum must be paid in taxes by the jitneys.

which have previously been furnished by the railways. A similar situation exists in regard to street sweeping, sprinkling and removal of snow.

3. *Depreciation charges*.—As has been indicated previously, the wasting of capital through the depreciation of the automobile has not been given proper weight in many cases. As the second-hand cars, and to a less extent the new cars which have entered this field of transportation, reach a point at which they can no longer be operated, the necessity for considering depreciation is being brought more forcibly to the attention of the owners. Those who entered the business first are now rapidly being brought face to face with this necessity, and although many operators have not yet given due weight to this factor, it will have, as time goes on, an increasingly greater force in determining whether or not the jitney bus is to remain.

4. *Cost of operation*.—The chief factor tending to discourage owners and operators of jitney buses is the high cost of automobile operation. This is a subject which has been gone into with a considerable degree of care, and the results of the computations based on actual operating experience in a number of cities are such as to indicate that, neglecting for the moment the wasting of capital, the average jitney operator is unable to make a reasonable daily wage over and above his cost of operation.⁴

THE ECONOMIC STATUS OF THE JITNEY BUS

We will look now at the economic status of the automobile engaged upon the public highways as a common carrier. It appears that this amounts to a reappearance of a type of transportation which vanished with horse-drawn vehicles upon the introduction of electric transportation, and it will be worth while to consider from various standpoints whether or not under present circumstances this type of transportation can return to supersede the more systematic type furnished by electric railways. While there are at present, in various cities, associations of jitney operators, not much progress has been made in the realization of their common interest by those engaged in the industry. With such a realization there would tend to come combinations and the formation of companies to take over and control the present scattered businesses. Such a development would greatly increase the ease of regulation and the effectiveness of control, and would probably result in making the possession of a franchise a condition of operation. Such changes do not appear to be a matter of the immediate future.

Obviously, the jitney bus will continue to exist if it can render a certain service at a less cost than its major competitor, the electric railway, or if it can render a better service at the same cost. The word cost in the previous clauses must be assumed to include a proper contribution to state and municipal funds. In other words, the existence of a subsidized industry, which is what the jitneys will amount to if they are relieved of their proper share of the burdens of the community, may or may not depend upon the factors which will be analyzed in an attempt to determine whether or not under free competition the jitney business will be permanent.

The question of the success of this experiment in urban transportation depends primarily upon three factors: (1) Is it profitable for the owner and operator? (2) Is it able to furnish a service to, and supply the needs of, a considerable portion of the community at a price within the ability of its natural patrons? (3) Is it upon general grounds advantageous to the com-

⁴See special report on cost of jitney bus operation by bureau of fare research abstracted in ELECTRIC RAILWAY JOURNAL for March 27, 1915. Figures on the cost of jitney operation from the report are quoted in part by Mr. Doolittle. [EBS.]

munity? Obviously an industry might exist and secure, at a profit to itself and at a rate within the reach of a considerable number of people, business which it would be contrary to public policy to permit to exist. We have discussed somewhat at length in previous pages the question of the cost of operation. Assuming that the operator of the jitney bus bears his proper share of the expenses of the community as a whole and that he protects his investment, it becomes evident that there is only a relatively small part of the total transportation business in any community for which he can compete. Under these circumstances transportation by automobile at a 5-cent fare cannot supplant for the city as a whole the transportation furnished by the electric railways. The existence then of competition for what may best be termed "short-haul" business⁶ appears likely to place upon the electric railways a burden such that it will be necessary, if operation is to be continued and the property maintained, to charge higher rates to those patrons who receive greater service. In other words, if there are eliminated from the business of the electric railway the short-haul passengers, the handling of whom presumably shows a profit, the passengers who are at present carried a considerable distance and the handling of whom shows a loss must in the future pay more than they do at the present. It is not within the province of this article to undertake to say in detail how such a change in fares will be brought about nor what effect the adoption of a zone system of fares would have upon the community in general. However the matter might be adjusted, it is apparent that such a change in the rates of fare on electric railways could not be accomplished without some difficulty and perhaps some loss.

The whole matter of transportation is a vital factor in city building, and any situation tending to bring about a change in the system of charging for urban transportation should be given attention by those within whose province it is to give thought to the larger interests of the community as a whole. In addition to the bearing which jitney competition appears to have on the rate of fare for a distance of more than 1 or 2 miles, which includes, of course, a considerable portion of suburban traffic normally handled on urban cars at a single fare, it should be noted that the confusion resulting from the addition of a large number of small, independent transportation units to the present complex traffic in city streets is a matter of grave importance. Various computations would indicate that it would be not an unusual condition during certain periods of the day to have the average distance between automobiles, engaged in passenger transportation, 5 ft. or less, if these cars were to replace the electric cars now furnishing the same service. Such a situation would doubtless be considered intolerable. It may be urged that the jitney business is in its infancy and that improvements in design of these passenger-carrying vehicles will so reduce the cost of operation as to enable them to compete upon a broader basis for the business of the electric railways. That such improvements in the art are possible cannot be denied; and as there have been improvements tending to reduce costs in very many of the mechanical arts, it will be indeed peculiar if the costs computed in this article are not lowered at some time in the future. There will still remain, however, in all probability, some reluctance on the part of cities to give up a major portion of their streets to passenger-carrying vehicles for the rendering of such service as is now being rendered by the electric railway cars which use but a small part of the street.

⁶The Kansas City *Star* quotes W. H. Miller, jitney promoter, as saying: "We are trying to select the short, profitable hauls, not more than 2 miles or 2½ miles at most."

It is such cases as these which point out the need of scientific traffic surveys in every city. It is as important for city governments to know accurately the movements of population from hour to hour as it is for a street railway company to have this information, and it is apparent that this is a matter which will be given increasing attention in the future. The proper location of bridges and tunnels, both for pedestrians and for vehicular traffic, is a matter which cannot be determined except by an accurate knowledge of the hourly movements of the people in the community. That these change from time to time is well known to those who have considered the matter, and the future development of means of travel through the various parts of any city should be planned always in the light of the best obtainable information as to the habits of its people. The use of a car 14 ft. long to carry four passengers is an extravagance which few cities can afford when cars seating fifty people are but 50 ft. in length. It may be urged that experience in Europe has indicated that cheap transportation in small units by transient vehicles has a legitimate place in the transportation scheme of any community. It should be observed, however, that conditions abroad are somewhat different from conditions in this country. In general, workers in Europe live closer to their places of employment than they do in this country. It appears that the average mileage per ride is considerably less in those countries than it is in this. The zone system of fares is very generally employed on European electric railways, and a considerable part of the population other than the laboring classes considers it beneath its dignity to walk a distance which in this country the average citizen walks with ease and without a thought as to its effect upon his social status.

CONCLUSION

In conclusion it would appear that the jitney bus cannot continue long to carry passengers the distances which it is now attempting to carry them at a 5-cent fare. The jitney bus, however, can compete with the electric railway for short-haul business. Improvements in automobile design tending to lessen depreciation and operating costs will probably from time to time change the maximum length of ride for which the jitney can profitably compete with the electric railway. It does not appear likely, however, that, within the near future at least, automobile transportation can be furnished to communities as a whole as efficiently and as economically as a similar amount of transportation can be furnished by the electric railway. The certain result of the taking of the more profitable business from the electric railways is an increased fare for the balance of the business. Assuming that the jitney business is regulated to a sufficient extent to protect to a reasonable degree the safety of the passengers and to promote as far as may be the reliability and regularity of the service, the interest of the city has not as yet been completely cared for. Streets are dedicated to the use of the public, and they will in the long run be so administered as to provide the greatest good to the greatest number. On this basis we may look to see considerable attention given to the fact that passenger transportation by automobile is wasteful of space in the city streets.

Considering all these factors, it does not appear that this most interesting experiment in urban transportation will result in the displacement of the present means of transportation, although for the period during which this experiment is being carried on individual instances will doubtless appear where the jitney bus can be operated profitably and with due regard to the interests of the people as a whole. It may not be out of place

to suggest that a limited number of people would probably be glad to pay 10 cents or even 15 cents a ride for service of a somewhat higher character than it is possible for electric railways to furnish. The number of such people is not so large that furnishing them with transportation de luxe will seriously encumber the streets; and it appears at the present time probable that, as the individuals who have already engaged in the jitney business discover that their profits are less than were anticipated, a certain number of them will try the experiment of furnishing their service for a fare of 10 cents. Whether the operation of the "double jitney" would be a profitable business or not it is not easy to determine; but it is quite likely that there is some form of transportation of this general nature at a rate between that charged at present by taxicabs and the rate charged by electric railways at which automobile transportation will be a profitable venture. It appears quite certain, however, that at the present rate of fare the jitney bus experiment is doomed to failure.

British Managers Discuss Conditions

At Meeting of Tramways & Light Railways Association in London It Was Shown that British Tramways Have Been Seriously Affected by the War

At the seventh annual congress of the Tramways & Light Railways Association in London on July 15, J. W. Dugdale, general manager Oldham Corporation Tramways, discussed the influence of the war upon the street railways in Great Britain. He stated that the number of tramway employees who had given their services for the war had reached 18,057, approximately 30 per cent of the total. Every man who had gone to the front had been assured that his dependents would be looked after and that if he was spared his situation would be open when he came back. The cost of these grants amounted at the present time to \$7,500 per week for the London County Council, \$5,000 for Glasgow, \$2,500 for Liverpool, and \$6,500 for Manchester.

Owing to the shortage of labor the car service has been curtailed in many instances. Extensive experiments with women employees for platform work have been carried out, and in the near future these will undoubtedly extend to other departments. Wounded soldiers who have been discharged from the army are being engaged as guards and are being offered light employment in various capacities. Under the conditions it has become imperative for traffic employees, especially motormen, to work a great number of hours each week. In Oldham the hasty training of men to fill motormen's positions has been the cause of an increase of some \$100 per week in the charges for electric energy. In that city the unit charge for current is 3 cents per kilowatt-hour, and it is expected that this figure will be increased because of the increase in the price of coal.

In the repair shops, a great scarcity of skilled mechanics exists, owing to the drafts by private workshops that are engaged in manufacturing munitions of war. On the Liverpool Tramways, munitions work is being carried out very successfully in the workshops, but only the largest tramway systems could cope with such operations and at the same time keep pace with their own repairs which need daily attention. Tramways are now handicapped in obtaining quick deliveries of materials, such as carwheels, axles, tires, etc., this condition having been brought about by the makers' inability to execute orders promptly because of pressing government work. Advances in the prices of material have already taken place and there is no doubt that

tramways will be called upon to pay very inflated prices for material of every description. The copper market has already alarmingly increased.

Free riding facilities have been granted to soldiers in training by a large number of tramways, and other free riders include wounded soldiers going to and from hospitals, refugee children going to and from school, etc. This concession has cost the Oldham Tramways Committee as much as \$200 per week, and at the same time the tramway revenue has fallen very much below that of normal times in a majority of towns. Owing to anticipated air raids, railways have to be prepared to be shut down direct from the power house at any time.

In the discussion of this paper a member stated that he had been unable to purchase steel tires and other equipment even at a 50 per cent increase in price, but notwithstanding the existing high price of material it was doubtful whether the postponement of track repairs was a measure of economy. Other speakers laid emphasis upon the difficulty of retaining sufficient men in service to operate the lines, the extent of the war's influence being indicated by comment to the effect that tramway employees were, in general, desirous of wearing badges similar to those worn by munitions workers in view of their services to the community at large.

OTHER PAPERS

Another paper presented at the meeting was entitled "Glimpses Into the Obvious" by A. V. Mason, general manager South Metropolitan Electric Tramways & Lighting Company, in which a number of hints on operating problems were presented. The discussion brought out considerable support of the prepayment principle and some comment on the advantages of high schedule speed.

A paper entitled "Battery Vehicles as an Adjunct to Tramways" by W. H. L. Watson gave data which indicated the superiority of the Edison nickel-iron cell as opposed to batteries of the lead type, owing to its lower cost of maintenance. In the town of Morecambe, Lancashire, where the overhead system was regarded as a menace to the scenic surroundings, a scheme for installing storage-battery cars was considered, this involving a capital expenditure of \$90,000 for twelve fifty-six-passenger double-deck cars and the necessary depot complete with charging equipment. The running cost was guaranteed not to exceed 11 cents per car-mile, including charges against interest and depreciation on capital.

It was considered that the storage-battery omnibus would prove to be a popular method of building up routes prior to the extension of a full tramway service, and a number of such buses have been installed. In several cases these have shown reductions in operating costs of 4 cents per bus-mile in competition with gasoline-driven vehicles. In one city the power consumption per mile was found to vary between 1.63 kw.-hr. and 2.10 kw.-hr. per bus-mile and the maintenance charges had proved to be very slight. Even with such low average revenue as 12 cents per bus-mile the service covered the expenses.

In the discussion the advantages of the storage-battery bus were emphasized, but there were some adverse comments upon the high cost of the vehicle. The hill-climbing qualities were praised, it being stated that on a certain severe hill the gasoline buses were unable to stop because they could not start again, but that the storage-battery buses had no difficulty in this regard. Storage-battery service wagons were mentioned favorably, a case being cited where an Edison battery vehicle did as much work for \$4.50 as could be done by horses for \$8.40.

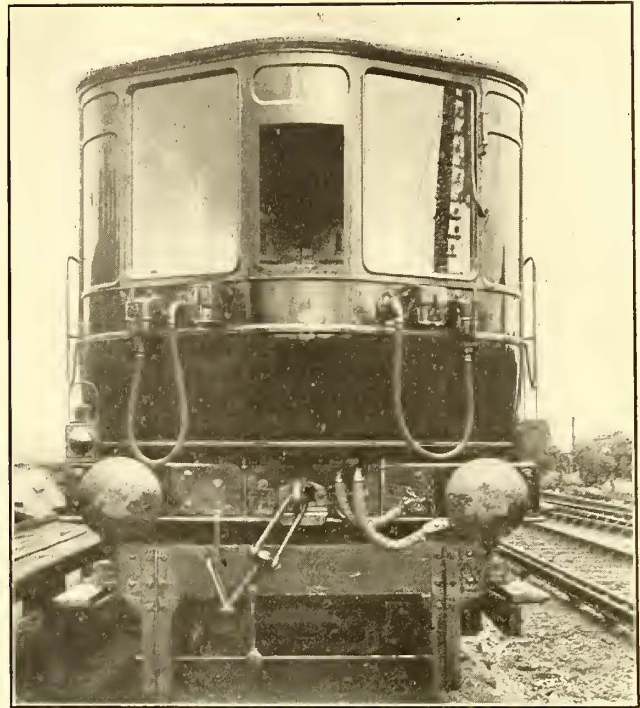
London & South-Western Railway Suburban Electrification

At This Time 140 Miles Are Being Electrified—The Train Make-up and Equipment of the 600-Volt Cars Are Briefly Described

The London suburban lines of the London & South-Western Railway now being electrified, following a slight delay at the commencement of the war, are the circular route from Waterloo via Wimbledon, Kingston, Twickenham and Richmond and back to Waterloo, the Hounslow loop line and the Hampton Court, Claygate and Shepperton branches. The total length of these routes is about 47 miles, equivalent to about 140 miles of single track. At a later date a further system of about 50 miles of route, the equivalent of 100 miles of single track, may be undertaken. A map of the electrification was published in the *ELECTRIC RAILWAY JOURNAL* for May 3, 1913, page 799.

After an exhaustive study by the engineers of the London & South-Western Railway of all systems in commercial use, it was decided to adopt direct current with a pressure of 600 volts on the third-rail. The trains are equipped for multiple-unit operation, and for convenience in handling are made up of three-car units (eighty-four in all), consisting of two motor cars with a trailer car close-coupled between them. The individual three-car units are designed to be permanently coupled, to form convenient units for traffic. It is intended to operate these units as either three-car trains or six-car trains, this being dependent upon the traffic requirements.

Each three-car unit is equipped with four Westinghouse 275-hp motors, 590 r.p.m., geared 21:59 on standard 42½-in. driving wheels; these motors are arranged in pairs on the trucks underneath the cabs at opposite ends of the unit. All electric-control gear is placed in the cabs, each pair of motors being controlled from its own set of control gear. The installation of the control apparatus in the motorman's cab, following the plan of the London tube lines, was selected by the railway's engineers in preference to under-car location in order to permit greater ease of access for inspection, cleaning and adjustment. Access to the control apparatus is obtained on one side from the motorman's cab and on the other through large hinged doors in the partition between the motorman's cab and baggage compartments.

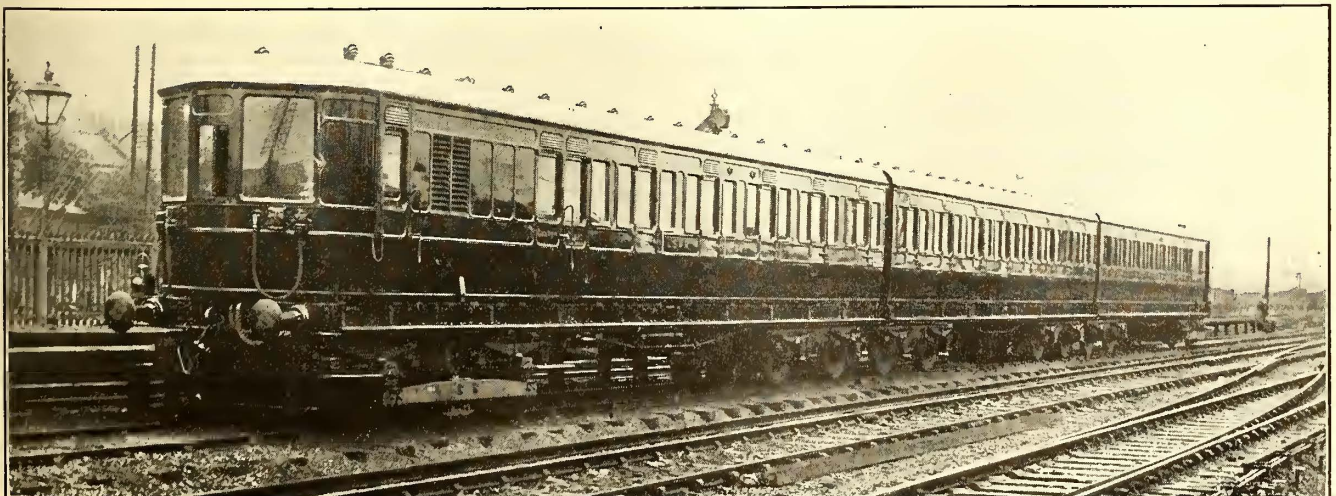


LONDON & SOUTH-WESTERN ELECTRIFICATION—END-ON VIEW OF MOTOR CAR

A further advantage in placing the control apparatus in the motorman's cab is that the weight of this apparatus comes over the driving truck and so increases the weight available for traction. For the electric trains the original rolling stock, consisting of the usual compartment coaches with side doors, has been used, the necessary alterations being made to fit them for electric service.

The motors are of box type with commutating poles and with a fan on the armature for internal ventilation. The control is of the Westinghouse all-electric type with automatic acceleration and deadman's handle. The coaches are heated electrically.

The Westinghouse brake used on the electric trains employs cylinders 12 in. and 14 in. in diameter with triple valves arranged to give almost simultaneous application of the brakes on a train 600 ft. long. All compressors start and stop simultaneously according to the maker's governor synchronizing system.



LONDON & SOUTH-WESTERN ELECTRIFICATION—STANDARD FOUR-MOTOR 1100-HP TRAIN OF TWO-MOTOR CARS AND ONE TRAILER

Another Massachusetts Fare Increase

Public Service Commission Adds Another Fare Zone to Blue Hill Line Because It Believes Company Entitled to a Fair Return on All Capital Honestly and Prudently Invested without Deducting Accrued Depreciation

In a decision handed down on July 31 and covering forty-two typewritten pages, the Massachusetts Public Service Commission ordered the establishment of a new schedule of fares on the Blue Hill Street Railway, a company operated by the Stone & Webster Management Association of Boston, Mass. The case is the most interesting of its kind with which the board has had to deal since the Middlesex & Boston finding in 1914, and in reaching its conclusions the commission has been guided largely by the latter. The company appealed to the board for authority to increase its fare unit from 6 cents to 8 cents, and while the road is a small one, operating less than 20 miles of track, the financial policy of its managers and the operating history of the company have been considered at great length. The commission soon came to the conclusion that the road needed increased revenue but deemed it important to discuss its regulative policy in considerable detail. An abstract of the decision is given below.

OUTLINE OF PROCEEDINGS

On March 9, 1915, the company filed with the board notice of a proposed increase in passenger fares to take effect April 15, 1915. The company proposed to make the cash fare 8 cents for every ride within the limits of any fare zone; to sell tickets, each ticket the equivalent of one cash fare, at the rate of seven for 50 cents; and to sell special school tickets at the rate of ten for 40 cents to pupils entitled by law to half-fare transportation. The existing fare unit was 6 cents, none other than school tickets being sold, the price of the latter being ten for 25 cents. The company estimated that the proposed increase would add from \$8,000 to \$12,000 to its annual revenue. The total operating revenue for the year ending June 30, 1914, was \$95,224. A public hearing was held on April 14, 1915, and a petition was presented by 137 residents of the town of Canton asking the board, if it should allow an increase, to order the company to sell a workingman's ticket at the rate of 5 cents, good only on working days, between 6 and 8 a. m. and 4 and 6 p. m.

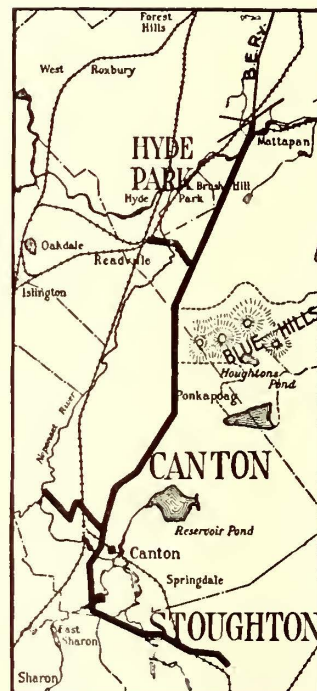
HISTORY OF THE COMPANY

The Blue Hill Street Railway was organized in 1899. The main line runs from Mattapan Square, in the outskirts of Boston, through Milton and Canton to Stoughton, with a short branch from the vicinity of Canton station to the Norwood-Canton boundary, and a still

shorter branch from Blue Hill Avenue, Milton, to Readville Square, Hyde Park. The total trackage is 19.75 miles, of which 1.32 miles are on private right-of-way. At Mattapan Square there is a connection with the surface system of the Boston Elevated Railway, but a through service rendered some years ago has been discontinued. At other points there are connections with other companies and the road substantially parallels the New York, New Haven & Hartford Railroad. The population of the three principal towns served totals 21,145, a gain of 27.4 per cent in fifteen years. When the road was first built its ultimate extension to Providence, R. I., was contemplated.

In general, a regular half-hourly schedule is maintained on the main line and an hourly schedule on the Norwood branch. The Readville branch has for some years been operated only on pleasant Sundays in the summer season, and at present cannot be operated at all, owing to a local bridge situation. On Sundays and holidays in summer a much more frequent service is maintained on portions of the road to accommodate a large travel to and from the Blue Hill Reservation, one of the most notable areas within the Metropolitan Park system. The company is not always able to handle all of this class of traffic. The cars at present are of the single-truck, hand-brake type, designed for moderate speed and economy in operation. The road was originally equipped with double-truck, air-brake cars, but a fire in 1909 destroyed these and the present rolling stock was specially designed to meet the needs of low-cost service. No attempt is made to conduct a freight and express business, but \$3,445 was earned in 1914 from the sale of power to a connecting company. The company was organized by Stone & Webster.

Prior to the current finding there were three fare limits on the main line, viz.: Mattapan Square to Ponkapoag, 5.41 miles; Blue Hill to East Sharon, 6.25 miles, and Canton to Stoughton, 4.22 miles. These zones overlapped, the total distance from Mattapan to Stoughton being but 12.74 miles. The unit fare was 5 cents until 1908, when it was increased to 6 cents and upheld by the Massachusetts Railroad Commission (Fortieth Report, page 115).



SCALE OF MILES
0 1 2 3 4 5
MAP OF ROAD

EARNING POWER AND CAPITAL EXPENDITURES

The operating revenue of the road in its fifteen years of life to June 30, 1914, totals \$1,021,151, operating expenses being \$770,266 and miscellaneous income \$2,417. Deductions from income total \$277,697, leaving a shortage in net divisible income of \$24,406. The stockholders have never received any dividends, revenues have often been insufficient to meet fixed charges and at times have failed to cover operating expenses. The gross earnings for the year ending May 31, 1915, were \$93,126, or \$2,440 less than in 1914, and balance for reserves and dividends was \$2,352 less this year than last. The balance sheet of May 31, 1915, showed total assets of \$717,272 and a deficit of \$43,202, the cost of the railway being \$409,559, cost of equipment, \$137,162, and the cost of land, buildings, etc., \$113,251. All the stock and bonds were approved by the railroad commission.

The loans and notes payable account of the company totaled \$160,601 on May 31, 1915, or 64.2 per cent

of the outstanding funded debt. The investment per mile is \$33,483. The commission concludes that the cost of the road is somewhat high for its location and questions the advisability of construction upon a percentage basis. Investigation of capital expenditures was hampered by the loss of construction records in the carhouse fire of 1909. In the absence of such records, the board resolves doubts arising from this cause against the company. Some criticism is included as to the accounting methods of the company and its returns to the board.

DEPRECIATION

The total deficiency, as compared with an allowance of 20 per cent of gross revenue per annum for maintenance and depreciation, since 1905, is \$35,341. No fund has been accumulated to offset depreciation. With respect to accrued depreciation, the board says:

"The extent to which deduction should be made for accrued depreciation must, to some degree at least, be determined by the method employed in ascertaining the gross amount from which such deduction is to be made. Because a method of dealing with depreciation may be sound where such gross amount represents the cost of reproduction new, it by no means follows that the same rule can be rigidly applied where the gross amount represents honest and prudent investment. Under the reproduction cost theory, credit is given to the company for appreciation on items entering into the estimate of cost (and often for 'going concern value'), and it is entirely consistent with that theory to make a deduction to the extent of existing depreciation on other items. On the other hand, if a fair return is to be measured by the 'capital honestly and prudently invested,' and if no credit is allowed for appreciation of the property through an increase in land values or higher unit costs of material and labor, it would hardly seem just to deduct the full amount of the accrued depreciation under all the circumstances and without reference to the causes of the failure of the company to make due provision for it.

"The ruling of the commission in the Middlesex & Boston case was accompanied by the express stipulation 'that if there is mismanagement causing loss, such loss must be charged against the stockholders legally responsible for the mismanagement.' In other words, the company is held to the same standard of honesty and prudence in the management and maintenance as in the original acquisition of its properties. It must, so far at least as it reasonably can, keep its investment good. If through some fault of its own it has failed to make due provision for depreciation, it cannot reasonably expect the public to pay a return upon that portion of the investment which it has neglected to preserve. But under a consistent application of the investment theory it would seem in general that deduction should be made for the depreciation which comes of age and use in so far only as the failure to make provision for it is due to the payment of unwarranted dividends or is otherwise attributable to mismanagement.

"In this case the stockholders have received no dividends whatever. In view of the low earnings, the character of the territory in which the company operates and its past and present efforts to increase its revenues, and after careful consideration of its history, the commission is of the opinion that the failure to make provision for depreciation and the virtual loss of invested capital caused thereby cannot justly be ascribed to mismanagement. To sum the matter up, the property has depreciated in value in the public service, and the stockholders have had no dividends. On the other hand, the public served has been receiving transportation at less than real cost, and has, in effect, used up a portion of

the property without giving an equivalent in return. As stated in the Middlesex & Boston case, to hold under these circumstances that the accrued depreciation should be deducted would amount to saying that money lost during the earlier stages of a public service enterprise is irretrievably lost by the stockholders; that if perchance rates have been fixed so low that the rate-payer has for a period of years obtained a service at less than cost this is the permanent misfortune of the stockholders, and that the public should never at any time and under any circumstances be called upon to make up a deficit thus incurred."

The board therefore rules that in determining the revenues to which the company is fairly entitled, allowance should be made for an amount equal to a fair return upon all the capital honestly and permanently invested without deducting accrued depreciation. The board does not hold, however, that if the company earns the amount to which it is entitled, it can properly pay dividends before the depreciation and other deficits from past operation have been made good.

The commission holds that if property of a company is destroyed by fire or other similar catastrophe before it reaches the end of its usefulness, or if it is voluntarily sold and a loss results over and above accrued depreciation, the amount of this loss should be deducted in determining the basis of a fair return. Such losses are risks which the stockholders assume and for which the company must be held responsible. The loss on the property destroyed by the fire was in this case inconsiderable, but the loss on cars sold over and above accrued depreciation came to fully \$11,000. The entire amount received from insurance, salvage and sale was not reinvested in permanent property. To the extent of \$21,327 it was used in reconstructing roadbed and track, an expense properly chargeable to operation. Funds so used can no longer be regarded as part of the capital investment, whatever bearing they may have in determining the reasonable charges against operation.

To all intents and purposes the Readville branch line has been virtually discontinued of late years. In view of the economic value, in general, to the State of even street railway lines whose existence seems hardly justified from the traffic point of view, the commission is not disposed to deny a return upon investment on the ground that an extension was built contrary to reasonable prudence and sound business judgment, except in the clearest cases. The line in question, however, seems on the evidence to be of so little economic value to anybody that the board would hesitate to approve an increase of rates upon the other lines merely to enable the company to earn a return upon the \$25,000 investment in this branch.

NEED FOR ADDITIONAL EARNINGS

The commission finds that a fair return should be based upon at least \$500,000, an assumption which it admits is distinctly unfair to the company but which leads to the irresistible conclusion that the fare-paying public has been and now is receiving service at substantially less than cost. Owing to the uncertainty of the records, the actual amount above this is left open without prejudice for consideration in any future proceedings. This sum is represented by \$300,000 outstanding stock and \$200,000 in outstanding mortgage bonds. Assuming no interest payments except upon the bond issue and eliminating the floating debt from consideration, the net earnings over and above operating expenses and fixed charges would yield but 4.61 per cent on the stock in 1915, with no provision for depreciation.

The board holds that the \$21,237 of capital funds used for reconstruction in 1909 should be treated as

an operating deficit, since the reconstruction was necessary, and if the company had not used available capital funds for this purpose it would have had to borrow money and to pay interest upon the debt. The company is entitled to have the sum gradually liquidated from earnings and to receive interest upon it to the extent that it remains unliquidated. Again, a sum of \$13,750 representing discount on bonds is likewise entitled to be amortized from earnings during the life of the bonds and to bear interest to the unamortized extent. The deficiency was supplied by floating indebtedness, and the company is fairly entitled to interest upon this indebtedness until the impairment of capital so caused has been made good from earnings.

The commission has little fault to find with the management of the company and sees no reason to believe that operating expenses can be reduced materially, if at all.

ADDITIONAL FARE ZONE

With the proposed increase to an 8-cent fare unit the increase, according to the company's estimate, would add about \$10,000 to the gross receipts, but Vice-President A. Stuart Pratt held in the hearing that the effect of such a fare unit would be problematical and that only a trial would determine its efficacy. Mr. Pratt said that an increase of about 10 per cent or 12 per cent is the estimated result of raising the fare unit from 5 cents to 6 cents on the Blue Hill and Brockton & Plymouth roads, both under Stone & Webster management. Assuming that the proposed increase would produce as much as \$12,000 additional revenue, there is no ground for a claim that this would result in excessive and unreasonable profits to the company. "If this were the only test to apply," says the board, "the commission would without hesitation approve the new schedule as filed." But with such a unit fare, the board holds that the discrimination between the long-haul and the short-haul rider would be unduly accentuated. Instead, it recommends the addition of another zone which was an alternative plan proposed by the company. Under this plan the unit fare will be reduced from 6 cents to 5 cents except in the zone between Mattapan and Blue Hill, which is much longer than any of the others, where it will remain 6 cents. The zones will have overlaps, and at one point, between Stoughton and Canton station, 4.22 miles apart, owing to local conditions, the company will sell two-part tickets, good at any time, at the rate of eight for 50 cents, the first part of the ticket to be collected in one zone and the second part in the other. It is estimated that these changes will yield between \$10,000 and \$12,000 additional annual revenue to the company.

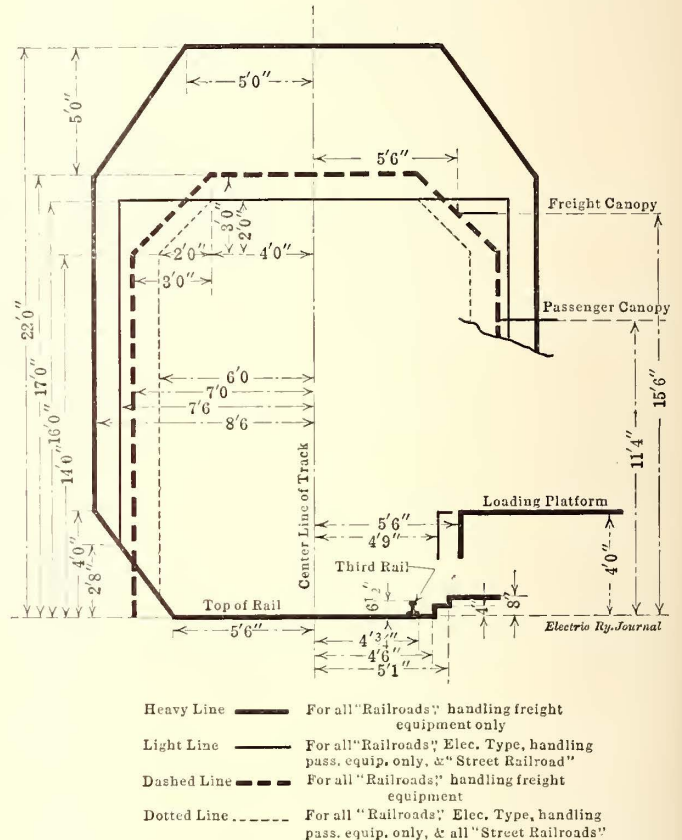
The board recommends a year's trial of the new schedule and orders that the rates take effect in thirty days.

Commission Fixes Railway Clearances

The Public Utilities Commission of Illinois, after investigating the subject of clearances on steam, electric and street railways, has prescribed minimum dimensions to govern future construction. The order states that hereafter any structure erected adjacent to any railroad or street railroad must conform strictly to the minimum clearance dimensions unless permission shall have been received from the commission to vary from them. The composite clearance diagram is shown in the accompanying illustration. In this diagram the solid lines show the clearances required between stations, the dotted lines the clearances within stations and in yards and terminals.

Clearances required which could not be shown in the

diagram for electric railroads are as follows: Those roads not handling freight equipment but which may be governed by a 9-ft. passenger car width are not permitted to have track centers less than 12 ft. Switching leads which lie adjacent and parallel to another track in which the switches are not operated mechanically, must have a center to center of track distance of 16 ft. For two switching leads parallel, this distance must not be less than 19 ft. The distance between centers for tracks given up wholly to passenger service in a passenger terminal or coach yard is prescribed as 12 ft. This minimum distance center to center of track also applies to track given up to loading and unloading of freight from



(Solid lines between stations; dash and dotted lines in stations and yards)

MINIMUM CLEARANCE DIAGRAM FOR FUTURE STEAM AND ELECTRIC RAILWAY CONSTRUCTION IN ILLINOIS

cars of a passenger or express type, at freight houses, private industries, steam tracks and similar places. It will be noted in the composite diagram that in addition to loading platforms, canopies and overhead side clearances, a third-rail clearance is indicated.

For street railways an 11-ft. minimum track center is allowed. The distance between the centers of switching leads and parallel tracks must provide a 3-ft. clearance between the sides of the cars. In city streets, where the clearance between main tracks is less than 3 ft. between the sides of the cars, the ruling provides that the windows of all cars shall be equipped with bars and that the vestibule doors shall be kept closed while the cars are in motion.

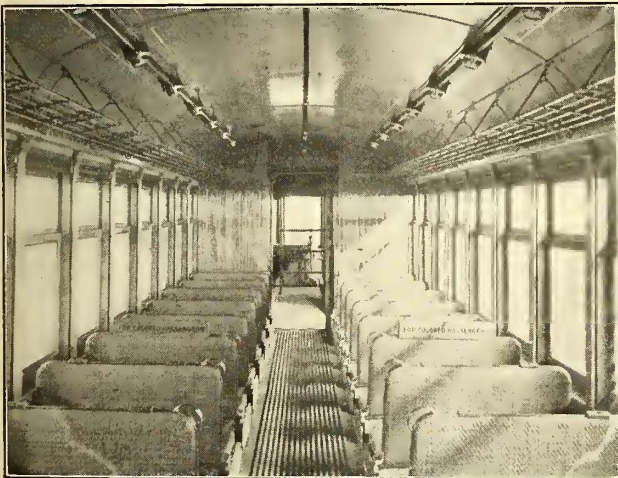
The clearance dimensions as prescribed in the composite diagram relate only to tracks on tangents or on slight curves. When the curvature is in excess of 6 deg., the rule provides that the horizontal clearance shall be sufficiently increased to secure the minimum allowance provided under the rules.

The Orleans-Kenner Electric Railway

This Is a New 1200-Volt Direct-Curren Interurban Line in Louisiana

The Orleans-Kenner Electric Railway, popularly known as the "O.K." line, was placed in operation on March 7. The cars are operated from Canal and Rampart Streets, New Orleans, over 4.3 miles of the New Orleans Railway & Light Company's tracks, thence for 11½ miles on right-of-way through the communities of Southport, Shrewsbury and Harrahan City. This right-of-way is a continuation of the neutral ground or parked center strip, common to many New Orleans car traction streets. It is flanked by high-class shell roads. By the completion of an overhead track crossing by the Illinois Central Railroad the road has just been finished to Kenner, and its eventual extension to Baton Rouge, 115 miles further, is contemplated.

The 2-mile zone adjoining New Orleans is good dairy land, while the territory beyond is used for truck farming. The Orleans-Kenner Electric Railway will endeavor to build up these industries by a frequent express freight service. At present the principal transportation means of this district is by a gas-electric car operated over the main line tracks of the Illinois Central Railroad between Kenner and New Orleans.



INTERIOR OF CAR OF ORLEANS-KENNER RAILWAY

The rail is 70-lb. plain girder on creosoted pine ties laid 2 ft. centers. The overhead construction is a General Electric catenary with ½-in. sherardized messenger, ⅝-in. sherardized hangers spaced 20 ft. to 40 ft. apart, and No. 0000 grooved copper trolley. This construction is carried in spans of 125 ft. from creosoted pine poles.

Energy is purchased from the New Orleans Railway & Light Company and transmitted to the Harrahan City substation at 6600 volts, three phase, sixty cycles. It is stepped down to 600 volts by means of three Westinghouse oil-cooled transformers for delivery to the same maker's 400-kw rotary which comprises two 600-volt machines permanently in series.

The carhouse, like the substation, is also a brick structure. It has but one track, and this is equipped with a pit for repair and inspection. Cars will be stored either in the open with tarpaulin sheeting or under an umbrella shed, these practices being feasible because of the mild climate. The carhouse is also at Harrahan City. Pending arrival of the first four motor cars, operation was begun with cars leased from the New Orleans Railway & Light Company. These cars are operated out of New Orleans every hour.

The new cars are of combination passenger and freight express type and were furnished by the American Car Works of The J. G. Brill Company. The operating equipment for each car includes four Westinghouse 50-hp motors with HL control and Westinghouse automatic air brakes. Following Southern practice, separate toilets are provided for white and colored passengers. The baggage compartment is available for smokers. An interior view is shown herewith. An article giving the general dimensions and other particulars of these cars was published on page 270 of the issue for Feb. 6, 1915.

Bay State Way Organization

Division of Duties of Way Department on One of the Largest Electric Railway Companies

According to the 1912 census report the Bay State Street Railway, Boston, Mass., operated more miles of trolley line than any other company in the country and was second only to the Pacific Electric Company of Los Angeles in miles of track. The recent consolidation in Chicago and possibly extensions of other systems elsewhere may have changed the relative positions of companies as regards length, but the Bay State organization remains one of the largest systems in the country. It serves the eastern portion of Massachusetts outside of Boston proper, the lines extending from Nashua, N. H., to Newport, R. I. There are now sixteen operating divisions and the organization of the maintenance of way department is unusually comprehensive.

The department is headed by an engineer of maintenance of way with headquarters at Boston. Under him as immediate assistants are three engineers and a chief clerk, the organization further requiring the services of one bridge superintendent, five inspectors, seven division roadmasters, twenty-one division foremen, twenty-one foremen, and ten acting foremen. During the busy months it is necessary to employ about thirty additional foremen to assist in supervising the extra men that are needed.

During the winter season all extra foremen are employed at the regular foreman's rate as trackmen, it being considered good business policy to retain trained men of this class. The company has had as many as eighty-two gangs working at the same time in Massachusetts, New Hampshire and Rhode Island. The company operates 941 miles of track. The force in winter varies from 220 to 1000 men, according to the weather, and in other months from 500 to 1500 men.

The engineer of maintenance of way has general supervision and responsibility in connection with all work relative to engineering, construction, reconstruction and maintenance of track and bridges on the system. He personally takes up matters regarding locations, grades, rebuilding of bridges, street widening and highway matters with local and state authorities, including legislative committees and the Public Service, Metropolitan Park and Highway Commissions. He submits estimates to and receives instructions from the general manager regarding work to be done; makes a general inspection of all work in progress and gives personal instructions relative to the manner in which the work is to be handled.

One assistant engineer has personal charge of all office work in connection with the preparation of estimates, making surveys, preparing plans for location or relocation of track, designing of special work, and giving line and grade for track construction. He makes personal investigation and reports on track conditions whenever requested by the engineer of maintenance of

way, and attends public hearings and conferences when the latter cannot be present. In connection with this work are employed five assistant engineers in charge of survey parties, one draftsman, three instrument men and two rodmen.

Another assistant engineer has personal charge of engineering relative to bridges and structures supporting track. He is also in charge of engineering relative to the study of grade crossing abolition and checking up costs of construction as given in detailed statements by railroads in connection with the abolition of crossings. Special investigations of traffic conditions fall upon this engineer. In connection with this work one draftsman and one rodman are employed.

The third of the assistant engineers has personal charge of measurements and the preparation of detailed reports of new track work completed for the auditor. Under him come renewals of all track special work, the repair of all rail joints and general track maintenance and incidental engineering. There are employed in this connection two assistant engineers in charge of survey parties, two instrument men, one rodman and one draftsman.

The chief clerk has charge of the general office, including maintenance costs, checking of tools, railroad crossing, special work, construction, reconstruction and estimate records, material required and on hand, reports of work done, daily reports of maintenance and construction, the compilation of reports and correspondence. For this work are employed three stenographers and five clerks. The chief clerk also has charge of the division roadmasters' clerks.

The superintendent of bridges has personal charge of construction, reconstruction, maintenance and inspection of all bridges on the system, of which there are about 260. In this work are employed one bridge foreman, and from two to eight carpenters, depending upon the amount of work. This official also attends to special work, such as the maintenance and operation of stone crushers, temporary supports, and structures carrying track in connection with municipal and state improvements.

There are one tie and four track inspectors. The former has general charge of tie inspection of all ties ordered by the company and makes trips south as occasion demands, since some ties are inspected while in the course of loading. New men are broken in occasionally by the tie inspector when he needs assistance. He also attends to special work such as investigating foremen, timekeepers and outside clerks, and notes and acts upon reports submitted by inspectors.

The four track inspectors have similar duties in inspecting track, including construction and maintenance. One, however, pays particular attention to bonding and acts as division roadmaster in the concentration of work requiring the presence of the regular official of this class. Investigations of accidents, complaints, drainage and tool matters also fall within the jurisdiction of this inspector. Another inspector pays special attention to paving, another to electric drilling machines, electric welders, grinders and hydraulic rail benders, and another has charge of gravel pits during the busy season with the handling of work cars. Night work also comes under the supervision of the fourth track inspector.

Division roadmasters are personally responsible to the engineer of maintenance of way for track construction and maintenance in their respective divisions. Each of these officials has direct charge of from 75 to 229 miles of track. They receive and carry out instructions from the general office, personally inspect and call attention to large repairs required on their divisions,

make a weekly inspection of railroad crossings, new rail, special work, joints, etc. General correspondence, inspection and signing of payrolls fall within the scope of their duties. Under them are various division foremen, with a subordinate organization of oilers, blacksmiths and trackmen.

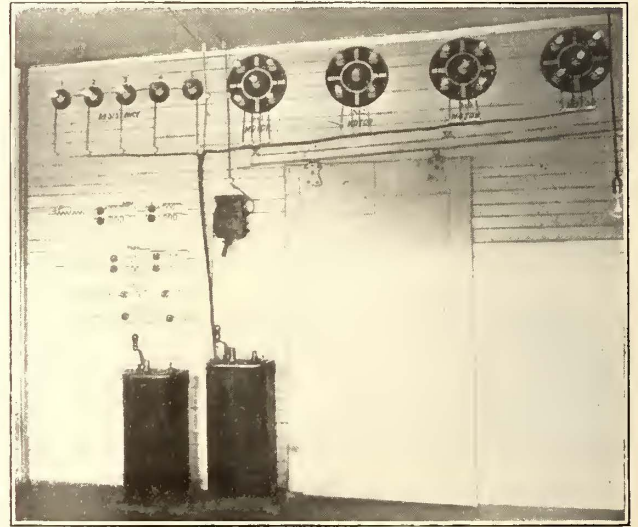
Instruction and Handling of Employees at Hampton, Va.

Besides Being Trained in the Operation of Cars, Motormen Are Instructed in Repairing Car Equipment and Inspecting for Defects

The following notes on the railway employees of the Newport News & Hampton Railway, Gas & Electric Company cover the practices in the instruction for motormen, in platform wages and in welfare work for all classes of employees.

INSTRUCTION OF MOTORMEN

A new motorman is broken in with a regular motorman until the instructor passes him on as fit. This period covers ten days to two weeks. Then the men spend four days in the shop pits and two days on the repair of controllers, compressors, etc. They receive \$1



INSTRUCTING EMPLOYEES AT HAMPTON—ACTUAL AND PAINTED CIRCUITS IN SCHOOLROOM

a day during this shop training. As a final polish the student is sent to the instruction room for several hours' teaching by the foreman electrician in cutting-out motors, inspecting for troubles, stopping cars with a single application of the air brakes, etc.

Although the company has no skeleton instruction car it has found a way to make learning attractive to future motormen by the use of illuminated circuit diagrams. In the instruction room itself are placed the control equipment for K-28 four-motor and K-11 two-motor operation, including circuit breaker and hood switch. Pictures of the circuits for each set of motors are painted on a wall of the room, while lamps are wired into the real circuit just below to show the relation between the resistance steps and motors.

The student is not placed in charge of a car until passed by the foreman electrician and master mechanic. Furthermore, the mechanical department has the privilege of calling for a motorman's return to the shop if it appears that he is abusing the equipment.

Motormen are also instructed in the duties of conductors, as all men must be prepared to operate at either end of the car. By this plan disturbance of service due to absence is reduced to a minimum.

WAGES

Platform men are paid as follows: First six months, 18 cents; second six months, 19 cents; second year, 20 cents; third year, 21 cents. Working time includes thirty-minute meal reliefs and deadhead running. Platform instructors receive 4 cents an hour extra.

Runs are divided into early straights, late straights and swings, as the cars are kept on the road from fifteen hours to twenty hours a day. The working time of the crews, including layovers, is kept within twelve hours. The tripper problem is a hard one inasmuch as the peak loads are only one and one-half hours long, both in the morning and evening. Nevertheless, the extra men are guaranteed \$1 a day minimum. At this time the company has thirty-three regular and nine extra motormen. The number of regular conductors is also thirty-three but the number of extra conductors is twenty because trailers are run during hours of heavy travel.

WELFARE WORK

All white employees who have served the company for five years receive a pass book for their wives while remaining in the service, aside from the monthly pass book issued to most of the other employees. Colored employees who have been in the service for five years receive annually three days' vacation with pay. As "lazy nigger" is such a stock expression, it is worth mention that most of these men prefer to work in vacation time and draw double pay. Colored employees, like a few of the white employees, ride on badges. The practice of giving premium uniforms every six months to all conductors and motormen who, during that period, have not been involved in an accident costing the company more than \$10, had proven highly satisfactory to all concerned.

The white employees of the company formed some fifteen years ago the Tidewater Relief Association. This body has always been managed directly by the men. The dues are sufficient to cover the relief work of the association, while the \$500 to \$600 donated annually by the company pays for four or five entertainments a year. These affairs take the form of oyster roasts and dances which are prolonged into the night to give every employee a chance to join in the merry-making. The association now numbers about 130 members. Among the chief clauses in its constitution and by-laws may be mentioned the following:

Membership ceases with resignation from the company's service; and the withdrawing member is entitled to receive the full amount of his contributions, less the pro rata share of disbursements made during his period of membership. A member who resigns from the association but not from the service does not participate in this privilege. The contrary was the case until it was discovered that some men resigned as members, got their pro rata and then rejoined a few months later! Under the present rules benefits do not begin until after four months' membership.

The death payment to the heir of a departed member is \$100, but if a member's wife or mother dies he receives \$50 to cover funeral charges and the like. The chief restrictions on the latter unusual provision are that no such benefit shall be paid twice to the same family within two years and that the relative so insured had been passed as in good health when the member himself was accepted.

Members who are not in receipt of regular salary while ill receive \$7 a week while totally incapacitated, \$1 per working day up to the end of the first six months and half that rate during the next six months, but not exceeding a total of \$200.

Sick payments begin for all non-salaried members from the beginning of the eighth day, assuming proper certification by the physician or presentation of other satisfactory evidence.

The management is vested in eight men, four of whom are car men, two from the mechanical department and two from any other department. This board of managers is elected annually. The managers receive no salary but are reimbursed for any time that they lose because of attendance at association meetings. The only official of the company regularly connected with the association is the auditor, who is custodian of the cash and securities. If awards are disputed they are open to arbitration by a board, the third member of which must be approved by the parties at issue. Dues are deducted from the member's earnings in advance.

Free medical attention is obtainable from any of four physicians, and to prevent malingering a man who reports sick is subject to visitation by fellow members.

The initiation fee is \$1 and the monthly payment is also \$1. This is more than customary elsewhere, but it should be considered that this association is really self-sustaining and that its disbursements include the unusual feature of death payments for wife or mother, as already noted. Assessments are limited to 25 cents a month.

On June 1 the company established a pension and insurance system, as described on page 1183 of the issue of this paper for June 19, 1915.

The clerical employees enjoy at half rates all privileges at the Newport News and Hampton branches of the Y. M. C. A., the company paying the other half. In this way the inside workers are encouraged to use as much of their spare time as possible for healthful exercise.

Among the most popular features of get-together work are the departmental tournaments at Buckroe Beach. These are held annually, and each member of the winning five-man team receives a \$5 sweater.

EMPLOYEES' SAFETY COMMITTEES

Another form of co-operation with the men is found in the committees on safety, economy and general efficiency. These are of two classes, those made up of groups of department heads and those of groups from the rank and file. The first committees are usually composed of three men, who are assigned to inspect a department over which they have no authority. Such committees make two inspections and reports a year. The employees' groups, known as sub-committees, are made up directly of workers in the department to be inspected. The sub-committees report monthly. New committees always have one holdover member to maintain the continuity of the work from year to year. All reports whatsoever covering this work are submitted for discussion at the weekly conferences of department heads under the chairmanship of the general manager. Action on the committee reports has resulted in many improvements, particularly in promoting safer working conditions and scientific care of new materials and scrap.

Among the suggestions adopted may be mentioned the following: Chains on flat cars in addition to couplings; employees' fire gangs; removal of unsightly and dangerous features like a defective rainspout outside the carhouse and rubbish-gathering shelves for holding fire pails inside the carhouse.

ANNUAL CONVENTION
SAN FRANCISCO
OCTOBER 4 to 8, 1915

American Association News

ANNUAL CONVENTION
SAN FRANCISCO
OCTOBER 4 TO 8, 1915

Announcement Is Made of the Arrangements for Transportation from the New England Section—Convention Meeting Places—Engineering Association Committee on Standards Discusses Various Subjects

NEW ENGLAND TRANSPORTATION ARRANGEMENTS

For the greater convenience of New Englanders planning to attend the convention arrangements have been made for special-car service from Boston to the Coast and return in connection with the "Red Special" leaving for California on Thursday, Sept. 23. Henry E. Reynolds, assistant general manager Bay State Street Railway, 84 State Street, Boston, Mass., is now making reservations for this trip as chairman of the New England committee, and is prepared to give full information of this and the other special trains and to handle all details for members and other visitors to the convention from the northeast section of the country.



EXTERIOR OF NATIVE SONS' HALL, WHERE THE MEETINGS IN SAN FRANCISCO WILL BE HELD

By the original plan, New England delegates would have been obliged to join the "Red Special" at Albany, N. Y., in journeying by this train, but arrangements have now been made for the attachment of a number of cars of the seven-compartment, two-drawing-room type to the 10 a. m. express out of the Boston South Station on the Boston & Albany Railroad on Sept. 23, these cars to be attached to the "Red Special" at Albany and thence to continue across the continent and back to Boston as an integral part of the tour of this already celebrated train. The accommodations of the "Red Special" will include a baggage car with trunks acces-

sible at all times, a club car, two "diners," valet, maid, barber and stenographic service, piano, "Victrola," and ample observation car accommodations. The party will be entertained at Milwaukee, Wis., Spokane and Seattle, Wash., and Portland, Ore. Already about twenty persons have signified their intention of going to San Francisco from New England on this train. Upon the filling of an application blank tickets will be prepared and mailed to the signer by Mr. Reynolds about Sept. 1, and all New England electric railway men and their friends are cordially invited to make full use of these facilities either by wire, mail or in person.

CONVENTION MEETING PLACES

As stated last week, the meetings of the association in San Francisco will be held in the building of the Native Sons of the Golden West, which is located between Geary and Post Streets at 414 Mason Street, directly in the rear of the St. Francis Hotel. The appearance of the front of this building is shown in the accompanying engraving. This is the building in which the National Electric Light Association held its convention last June.

The building contains numerous rooms suitable for general and committee meetings. Of these the largest is the Native Sons' Hall, consisting of an auditorium 66 ft. x 82 ft. or about 5500 sq. ft. It has a stage at one end, and the estimated seating capacity is about 2000. There are lobbies and a small reception room near the entrance. The sessions of the American Association and of the Transportation & Traffic Association will be held in this hall, which is on the first floor of the building.

The other associations will meet in lodge rooms on the fourth floor of the same building. The room selected for the meetings of the Engineering Association is called "Yosemite Hall" and is about 31 ft. x 67 ft. "Sacramento Hall," where the Claims Association will meet, and "San Joaquin Hall" where the Accountants' Association will meet, are also on the fourth floor. These rooms are also commodious, being each 31 ft. x 48 ft. All are well lighted and provided with ante-rooms.

The secretary's office and registration headquarters will be in the lobby on the main floor of the building.

The Native Sons' Building is in the center of the hotel, theater and club district of San Francisco and is used for many meetings in San Francisco.

ENGINEERING ASSOCIATION COMMITTEE ON STANDARDS

As stated in last week's issue, page 188, a meeting of the committee on standards was held in New York on July 29 and 30. In addition to those whose names were listed as being in attendance, the following were present at the second day's sessions: E. R. Hill, E. B. Katté and J. M. Waldron, all of New York City. The purpose of the meeting was to pass upon the recommendations of the technical committees in so far as they affect association standards.

On Thursday, after roll-call, Secretary Burritt read in full the rules for the adoption of standards and recommendations. The committee then took up one by one the recommendations of the committees, giving most thorough attention to each.

Prof. A. S. Richey presented the power distribution committee report. The inclusion of specifications for concrete poles in the Engineering Manual, as information, was authorized, as were also certain improvements in the steel-pole tables and formulas. At the suggestion of this committee the printing in the manual of portions of the report of the joint committee on the joint use of poles was also approved. The power distribution committee presented an elaborate, illustrated set of specifications for 600-volt overhead line material, the printing of which was approved. Recommendations as to the location of lightning arrester grounds, involving changes in Sections 81 and 82 of the overhead line construction specifications, were adopted, these being in conformity with the report of the committee on lightning protection.

The committee on lightning protection made a number of recommendations as to details of arrester installation and appended appropriate technical data. These were approved for printing in abstract in the manual.

The committee on buildings and structures recommended approval of a set of rules for instruction to employees for fire protection, which have been before the association for several years. These had been referred to Mr. Schreiber for consideration with the National Fire Protection Association. They have now the approval of this association. These rules are already contained in the manual, Section Bm 2b. They were approved by the standards committee.

At the session on Friday Mr. Gove presented the report of the committee of equipment, bringing up first a revised specification for heat-treated carbon-steel axles, shafts, and similar parts. It was decided to supersede this with a new specification which differs mainly in being more definite in wording and more up to date, the title being changed to cover quenched-and-tempered carbon-steel axles, shafts, and similar forgings. The specification for annealed carbon-steel axles, shafts, and similar forgings was then approved for revision in certain sections dealing with physical and chemical properties. New specifications for gears and pinions were submitted, these including both the quenched-and-tempered and the case-hardened types, and these were approved by the standards committee for submission to the convention as recommended specifications.

The equipment committee's proposal to print in the Engineering Manual a schedule for proof testing heat-treated steel forgings was approved, as was also the printing of the N. F. P. A. rules. Approval was given to a revision of the specification for air-brake hose in which minor changes in detail were proposed, and this will be presented to the convention as a recommended specification. A suggested revision of steel-wheel design which consisted in drawings for additional sizes extending down to 21 in. was postponed, together with the matters of new tread-and-flange-contour designs, these being held over for consideration by the ensuing committee on equipment.

J. M. Waldron then presented recommendations from the committee on block signals which included detailed drawings for a standard electric semaphore signal. The proposal of the 1914 committee for a recommended design for a spectacle casting, which was approved at the 1914 convention, was passed as a recommended design, this drawing forming part of the proposed details for the standard semaphore, and the detailed drawings were then adopted as recommended designs. A clearance diagram for semaphore signals, which had received the approval of the committee on power distribution, was referred back to the committee on signals for further consideration in connection with

the recommendations of the convention for last year. In connection with light aspects for signals operated by contactors, the use of the terms car-registering and non-registering were adopted in place of car-counting and non-counting signals.

E. R. Hill then presented a report from the committee on heavy electric traction in which revisions of clearance lines for third-rails were proposed, together with recommended designs for protection of over and under-running third-rails and a standard definition for third-rail gage, all of these proposals being approved by the committee on standards. A proposed specification for coal purchases in the report of the committee on power generation was then submitted by Mr. Welsh. This gives an outline of the points that should be brought out in connection with coal contracts and it was approved for publication in the manual as miscellaneous method and practice.

Following this the report of the committee on way matters was presented by Mr. Kimball, who took up first the matter of rail foundation construction. The Type B of track construction as submitted in last year's report of the committee on way matters was approved as recommended design. Action on Type C, as submitted in last year's report, was deferred until after the coming convention. A classification of soils and screens was then submitted, the plan being approved for entry in the manual as a miscellaneous method and practice. Specifications for special work covering manganese steels, cast steel for track castings, cast-iron rails, splice bars, bolts, tongue switches, etc., were approved for presentation before the convention as a recommended practice.

A design of joints for standard 7-in. 80-lb. and 91-lb. plain girder rails was proposed as a recommended practice, together with a specification for drillings in standard section rails, both of these being approved. The question of symbols or conventional signs for recording surveys was then considered and it was suggested that this subject be considered jointly by various committees so that the existing symbols can be incorporated with those now bearing the approval of the Interstate Commerce Commission in its valuation work. It was suggested that the symbols be printed on a larger scale. This suggestion was approved and the report was referred to the executive committee for amplification by a joint committee so that all classes of symbols may be included. The addition of a missing dimension in the design of joint plates for 7-in. girder and grooved rails was then approved as a revision of the design.

It was recommended that the term "T-rails" be changed to "plain girder rails" in several places in the manual, owing to confusion that sometimes arose with the present nomenclature. This recommendation was approved. The subject matter now in the manual under the title "T-rails in Paved Streets" was revised also by rewording and subdivision, the design for plain girder rail covering the American Railway Engineering Association standard sections of 80-lb., 90-lb. and 100-lb. weight appearing in a separate section.

Chairman Adams then outlined preliminary arrangements that had been made for co-operation with the standards committee of the Transportation & Traffic Association and Mr. Stocks presented a report regarding the extent of the use of association standards by the member companies, prepared from replies to inquiries sent out from the secretary's office. Owing to the small number of replies received to the original circular of inquiry, as well as the apathetic nature of the replies, it was decided to appoint a sub-committee to report on the situation to the executive committee and Mr. Hanna was delegated for this duty.

COMMUNICATIONS

Is the Ultra-Light-Weight Car a Passing Craze?

NEW YORK, July 30, 1915.

To the Editors:

During the last few months I have been very much interested and I must confess somewhat disturbed over the demand for cars of extraordinarily light weight. I am not referring to the use of cars of small capacity as opposed to large units, as that is solely a transportation problem, but there has been a great deal of talk about cars which weigh, completely equipped, less than 10,000 lb., and, according to all of my past experience, this is far too low to provide proper lasting qualities.

In the movement toward lighter weights there is a deadline that has to be recognized eventually. I believe that the present demand has passed this. I have heard of designs for bodies seating approximately thirty-six which are estimated to weight approximately 5000 lb., and some reports even state that bodies of a much lighter weight than this have been proposed, but it is a significant fact that none of them is being built. Is it not true that while a great many managers of railway properties are demanding extremely light-weight cars and have ideas of their own as to how they should be constructed, in every case they want the car builders to stand behind the design and guarantee durability before they will actually undertake the construction, and is it not the case that the car builders are unwilling to do this? If so, there is not much danger in the movement. But I would not like to see the industry adopt a policy of building cars which, like buses, will last only for four or five years.

Naturally, I am interested in knowing whether the car of extremely light weight is really going to come into use. I hope not, because if it does it will be necessary for all of us to revise our ideas on car construction and to make extraordinary provisions for depreciation. On the other hand, since the decrease in jitney competition has become evident, the desire for extremely light cars seems to have decreased also. Indeed it might be daring (in the light of the still-prevalent fever for extremely light cars) to say that the craze is only temporary and will subside.

MANAGER.

Injuries to Persons

LINCOLN, NEB., Aug. 3, 1913.

To the Editors:

The legal profession is fast becoming a dollar institution. The ethical side of life is being forgotten in the mad rush for financial gain. Not only is the profession destroying itself, but it is drawing into its whirlpool of disintegration thousands who are made to feel the sting of financial loss and starting as many more upon a moral decline by inducing them to see a state of facts that has no real existence.

The verdict of a jury is hardly to be considered as evidence of the guilt or innocence of the accused. Courts are becoming temples of technicalities rather than of justice. Case law appears to have more weight than the principles of law that underlie it. Sight is lost of the fact that justice is more liable to result from the application of a principle to a proven state of facts than in applying case law thereto. A little more care on the part of the judges and the members of the bar in rendering decisions and giving advice would save our people millions of dollars annually in Supreme Court expenses, in costs of actions that never should have been brought and in attorneys' fees that never

should have been paid. The entire legal machine is very much in need of reform. This reformation should be from within, and were it not from a spirit of indifference, the fear of offending and the horror of being criticised, it would be.

The wrongs practised are generally known, they are numerous and glaring. One of the most damaging to the profession and to the general public, perhaps, is the present practice in personal injury cases. The loss to the general public by reason of such actions against steam railroads, street and electric railways run into the millions annually. However, the sum paid to the deserving claimants, so long as it is reasonable, is not to be complained of, but that which is paid to the large army of damage hunters and the 50 per cent that is retained by the attorney cannot be criticised too severely.

This item has grown to enormous proportions and is increasing from year to year, regardless of the safety appliances installed and the care and caution used by these corporations to protect the persons of its patrons. In fact, it appears that these transportation companies are really reducing the number of injuries, yet the aggregate sum paid is growing larger each year. For the year ended June 30, 1913, the railways of the United States, not including the street and electric lines, paid for injuries to persons the sum of \$30,410,030, an increase over the previous year of \$1,639,325. During the year 1912 the street and electric railways of the United States paid for injuries to persons the sum of \$20,707,960, an increase over the year of 1907 of \$2,531,655. If this increase with both steam and electric lines has been maintained to date these transportation companies will have expended upon this item for the year ended June 30, 1915, the enormous sum of almost \$60,000,000. Of this the legal profession will have received not less than \$30,000,000 for its services, thus damaging the public by reason of these charges in a sum not less than \$18,000,000 if we allow them 20 per cent, and \$24,000,000 if we allow them 10 per cent for their services. The commercial world pays for its collection when made by suit the sum of 10 per cent on the first \$1,000 collected, and 5 per cent thereafter, and there is no good reason for the attorney charging more in personal injury actions.

To this sum retained by the legal profession we can with certainty add \$6,000,000 paid to undeserving claimants through the efforts of the profession. It can be said with reasonable certainty, therefore, that not to exceed \$24,000,000 of the \$60,000,000 ever reaches the deserving claimant. If the \$24,000,000 now unjustly taken from the railway companies were allowed to remain in their hands, it would go far toward settling the transportation question. Think what it would mean in one decade, almost a quarter of a billion dollars.

The profession has, for years, been educating the people that the transportation companies were outlaws to be preyed upon at will, forgetting to explain that every dollar above a legitimate claim and charge could not be justified, that all personal injury claims are chargeable to operating expenses and must be paid by the patrons of these companies.

The sums paid for injuries are becoming more burdensome from year to year. Something should be done to protect the public as well as the corporations. It is granted that the attorney has the right to contract for his services so long as he is reasonable and just and the public is not damaged thereby. In these cases the public is directly and vitally interested, and if the attorney forgets his duty to that public, the State should, at once, remind him of it in such a manner as to make it impossible for him to go wrong in the mat-

ter of his charges; they should be regulated and fixed. It should be made a crime to charge a contingent fee. Such regulations would save the public millions annually, and the deserving claimant be cared for as well as now. It is clear to both judge and jury that the charges made by the attorney are exorbitant. They understand that the verdict and judgment must be, at least, twice what it should be to remunerate the deserving claimant.

The money loss under the present practice is great, but the loss to manhood is much greater, due to the manner of procuring and prosecuting these claims. The attorney who makes personal injury suits his business has his emissaries at the danger points along the street car and steam lines. The unfortunate one is very often doubly injured by reason of the accident sustained by his person and the blow dealt his moral fabric at being made to understand that he must see the facts through the glasses of his attorney.

Not all the members of the profession are guilty of these practices, nor is it to be presumed that they would be if they had the opportunity, but the silence of all, and the indifference of the many, causes the public to think that one is as bad as the other. Nor has that public forgotten that in order to protect the old soldier from the greed and avarice of the pension attorney, a law had to be promulgated regulating his fee.

STEPHEN S. BISHOP, Attorney-at-Law.

Stone & Webster Official's Views on Motor Buses

To a representative of the ELECTRIC RAILWAY JOURNAL, Frederick S. Pratt, chairman of the board of directors of the Puget Sound Traction, Light & Power Company, Seattle, Wash., and a prominent member of the Stone & Webster Management Association, recently outlined his views relative to the motor-bus situation in the Northwest upon returning to the Boston offices of the firm. Mr. Pratt said that about a month ago a motor-bus service was begun between Edmonds and the main line of the Pacific Northwest Traction Company, the electric interurban road connecting Seattle and Everett, the distance covered being about 3 miles. Sixteen Ford cars are also in use in Everett as an experimental means of handling short-interval travel in small amounts, the cars being run by the Washington Auto Bus Company, affiliated with the local traction company, virtually in competition with the latter's service.

On the Puget Sound Electric Railway, a gasoline motor-bus service is being run by the Auto Bus Company between Auburn and the towns of Buckley and Erumclaw, the last-named place being about 20 miles from the interurban road connecting Seattle and Tacoma. The buses carry twelve passengers each, and through tickets are sold between points on the bus line and the interurban terminal stations.

Mr. Pratt said that the usefulness of the motor bus as a feeder to a trunk line seems on the whole fairly well established. The company's jitney service has been in operation too short a time to yield valuable conclusions, but it is not regarded as a money-making venture as yet, and there is little reason to anticipate financial profit from such service on a 5-cent rate. Definite plans for establishing jitney service in Seattle, as discussed in the local press at various times, are by no means crystallized. It may become necessary to establish such a service, but at present no complete arrangements have been determined, and, in any event, the Stone & Webster interests are convinced of the permanence of the electric railway as the agency for handling the great bulk of city and trunk-line transportation.

Ambulance Trailers in Hanover

The street railway in Hanover has been rendering valuable aid to the authorities in transporting wounded soldiers from the railroad station to the several hospitals in the city in small trailer cars like the one shown in the accompanying illustration. The bodies were prepared for their purpose by removing the ends and mounting angle-irons near the floor and at the height of the window sills. On these, acting as rails, small



HANOVER CARS FOR TRANSPORTING WOUNDED SOLDIERS

trucks were placed upon which the stretchers carrying the wounded soldiers could be readily rolled into place. Each trailer accommodates eight stretchers, the length of the body being about 16½ ft. The ends are closed with sail-cloth curtains.

The company has been operating eight of these trailers and some weeks ago had already transported more than 7000 men.

Inventors' Guild Members on Naval Board

In accordance with the invitation of the Secretary of the Navy, the Inventors' Guild is planning to select two of its members for membership in the National Naval Advisory Board, the secretary having been instructed to send to the members of the Guild a brief statement reviewing the situation and a request that each nominate by letter ballot not less than two nor more than four members. These names are to be considered by the board of governors of the Guild with the understanding that from the names received three or more will be selected, the president of the Guild making the final selection of the two nominees.

It is expected that the National Naval Advisory Board will be composed of about eighteen members. Thomas A. Edison has already been appointed chairman, and the large technical societies of the country will each elect two members. The duties of this body will not lie so much in the actual invention of plans and devices as in advising the Navy Department concerning such technical matters as may be submitted for its attention, assisting in the investigation of such matters as are deemed worthy of consideration, obtaining for the Navy Department the assistance of the most competent men in any special technical branch and in offering a trained and receptive ear to inventors. The board will, in fact, form an effective professional connecting link between the people of the country and its trained military experts, it being probable that some arrangement will be made whereby the services of the board will be at the disposal of both the army and the navy.

Equipment and Its Maintenance

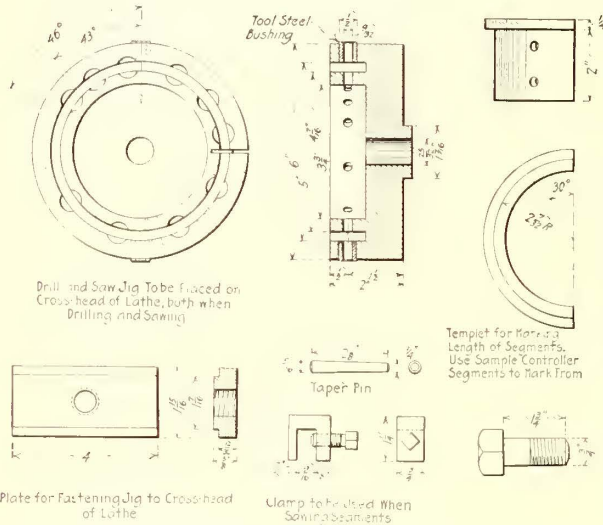
Short Descriptions of Labor, Mechanical and Electrical Practices in Every Department of Electric Railroading

(Contributions from the Men in the Field Are Solicited and Will be Paid for at Special Rates.)

Resawing Old Controller Segments to Smaller Size

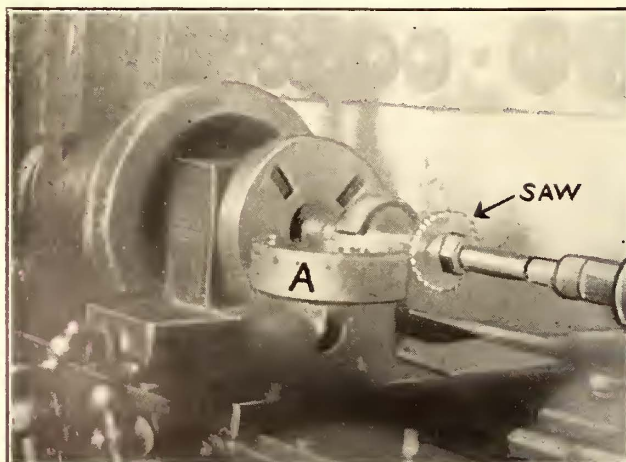
BY F. A. MILLER, SUPERINTENDENT OF POWER AND EQUIPMENT OAKLAND, ANTIOCH & EASTERN RAILWAY

The accompanying halftone and drawing show an economical method of using worn segments of hand controllers by making smaller out of the larger ones. This practice was devised when the writer was with the Puget Sound Electric Company at Tacoma, Wash.



DRILL JIG FOR SEGMENTS OF K-6 AND K-28 CONTROLLERS

A is a jig counter-bored in order to fasten it to the tool-post rest by a T-headed bolt, and it also has a circular groove in order to receive the segment which is to be cut down. A saw cut and a row of holes allow the segment to be cut off to the proper length after it has been placed in the groove after inserting a 1/4-in. standard taper pin in the hole in the good end of the segment. The jig is fed forward against the metal



RESAWING OLD CONTROLLER SEGMENTS TO SMALLER SIZE

slitting saw which is fastened to a mandrel in the lathe centers.

After a lot of old segments have been cut to the desired length, the mandrel and saw are removed from the lathe and a drill of proper size is installed in the headstock. The jig is now fed forward until the hole to be drilled is opposite the drill. The segment to be drilled is dropped again into the groove, the 1/4-in. pin is inserted in the one good hole in the segment and the tool carriage is fed against the drill.

It is to be understood that when this jig is manufactured the holes in the circle are to be the same height as the drill center in the headstock, and that a separate jig is to be used for each type of controller where the arc of the circle is different.

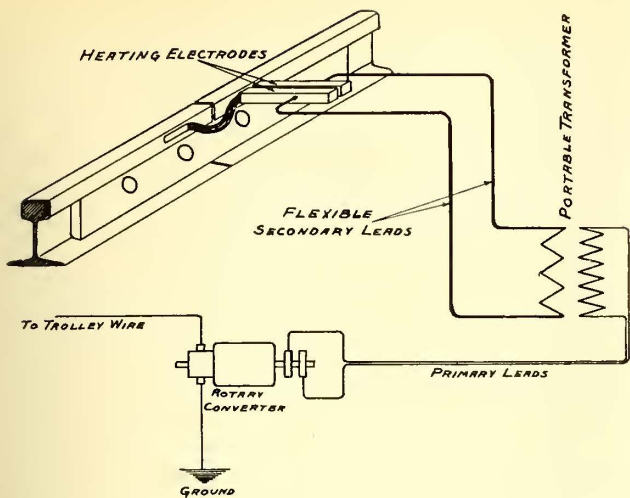
An Improved Method of Applying Rail Bonds

BY L. P. CRECELIUS, SUPERINTENDENT OF POWER CLEVELAND RAILWAY

Of all the items entering into electric railway construction, the rail bond is not only one of the most important, but it is also one of the most difficult to install and maintain properly. It is located at or near the ends of abutting rails where it is subjected to severe vibration and exposure and where it is frequently tampered with in repairing loose joint plates and resurfacing rails. These conditions require the following essentials in its design and application; first, flexibility graduated away from the terminals and apportioned over the length of the bond to resist injury from prolonged vibrations, and second, intimate and permanent union between bond terminals and rail from the mechanical and electrical standpoints.

The first of these requirements seems to have received early recognition, for there are available rail bonds equipped with terminals and sufficiently flexible to resist an almost incredible amount of vibration. The second requirement, however, has given rise to a number of processes for uniting the terminals of the bond directly to the rail by means of all sorts of external heating agencies, and there are at the present time in use numerous devices by means of which the bond terminals are soldered, brazed and even welded to the rails. Closely related to the second primary requirement is ease of application and avoidance of injury to bond and rail. It is also obviously necessary, on busy railways, that the tracks be left unobstructed so that traffic may continue over them while the rails are being bonded. This limitation imposes severe restrictions upon the use of bonding apparatus satisfactory in other respects.

In a bonding outfit which has been used in Cleveland during the past two years with very satisfactory results, notwithstanding the heavy traffic conditions encountered, these requirements have been met in the manner herein described. The designers of this equipment had in mind the object of overcoming the difficulties due to the high temperature encountered in welding by means of the electric arc, oxy-acetylene flame or superheated, molten copper. By the new method rail bonds may



ELECTRIC-CIRCUIT DIAGRAM CLEVELAND RAIL-BONDING OUTFIT



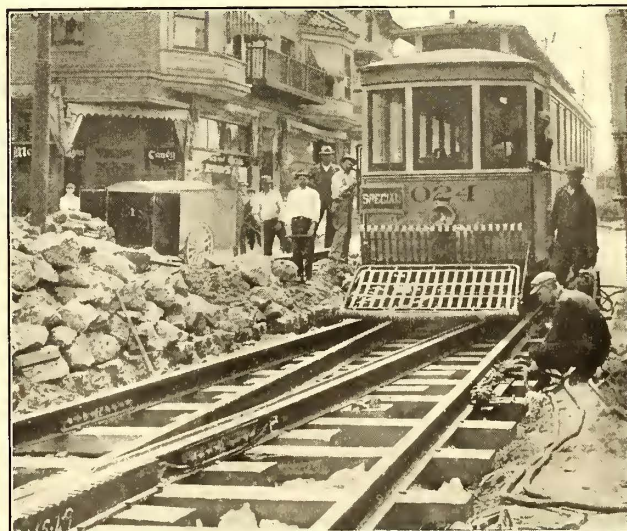
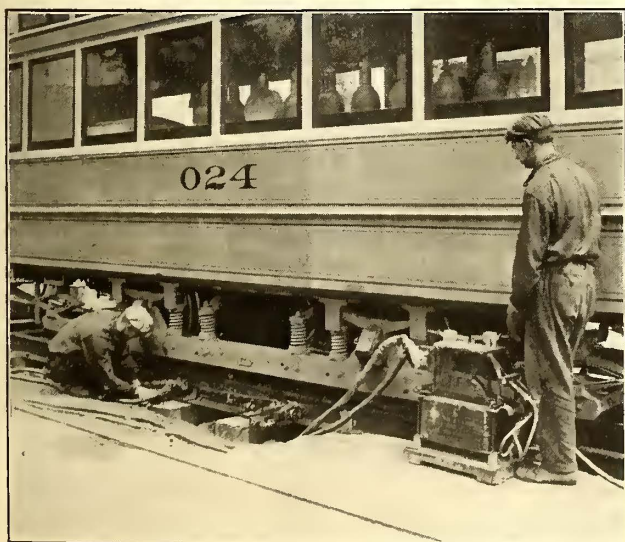
GENERAL VIEW OF CLEVELAND RAIL-BONDING OUTFIT

be electrically brazed to the rails without interfering with traffic and at a temperature sufficiently low to avoid difficulty.

The device consists of small bonding clamps, which are arranged to be clamped to the lower flange of the rail or to the fish plates, and upon which are mounted two adjustable carbon heating electrodes which are brought to bear against the bond terminal. The electrode holders are equipped with quickly detachable terminals to which are connected flexible secondary leads extending from a transformer of about 18-kva. capacity. The transformer is made portable so that it can be lifted about from place to place. The primary leads to the transformer are connected to a small rotary converter of about 20-kva. capacity which receives power from the trolley wire. This converter is mounted on any suitable car or vehicle. One form of mounting is shown in an accompanying illustration. By extending the primary leads the transformer can be moved along the rails as the bonds are applied, to any desired distance from the rotary converter. The heat is produced electrically directly against the bond terminals by the I^2R loss in the resistance interposed in the circuit at this point by the contact of the electrodes with the bond terminal. The circuit, therefore, consists of the transformer secondary, the flexible leads, the electrodes and the bond

terminal, all connected electrically in series. By this arrangement there is thus introduced into the circuit, at the desired point, a considerable and effective heating resistance permitting of a very substantial reduction in the amount of current ordinarily required to produce the necessary I^2R drop. In consequence, the size of the secondary leads from the transformer are reduced to a point at which they can be very easily handled. The electric circuit is illustrated in the accompanying diagram.

To avoid mutilating the bond terminals and overheating the rail section, silver solder interposed between the bond terminal and rail is employed as a brazing material. Silver solder is an alloy composed of copper, zinc and silver of such proportions that its fusing point is in the neighborhood of 1500 deg. Fahr. This material has to a marked degree the requisites of conductivity and cementing power, with the additional advantage that it forms a perfect union between the bond terminal and rail at a temperature sufficiently low to prevent injury to either. Standard forged-terminal bonds, which have been designed to resist the effects of vibration and which have contact areas commensurate with the cross-sectional areas of the bonds, can thus be used. In other words, in the application of this method most of the objections to the use of thermic processes are removed



APPLICATIONS OF CLEVELAND RAIL-BONDING OUTFIT WITHOUT INTERFERENCE WITH TRAFFIC

and the bond may be permanently and cheaply brazed to the rail.

As shown by the illustrations on page 237, the outfit is assembled into a compact unit and is so arranged as to provide the maximum of portability. In some instances it is placed in a small cart and delivered alongside the section of special work to be bonded, being towed there by an auto-truck and left until the work is finished, whereupon it is moved along to the next job. When the work consists in rebonding rails that have been repaired here and there along the street, the outfit is placed aboard an auto-truck and the leads extended from the transformer to the clamps which have been placed on the rails. In these cases it is unnecessary to remove the transformer from the truck. In outlying districts where the bonding must be done from the tracks along the private right-of-way, removed from roadways, the outfit is placed aboard any suitable car, and where traffic conditions warrant the bonding is done without unloading the equipment. Where conditions are such, however, as to require the car to be removed to a siding in order to clear the main line, the transformer is removed and the primary leads are extended from the car which contains the rotary to the point where the bonds are being applied. In fact, in some cases the primary leads are extended for a distance of half a mile or more on either side of the car to the transformer. This arrangement is such as to afford the greatest utility to the apparatus because of its flexibility.

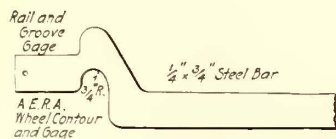
To summarize, the advantages of this method of bonding have been found to consist of the following: (1) The entire elimination of obstruction to traffic along the rails which are being bonded; (2) the use of silver solder whereby standard forged terminal bonds can be applied very efficiently from the mechanical and electrical standpoints; (3) the absence of pyrotechnical displays in the public highway, due to the low temperature by which the union between the bond and rail is made; (4) the absence of overheated and broken rail sections and mutilated bond terminals; (5) the high degree of flexibility which has been incorporated into the design of the apparatus, resulting in general utility, and (6) the low cost.

Apparatus making use of the method as described above is manufactured by the Cleveland Rail-bond Company and is known as the "Champion Portable Rail-bonding Outfit."

Combined Wheel and Track Gage

BY C. M. FEIST, MASTER MECHANIC SIOUX CITY (IOWA) SERVICE COMPANY

Accuracy in special work installations, with particular reference to wheel and track gages, is obtained by the Sioux City (Iowa) Service Company by checking



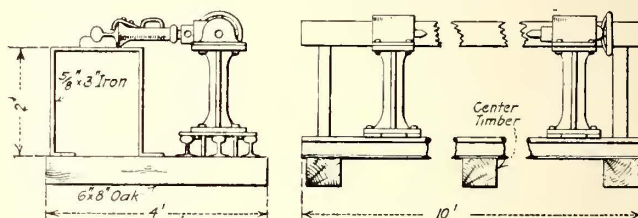
COMBINED WHEEL AND TRACK GAGE

both with a combined wheel and track gage. This gage is shown in the accompanying sketch. It is made of a 1/4-in. x 3/4-in. steel bar, with the American Electric Railway Engineering Association's standard wheel contour on the underside of the gage bar and the correct track gage to fit this wheel on the opposite side of the bar. This device has been found particularly effective in testing the wheel passages through special work, and makes possible the correction of errors in the track or the wheel gages.

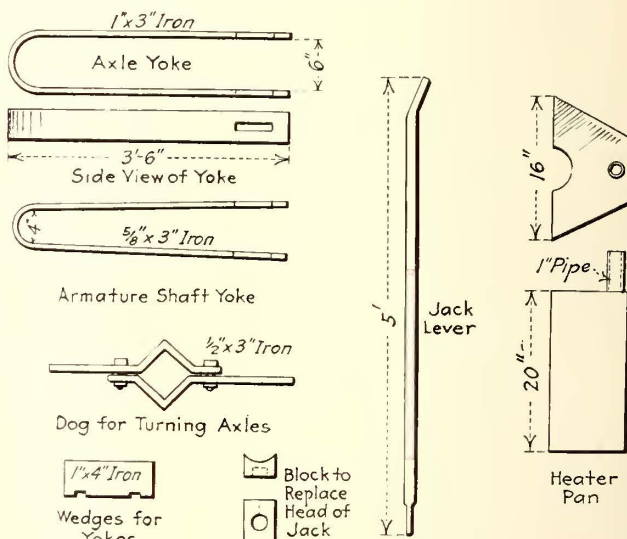
Axle and Armature-Shaft Straightener

BY J. N. GRAHAM, MASTER MECHANIC ROCKFORD & INTER-URBAN RAILWAY, ROCKFORD, ILL.

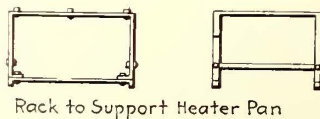
A good home-made axle and armature-shaft straightener has been in use for some time in the Rockford & Interurban Railway shop with excellent results. The machine was made for the most part from material similar to that which can be found in any railway shop. As will be evident from the illustrations, it consists of a headstock and a tailstock mounted upon a bed made of rails with provision for applying a straightening force at any point by means of an ordinary screw jack. A simple heater permits the axle or shaft to be softened if necessary.



SIDE AND END ELEVATIONS OF AXLE AND SHAFT STRAIGHTENER



(Not to Scale)



Rack to Support Heater Pan

ACCESSORIES FOR AXLE AND SHAFT STRAIGHTENER

The foundation of the straightener consists of three pieces of 6-in. x 8-in. x 4-ft. oak tie to which, at one end, are bolted three pieces of rail about 10 ft. long. This rail may be of any convenient size and the pieces should be placed with spaces of about 2 in. between them.

On this rail bed rest movable heads, in one of which is a fixed lathe center, and in the other a movable center, operated with hand wheel and screw as in the tailstock of a lathe. Patterns had to be made for these heads. In order to guide the heads on the bed, pieces of 3/4-in. x 3-in. flat iron, long enough to span the three rails, were bolted on the bottom surfaces and to these were bolted pieces of 3/4-in. x 2-in. flat iron, the latter acting as slides to keep the heads in line with the rail.

The following scheme was devised to permit the straightening force to be applied to the axle without

putting a strain on the centers. On the ends of the outside foundation timbers opposite to those occupied by the rail two stands made of $\frac{5}{8}$ -in. x 3-in. flat iron were mounted, their height being such that a rail laid across them was level with the lathe centers. The height of the machine is at the option of the builder, but the one which we are using has the centers 2 ft. above the top of the bed rails. On the stand was mounted a piece of rail 10 ft. long, supported on its side on two pieces of wood sawed to fit the contour of the rail. This piece of rail is loose on the stands so that it can be moved back and forth.

To this jack rail was attached an ordinary screw jack by means of two iron hooks bolted to its base. It is necessary to use a heavy type of jack for this purpose. The head of the jack was removed and replaced by a piece of iron cut out to fit around the axle. A pair of yokes, like those shown in one of the illustrations, are used to hold the jack rail at the proper distance from the axle. These yokes are slipped over the axle and over the jack rail and iron wedges are pushed through slots near the open ends of the yokes and back of the jack rail, these wedges being notched to prevent the spreading of the yokes under pressure. A jack lever, made of $1\frac{1}{2}$ -in. hexagon steel, with ends rounded to fit into the holes in the jack screwheads, is used in applying the straightening force.

Other auxiliaries which are convenient in the operation of the straightener are a dog for turning axles and a heater pan, details of which are shown. The dog is used for turning axles from which it has been necessary to remove the wheels, although in most cases the axles can be straightened without such removal. In most cases, the shaft can be straightened cold but it can be easily heated, if necessary, with the aid of the heater pans made of No. 16-gage, blue annealed steel. The pan is fitted with a small piece of pipe at one end, close to the bottom, for attachment to an air hose, charcoal with air blast being used to prevent the formation of smoke and the production of scale on the shaft.

Economies of the Light Car and of Ball Bearings

BY ARTHUR V. FARR, S. K. F. BALL BEARING COMPANY, NEW YORK

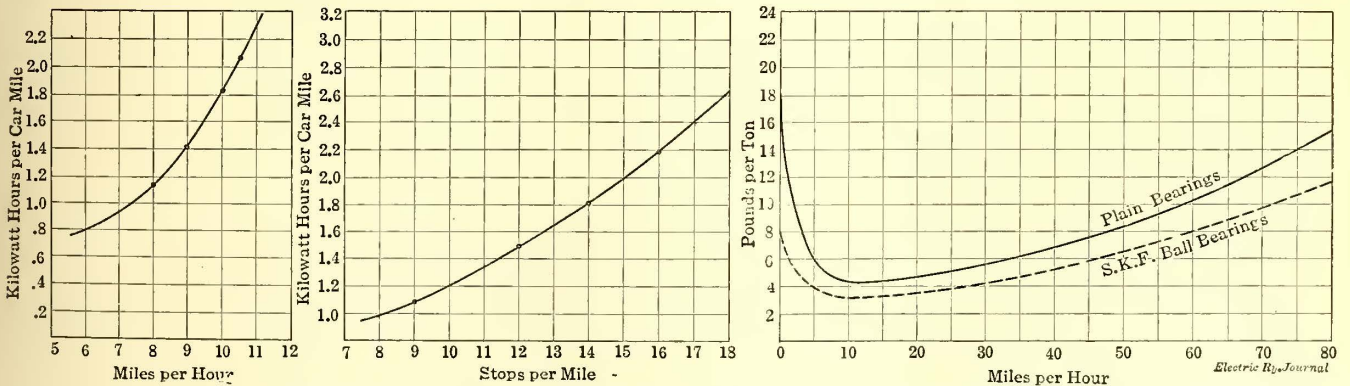
Frequency of schedule and character of service rendered are factors upon which success in modern street railway practice often depend. To operate a faster schedule and reduce headway without materially increasing operating expense is the problem facing the operator. And its successful solution will be welcomed by both operator and public.

The solution to the problem depends upon the answer to this question: Can a car be made which is acceptable to the public and which combines the qualities of light weight and strength to such a degree that the savings in power and maintenance more than offset the additional platform expense where more cars are used? The answer to this inquiry is, "Yes," that the advance in body and truck design not only makes this possible, but such cars are being made and operated with notable success to-day.

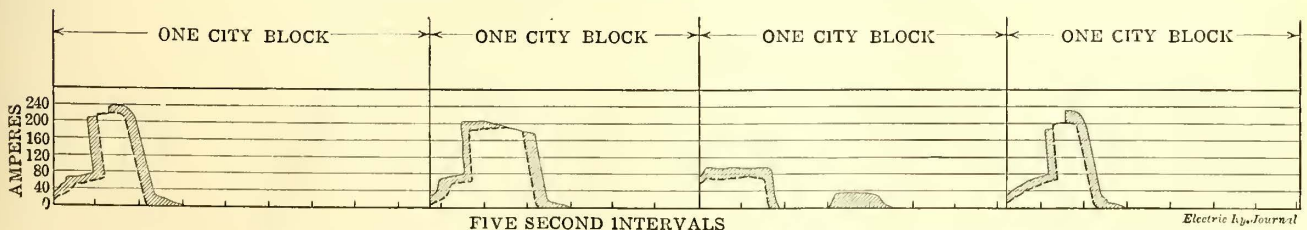
The modern type of light car is frequently a single-truck proposition, following the practice of modern engineering design in securing greatest strength for least weight. By the use of the radial truck construction and long wheelbase the riding qualities of the single-truck car approximate those of the double-truck car.

Weight reduction is a matter of recognized importance. Five cents per pound per year is usually accepted as the saving which can be secured in city service by cutting down car weight. On this basis the substitution of a 12,000-lb. car for one weighing 40,000 lb. would save \$1,400 per car annually. Against this saving would be the increased platform expense for the daily rush hours, amounting to not more than \$300 to \$400 per car annually.

The Third Avenue Railway of New York has used



THIRD AVENUE RAILWAY CAR TESTS—FIG. 1—ENERGY CONSUMPTION WITH 9.17 STOPS PER MILE, 26,000-LB. STEPLESS CAR, BALL BEARINGS, RADIAX TRUCK, FOUR PASSENGERS; FIG. 2—ENERGY CONSUMPTION AT 7.5 M.P.H. SCHEDULE SPEED, SAME CAR; FIG. 3—COMPARATIVE TRACTIVE EFFORT WITH PLAIN AND BALL BEARINGS RESPECTIVELY



SAVINGS DUE TO BALL BEARINGS—FIG. 4—CURRENT CONSUMPTION RECORDS SHOWING COASTING WITH PLAIN AND BALL BEARINGS RESPECTIVELY

Solid Line, Plain Bearings; Dash Line, Ball Bearings; Shaded Area, Saving Due to Ball Bearings.

the light type of car to advantage and has reduced the car weight per seated passenger from between 800 and 900 lb. (average for typical double-truck cars in city service) to 650 lb.

The biggest item of economy is, of course, power saving, and the use of ball-bearing journals further increases this item. The reduction of power consumption, especially at the peak of the load during rush hours, affords an opportunity for immense economy. The use of light cars reduces the required investment for power stations and substations to the extent of \$1,000 to \$2,000 per car, or, in the case of existing properties, permits the operation of a greatly increased car mileage.

Tests show that the starting effort required is reduced 55 per cent when ball bearings are used. The reason for this reduction is this: plain bearings, depending upon a film of oil to separate the journal from the bearing lining, bind when the car stops. The pressure of the car on the journal squeezes the oil out, and in starting the rubbing friction of two metal surfaces

city cars weighing 40,000 lb. and more. Compared with these the saving would be still more in favor of the light car.

The comparison is between a forty-passenger car weighing 26,000 lb. and a twenty-nine passenger car weighing 10,000 lb., operating over the same route during a period of twelve hours daily.

One of the chief considerations of almost every part of car equipment is its bearing on accident reduction. Doors, steps, brakes, brakeshoes, wheels, axles, and bearings (if of the anti-friction type), all play an important part in helping to reduce accident. Ball bearings permit a car to be more easily manipulated, and easy manipulation means quicker starts and freedom from jolts at starting, as cars can be started with smooth, constant torque. Not only do ball bearings help to reduce the number of accident claims, but being more durable than plain bearings they reduce the liability to car accidents in service.

Among other advantages of ball bearings are the following: Lubrication cost is saved to the extent of 85 per cent. As the bearing housings are sealed, there is no leakage and lubrication is required but once in three months. There is also a saving of from 35 per cent to 70 per cent in maintenance cost, and heating of journals is eliminated. When used on the motors the ball bearings insure uniform air gap, aid in commutation and reduce gearing and bearing wear, at the same time permitting a shortening of the motor by from 10 per cent to 20 per cent.

	Forty passenger Car	Twenty-nine passenger Car
Length of route—miles.....	4 1/2	4 1/2
Round trip—miles.....	9	9
Maximum speed—miles per hour.....	30	25
Schedule speed—miles per hour.....	9.2	9.9
Stops per mile.....	8	6
Weight of car complete, pounds.....	26,000	10,000
Hours operated, per day.....	12	12
Time each way—minutes.....	30	27 1/4
Time round trip—minutes.....	58.7	54 1/2
Round trips per day.....	12 1/4	13.2
Seated passengers per round trip.....	80	58
Seated passengers per day.....	980	766
Gross earnings per car per day.....	\$49.00	\$38.30
Number of cars operated on route.....	4	9
Gross earnings per day on route.....	\$196.00	\$344.70
Headway—minutes.....	15	6 1/4
Capital investment—four cars.....	\$24,000	.....
Capital investment—nine cars.....	.....	\$18,000
Daily mileage per car.....	110	119
Daily mileage—four cars.....	440	.....
Daily mileage—nine cars.....	.....	1,071
Power consumption kilowatt-hours per car-mile.....	3	1
Power consumption kilowatt-hours per day—four cars.....	1,320	.....
Power consumption, kilowatt-hours per day—nine cars.....	.....	1,071
Cost of energy delivered at car, per kilowatt-hour.....	\$0.01	\$0.01
Cost of energy per day—four cars.....	\$13.20	.....
Cost of energy per day—nine cars.....	.....	\$10.71

in contact must be overcome. The starting friction of ball bearings, on the other hand, is no greater than the running friction. They do not depend upon a film of oil, so start easily from rest and operate at uniformly high efficiency.

The decreased bearing friction with ball bearings permits a car to coast farther than one equipped with plain bearings. Because of the higher rate of acceleration and the ability to coast at much slower speeds, the ball-bearing equipped car can be operated a very much larger part of the time on the coast, between corners when making stops and on slight grades in city districts where the grades are of little or no value to the plain-bearing car.

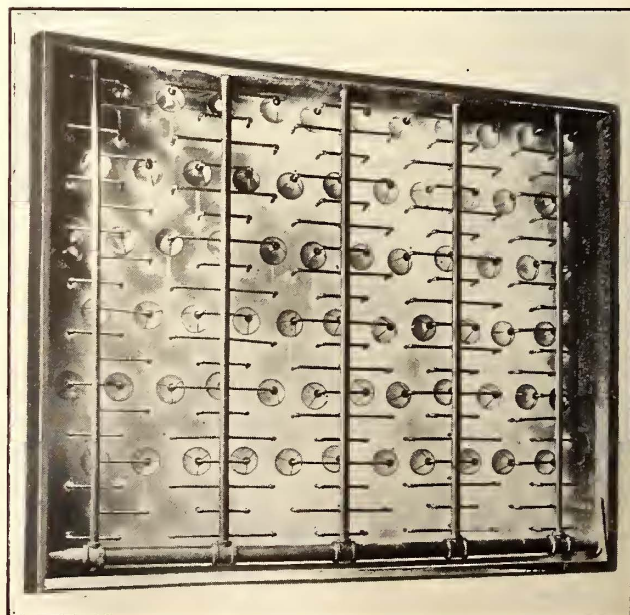
The advantage which the ball-bearing car secures from these long coasting periods cannot only be accurately determined by experimenting in a congested city, but by comparing the ease with which a 9000-lb. car can be moved by hand when mounted on ball bearings and the amount of force necessary to move a forty-passenger bronze-bearing car in the same way. One can in this way readily appreciate what this coasting factor amounts to.

The increased revenue by the use of light cars, in comparison with cars of greater weight is illustrated by the accompanying table. In this instance nine light cars replace four heavier cars, making schedules appropriate to the increased number. It will be noted that the larger car, weighing 26,000 lb., is small compared with

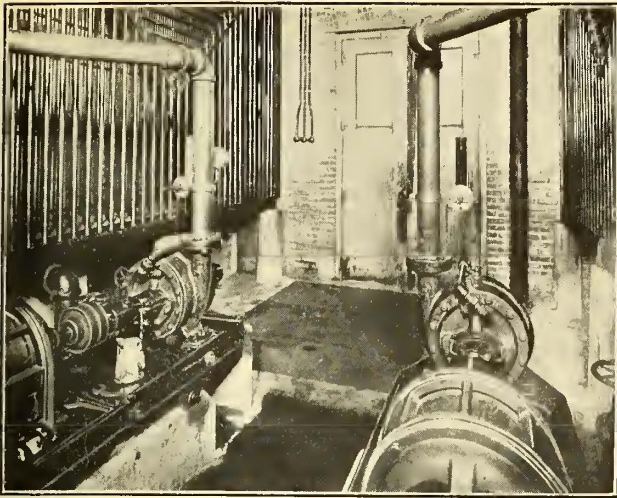
Test of Kansas City Air Washer

The Metropolitan Street Railway, Kansas City, Mo., has recently completed the installation of two air washers in connection with its largest turbo-generating plant at the corner of Second Street and Grand Avenue, and the company's engineering department now announces the successful outcome of its tests of the machines, which have a capacity of 80,000 cu. ft. per minute each. The installation includes complete equipments of motors, pumps, patented spray nozzles, spray piping, screens, eliminator plates and other necessary appliances.

According to the railway officials, the expense of installing and operating the air washers has been more than justified by the results obtained—the removal of practically all the dust in the air entering the washer



KANSAS CITY AIR WASHER—SPRAYING EQUIPMENT



KANSAS CITY AIR WASHER—PUMPING UNITS AND TEMPERING COILS

and the cooling of the air to the wet bulb temperature, thus increasing the capacities of the turbo-generators from 12 per cent to 15 per cent. The installation will undoubtedly prevent expensive burn-outs that are liable to result from carrying overloads, with an accumulation of dirt on the windings, and is believed by the railway electricians to constitute an effective insurance against the losses due to decreased efficiency and the delays required for repairs and cleaning the generator windings.

The new machines, shown in the accompanying illustrations, were purchased by the Metropolitan Street Railway from the Spray Engineering Company, Boston, Mass., which followed its usual custom in erecting them for the purchaser. About 350 ft. of 1-in. galvanized steam piping were included in the equipment of each washer, to be used as tempering coils to reduce the humidity of the outgoing air, when required. These coils are constructed so as to operate satisfactorily under a steam-gage pressure of 5 lb. per square inch. The air-washer equipment furnished renders it unnecessary to have any extra equipment for washing down the eliminator plates, thus considerable expense is avoided. The eliminators consist of vertical plates, so arranged as to provide a large wet surface. The washers are guaranteed to operate efficiently for ten years.

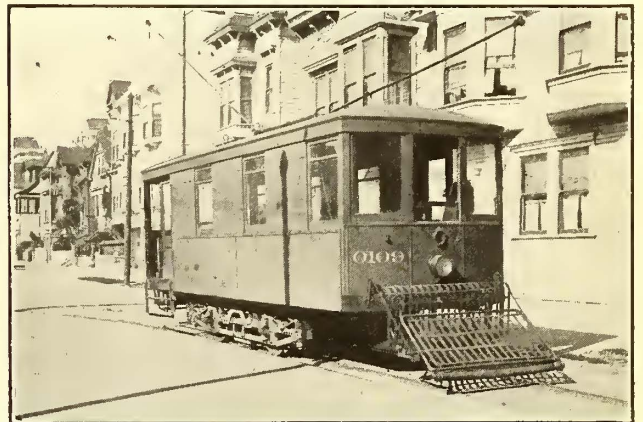
Each pump unit of the machines is mounted on a heavy cast-iron bedplate, so constructed as to extend under all parts. This arrangement prevents oil and water from dripping from the pumps and motors on to the floor, the bedplates being flanged and set at an incline so as to give perfect drainage. The motors are capable of operating without deterioration in a moist atmosphere from 40 deg. to 50 deg. Fahr., and the pumps operate readily with a 60 per cent efficiency. All piping and fittings are of galvanized iron to prevent corrosion incident to a humid atmospheric condition.

The tests made in Kansas City have interested a great many electricians of the Southwest who came to witness them. The assistant electrical engineer reports that in the tests thus far made, the washer passes no free moisture that will show on a plate of clean glass held at a distance of 8 in. from the eliminator. The test for cleaning consisted in sifting 5 lb. of dry boiler soot into the mouth of the washer at a temperature of 70 deg. At the same time, a sheet of clean white paper was held at right angles to the air flow at about 6 in. from the flow openings. This test was conducted for ten minutes, after which not a trace of soot could be found on the paper. With a view to seeing what

result would show in the case of the finest dirt, two wire screens were covered with a thin film of absorbent cotton, and one of these was inserted in the air duct to intercept the air as it entered the washer, while the other was placed in the duct leading from the washer. The first screen was allowed to remain in the air current continuously for six hours and the second for two weeks. At the end of the latter period it was found that the second screen showed no more soiling than the first, which had been exposed for the shorter period.

Grinding Rail with Carborundum Track Brake Shoes

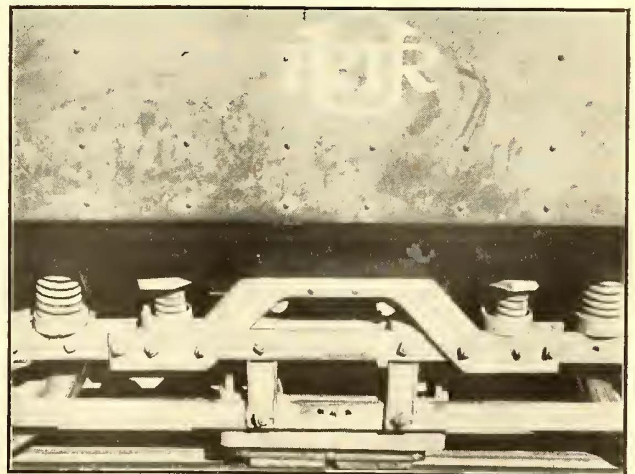
To hasten the grinding of rail the United Railroads of San Francisco replaced the blocks used for wooden track-brake shoes on several of its single-truck service cars by carborundum blocks which are clamped into the same holders, four 2-in. x 4-in. x 8-in. blocks being used per car. The cars are run over the track with dragging shoes until the rail has been properly ground, the process lasting from a few days to as



SINGLE-TRUCK CAR FITTED WITH CARBORUNDUM RAIL-GRINDING SHOES

many weeks, depending upon the condition of the rail.

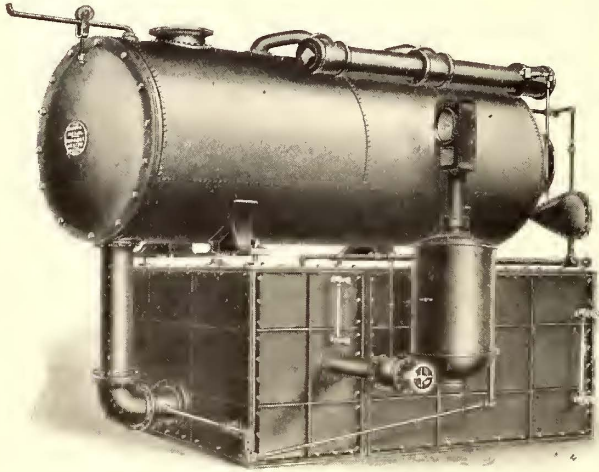
The cars are run at regular speeds while grinding in this unusual manner, and where possible they are run back and forth over a given piece of rail. Owing to the noise made by the grinder, night work is carried on only in business sections like lower Market Street, but on the less-traveled tracks in residence sections day operation is entirely feasible. No less than seven cars have been equipped for this work.



CLOSE-UP VIEW OF CARBORUNDUM RAIL-GRINDING SHOE.

A Simple Feed-Water Recorder

The feed-water recorder that is furnished by the Hoppes Manufacturing Company, Springfield, Ohio, in connection with the well-known Hoppes feed-water heater, is a device of unusual simplicity, although it is guaranteed to be accurate within 1½ per cent by actual weight at any temperature and at any rate of flow. Its operation is based upon the principle of the V-notch

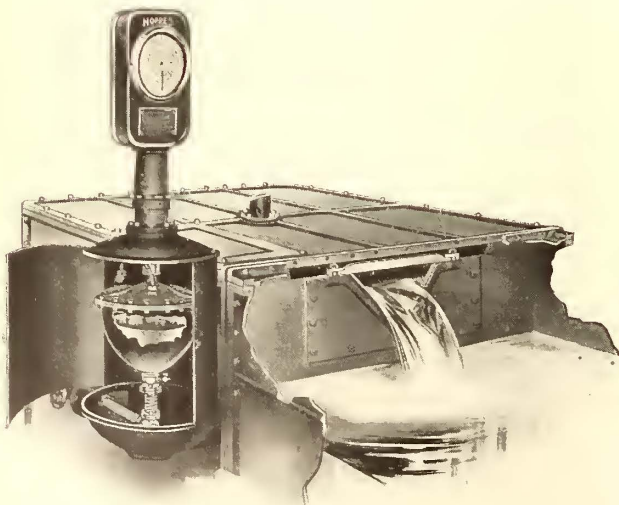


EXTERIOR VIEW OF FEED-WATER HEATER, TANK AND RECORDER

weir, and no engineering features that are not thoroughly understood have been incorporated in the design.

The meter consists of a storage tank divided into two parts by a diaphragm with a V-notch at the top. A cabinet is attached to the side of the tank by a bracket, and inside of this is a weighing vessel suspended by a coil spring, the vessel being connected to the interior of the tank by flexible bronze hose in such a manner that the water in it will always be at the same level as the water behind the weir. As the water rises behind the V-notch it also rises inside the weighing vessel, and as this vessel is so shaped as to contain just enough water at each unit of height to draw down the spring in a direct ratio to the rate of flow, the pen and recorder are directly attached to it without the use of cam or other motion-changing device.

The recording and indicating device is located in the



VIEW OF RECORDER CABINET WITH DOOR OPEN TO SHOW WEIGHING VESSEL

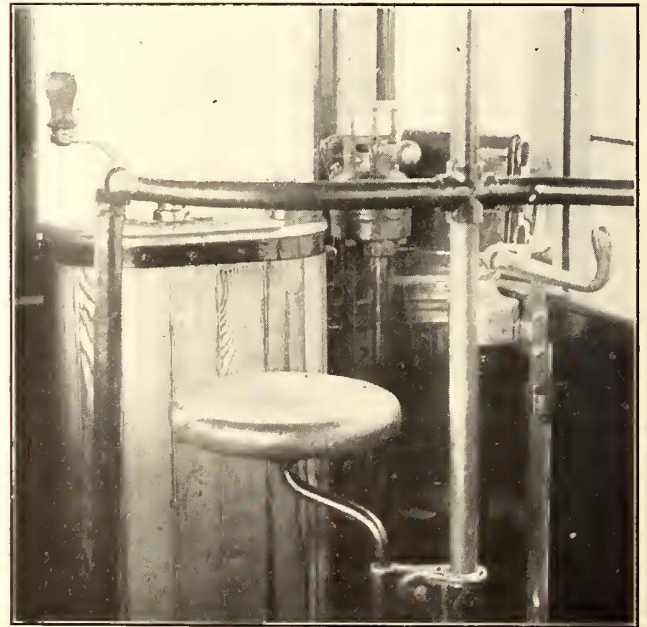
head of a column that is supported by the cabinet. A clock movement operates a circular chart on one side, this making one revolution in twenty-four hours, and on the other side is an aluminum disk making one revolution per hour. The pen for making the record on the chart is attached to a crosshead that moves vertically and is directly connected to the weighing vessel. An arm is carried to the other side, and this supports a small planimeter which is mounted on a vertical axis and is revolved by the aluminum disk.

The planimeter wheel moves a train of gears and operates an integrator which records the amount of water in pounds that has passed the wheel. When the water is just starting over the V-notch the planimeter wheel rests at the center of the disk. As the head increases the wheel is drawn downward, and as the wheel moves away from the center the increase in the radial distance increases the rate of travel as the disk has a constant rotary motion.

Where the tank of the feed-water heater is placed above the floor line, or on a floor that is above the most desirable place for locating the recorder head, an inverted head can be attached to the bottom of the cabinet and can be carried as far below the cabinet as desired. If it is more convenient to read the record from the floor above the installation, an extension can be furnished and the head raised to any height desired above the cabinet.

Adjustable Seat for Motorman

E. L. Stephens, master mechanic Los Angeles (Cal.) Railway, has recently applied for patents on the motorman's seat illustrated as in use in the accompanying half-tone. The seat is attached to a curved arm which sets



ADJUSTABLE SEAT FOR MOTORMAN

in an automatic eccentric grip attachable to any of the vestibule stanchions. The seat may be swiveled at any angle, and may also be raised or lowered at will by raising a cam which compresses a spring that keeps the seat in any set position. Thus the user of the seat can adjust it to suit himself. The San Diego Electric Railway has placed seats of this design on its latest cars.

Another seat designed later by Mr. Stephens includes a spring in which the seat pivot can be set to give easy riding.

LONDON LETTER

(From Our Regular Correspondent)

The work of electrifying the Lancashire & Yorkshire Railway's branch line to Bury, via Prestwich, is now almost completed. It had been hoped to have this line opened to the public this month, but that is now found impossible, because of the war. Experiments have recently been made on certain sections, over which trains have been run, current for this purpose having been supplied by the Manchester Corporation. The principal work that remains to be carried out refers to the big power station that is being erected near to Clifton Junction. This new railway scheme is to afford a better service between Manchester and Bury. In normal times there are about sixty stopping trains on this line. For the new electric service the third-rail system is to be used, this being similar to that on the Liverpool-Southport line. There will, however, be this difference, that a different voltage will be employed. The trains are to consist of long and wide corridor carriages of the saloon type, and each is to have accommodation for about 100 persons.

For something like fifteen years the City & South London Railway—the oldest of the London tubes—has been a subject of special interest to all concerned in the transmission and distribution of electrical energy. There is no other railway or tramway in England, and it is a question whether there is any in the world, which is worked on the three-wire system. The "outer wires" are formed by the conductor rails of the two tracks and the running rails form the "neutral wire." With such a frequent service of trains as that run on this railway the load on each side of the neutral is fairly evenly balanced. As a result of the recent consolidation of interests among a number of the London Underground Railways, the three-wire system is likely to be superseded by the method employed on the other lines, namely, transmission by high-tension three-phase current to substations and thence by simple low-tension d.c. circuits to and from the motors of the trains. Thus a very interesting and successful demonstration of the three-wire system of traction will pass away.

The bill to authorize the City & South London, the Central London, the London Electric, and the Metropolitan District Railway companies, to make arrangements with each other and with the London General Omnibus Company for the purpose of providing increased facilities for the interchange and alternative routing of traffic, has been passed for second reading and committee stages by the examiners of the House of Lords. The promoters have agreed to amend the bill by deleting all powers dealing with interchange of traffic, etc., thereby limiting the measure to the pooling of the receipts of the companies and also to insert a clause making it clear that no statutory powers shall be conferred on the London General Omnibus Company.

The Bristol Tramways & Carriage Company has been successful, in the Chancery Division, in securing the sanction of the court to the extension of its object to enable the company, among other things, to make and arm motor cars and aeroplanes.

The Underground and its allied companies have subscribed for £800,000 in the war loan. Provision has been made by the T.O.T. group enabling their employees to invest in the loan by deductions from their wages at the minimum rate of 2s. per week.

The recent strike of the London tramwaymen has resulted in a net loss of more than £100,000. Last year's report showed that there was a deficit of £33,000, and nothing was available for the reserve fund. This year's estimates, prepared before the strike, anticipated a deficit of £91,000, due principally to allowances to those who have enlisted. The strike has made the financial situation serious, and before the end of the year it is likely that the general reserve fund will be exhausted. The men, too, are demanding increases. The arbitration court has just decided that in the case of the men in the electrical section the war bonus of 3s. a week shall be extended from men earnings 30s. and under to men earning up to £2, and no doubt the conductors and motormen will secure this concession. Unfortunately, the Treasury has held up the Council's scheme of linking up and consolidation.

The Dublin United Tramways Company has recently suffered loss by the deaths of two of the best-known members of its staff. C. W. Gordon, manager of the tramways, died suddenly on May 27 while riding, and R. S. Tresilian, secretary of the company, died on May 29 after a severe operation. Both gentlemen were well and favorably known to most of the members of the tramway fraternity in Great Britain, and members of the two tramway associations of Great Britain will not be likely soon to forget the kindness of these two gentlemen on their visit to Dublin in 1910. W. M. Murphy, the chairman of the company, who is well known not only in Great Britain, but also in America, has received many tokens of sympathy on his being deprived so suddenly of the services of his two right-hand men. In the meantime, George Marshall Harriss, chief electrical engineer, has been appointed as general manager, and Mr. M'Hugh, chief accountant, has been appointed as secretary. Other new appointments have been made, all from the existing staff of the company.

F. Ayton, M.I.E.E., presented a report of the electric vehicle committee to the members attending the meeting of the Incorporated Municipal Electrical Association recently held in London, in which it was stated that there were now three municipal tramway undertakings making use of the electric bus as an adjunct to their tramway services, namely, Southend-on-Sea, South Shields and York. In all three instances it was understood that the vehicles were giving satisfaction. Other corporations are considering the adoption of electric vehicles for various purposes, and it would appear that before long a number of these vehicles would be in regular service.

Following the example of other cities and towns—Glasgow, Newcastle, Sheffield, Salford, Aberdeen, Cardiff and Blackpool—the Birmingham tramways committee has decided to employ women as conductors to help make good the shortage in this class of labor caused by the war. An experiment will be made on the Bristol Road and King's Norton cars, with fifty or sixty women, and if they come up to requirements more will be engaged for other routes. By this means the committee hopes to lessen the difficulties in the working of the system caused by the shortage of about 120 men as drivers and conductors. The men's union offers no objection whatever to the employment of women as a temporary expedient, and especially in view of the fact that the old hands have had to work long hours since the depletion of the staff began. Evidence obtained from other towns where female labor has been employed is without exception to the effect that women have given satisfaction as tramway conductors.

The Local Government Board has authorized the Manchester Corporation to borrow £432,470 to enable it to proceed with the erection and equipment of the large new electric generating station at Barton. Some months ago the station, with its complete equipment, was estimated to cost £1,775,000. Prices have risen since then, so a larger sum will probably now be required. The loan just sanctioned is, however, deemed sufficient to cover the cost of the first complete section of the scheme. A somewhat higher sum was originally submitted to the Local Government Board in respect of this section, but the estimate was cut down to meet the views of the Treasury. The scheme for the complete station provides for a plant capacity of 160,000 kw.

The introduction of women into the Hull tramway service threatens to cause serious trouble among the men employees. The tram drivers and conductors have unanimously passed a resolution declaring that they will refuse to work with women conductors and calling for their withdrawal. They contend that there are sufficient men not eligible for military service who are willing and capable of taking up temporary positions as conductors, and they object to the employment of women on the ground that it encourages the practice of employing casual labor. Discussing the position, the Lord Mayor, who is chairman of the Hull Corporation tramways committee, stated that it was absolutely impossible to get suitable men. If they could be found they would be employed, but he stated emphatically that he would not move from the decision to employ women, and the committee would, he believed, support him.

A. C. S.

News of Electric Railways

ACTION ON RAPID TRANSIT CONTRACTS

Three Contracts Aggregating \$7,022,540 Awarded by New York Commission

The Public Service Commission for the First District of New York during the week ended July 31 acted upon rapid transit contracts aggregating \$8,714,911. The total awards of the week totaled \$7,022,540, and one contract amounting to \$1,692,370 is expected to be awarded soon. The contracts awarded included the only remaining section of the Broadway subway in Manhattan, and next to the last underground section of the Eastern Parkway subway in Brooklyn. The contracts follow:

Section No. 3 of Routes Nos. 4 and 36, the Broadway subway in Manhattan. Section No. 3 extends from Thirty-eighth Street northerly under Broadway to Times Square, and thence northerly under Seventh Avenue to Fifty-first Street. Awarded to Holbrook, Cabot & Rollins Corporation, the lowest bidders, for \$3,740,913.

Section No. 3 of Route No. 12, the Eastern Parkway subway in Brooklyn. This section extends from about Nostrand Avenue easterly under Eastern Parkway to Buffalo Avenue. Awarded to Rodgers & Hagerty, Inc., the lowest bidders, for \$2,170,652.

Section No. 1 of Route No. 49, the Culver elevated line in Brooklyn. Section No. 1 extends from a point near Thirty-seventh Street over Gravesend Avenue to a point near Bay Parkway. Awarded to Post & McCord, Inc., the lowest bidders, for \$877,959.

The Broadway subway and the Culver line are both for operation by the New York Municipal Railway Corporation, while the Eastern Parkway subway, which is an extension of the existing subway, is for operation by the Interborough Rapid Transit Company.

In addition to the construction contracts, the following awards were made for track materials, which will be used on about 230 miles of single track of the dual system, covering all lines not already provided for: Track rail splice bars, the Rail Joint Company, \$197,106; nut locks, Robert F. Horsey, \$735; anti-creepers, the Creepcheck Company, \$35,174.

The commission has laid out a new rapid transit route, to be known as Route No. 61, providing for the construction of a new tunnel under the East River from Sixtieth Street, Manhattan, to the Queensboro Bridge Plaza in the Borough of Queens, where it will connect with the new rapid transit lines in that borough running to Astoria on the north and to Corona on the northeast. This action was taken in pursuance of resolutions adopted by the Board of Estimate and Apportionment asking that the tunnel route be substituted for the original route over the Queensboro Bridge. The new route is for operation by the New York Municipal Railway Corporation in connection with the Broadway subway in Manhattan and the new lines in Queens, over which this company will have trackage rights. In December, 1914, the Degnon Contracting Company proposed the change from the bridge to the tunnel, and in February, 1915, that board adopted resolutions requesting the Public Service Commission to submit a plan for a tunnel and to prepare for introduction in the Legislature such amendments to the rapid transit act as would be necessary to enable the city to make the change. The commission immediately caused to be introduced in the Legislature the required act, which was enacted into law. The proposed change was submitted to Alfred Craven, chief engineer of the commission, who made two reports thereon in March, in which he favored the bridge route. These reports were transmitted to the Board of Estimate, and on July 21 that board adopted further resolutions declaring that "it is still the opinion of the board that ultimate economy will best be served through the substitution of a tunnel connection for the proposed connection across Queensboro Bridge." The Degnon Company in its proposition to the Board of Estimate stated that it would submit a bid for the construction of the tunnel not to exceed \$4,500,000, and it would agree to complete the work within two and

a half years. If this is possible it will not materially delay the beginning of operation of the Broadway subway in Manhattan.

DETROIT STOCKHOLDERS APPROVE SALE TO CITY

Stockholders of the Detroit United Railway, at an adjourned meeting on Aug. 2, approved the proposed purchase contract between the city and the company. More than 80 per cent of the stock was represented at the meeting.

The necessary papers have been signed by the officers of the company and returned to the board of street railway commissioners, ending the company's participation in the proposition for the present. The next step is to be taken by the members of the Street Railway Commission, upon whom devolves the duty of setting the machinery in motion to get the purchase contract before the electors. Inasmuch as Chairman Couzens is absent from the city and his signature is required, it probably will be two weeks before the contract is in shape for presentation to the Common Council. After it reaches the latter body it must lie on the table for thirty days before it can be placed on a ballot at a special election. It is not expected that the contract will be held up in any way by the Common Council as the latter body has not been inclined to interfere with the Street Railway Commission in any of its proposals. At present the submission of the plan to the electors about Oct. 1 seems likely.

The Detroit United Railway, through *Electric Railway Service*, its official publication, announced that inasmuch as it is a party to the contract it will not participate in any discussion concerning it. What is regarded as the company's last statement on the proposal says:

"We feel sure we will be pardoned for expressing some slight objection to one feature of the pending propaganda—that is, picturing the Detroit United Railway as a sort of 'foreign devil' because part of its earnings go to the absent owners of some of its securities. We particularly object to that suggestion because the Detroit United Railway will be charged with the responsibility of presiding over more than 600 miles of Michigan electric railways even after the city lines are taken over by the city of Detroit. We further object because the truth is that almost as many Detroit United Railway securities are owned here at home as are those of Detroit's principal newspaper corporations and those of the city of Detroit itself. It is, furthermore, doubtless true that at least 99 per cent of the automobiles manufactured in Detroit are dependent upon the purchasing power of absent owners. No one should Chinaize or Mexicanize the city of Detroit with the thought that outside investors are to be invited in only to be snubbed or to have their pockets picked."

NEW YORK'S CONSTITUTIONAL CONVENTION MAKES SLOW PROGRESS

Senator Root of New York recently warned the constitutional convention that it was far behind schedule and that the delegates must give their entire time to the task before them if they wish to complete their work in time to submit a revised constitution to the people this fall. On Aug. 1 the convention had been in session four months and in that time had tentatively approved four out of 707 proposals introduced. These four proposed amendments have been advanced to third reading and put aside for final consideration at a later date. Two other proposed amendments have been defeated in committee of the whole. Thirty-four others have been reported favorably by standing committees, and are now awaiting debate. It was expected that by the close of the week ended Aug. 7 the standing committee would have placed in its hands amendments embodying the projects of the reorganization of the State government by the co-ordination of departments and by the application of the short-ballot principle to the elective offices of the State; the reform of the financial system of the State by the establishment of an executive budget; the freeing of municipalities from legislative interference with their private affairs by a broad grant of home rule, and the attainment of a speedier and more systematic administration of justice by the revision of the judiciary article of the constitution.

The proposal for an appointive judiciary has been rejected by the judiciary committee. The committee on legislative powers, of which William Barnes is chairman, has reported favorably to the convention Mr. Barnes's amendments designed to prohibit the Legislature from enacting advanced social legislation, notably a minimum-wage law. On the other hand the committee on industrial relations has reported in favor of authorizing the Legislature to pass a minimum-wage law. Mr. Barnes's committee has also indorsed the Dunmore amendment, requiring that all regulations by boards and commissions in the exercise of the police power should be "reasonable," and so subject to review by the courts. It appears that there is every prospect of the passage of an amendment making cumulative voting compulsory in the election of corporation directors.

A digest of the proposals contained in the completed draft of the amendments advocated by the committee on public utilities with respect to the public service commissions was published in the *ELECTRIC RAILWAY JOURNAL* of July 31, page 202.

TOLEDO TENTATIVE DRAFT COMPLETED

Report of Franchise Committee Reviewing New Grant Printed in Full

At the close of the conference between the franchise committee of the Toledo City Council and the representatives of the Toledo Railways & Light Company, Toledo, Ohio, on the evening of July 29, Henry L. Doherty, chairman of the railway board, left for New York to confer with his associates in regard to the tentative draft of the new franchise as prepared and the report of the committee, which is to accompany the grant when presented to the City Council. Mr. Doherty and the committee had disagreed on the report because the committee refused to include anything that could be called a recommendation for the action of Council on the franchise. The committee told the railway's representatives that they did not expect Council to do anything further than refer the grant to the voters for action. Mr. Doherty contended that the work that has been done in preparing the draft would amount to nothing unless Council either accepted or rejected the proposal.

A copy of the report was submitted to the Toledo Railways & Light Company on July 29 after it had been revised to some extent by the committee. When Mr. Doherty found that the committee was fully committed to the report as it then stood he asked for time to submit it to his associates. The committee made some objection, but Mr. Doherty said if the report had been furnished to him just after the close of the last conference on the previous week he would have had his reply ready. It was agreed that another meeting should be held on Aug. 3, when Mr. Doherty expected to give the committee his decision as to both the tentative draft and the report. The report, as it stood at the close of the conference on July 29, is as follows:

"At the end of the try-out period Council is required to establish a rate of fare which will cover the cost of operation, the cost of maintenance and a 6 per cent return to the company for a period of five years or more if neither party requests a new fare at the expiration of five years; further, the fare thus established by Council cannot be questioned in court or by arbitration until it has been in operation for six months and it cannot be disturbed by any court or by any arbitrators to whom it may be submitted, unless it is clearly proved by the company that the fare is insufficient to cover the operating and maintenance costs exclusive of interest on bonds, and a 5½ per cent return upon the value of the property.

"There is only one condition under which the fare fixed by Council may be brought in question before the expiration of the six months' period, and that is when the company is able to prove to the commissioner of public utilities of the city, who will be an officer under the new charter, that the rate of fare fixed by Council is insufficient to produce a return in excess of 3 per cent upon the value of the property, in which event the question may be submitted to arbitration.

"If the fare is found by arbitrators or a court, as the case may be, in a final hearing of the question, to be insufficient

to meet the three items named, then the fare is abolished and Council has ninety days in which to establish a new rate of fare, and during the ninety-day period the fare will be seven tickets for a quarter for adults, and if Council fails to establish a fare within the ninety-day period, then the arbitrators or court, as the case may be, may fix the fare to prevail after the ninety-day period until the Council does establish a new rate of fare.

"As to municipal ownership, the ordinance expressly reserves to the city the full, complete and absolute right and authority at any time, upon twelve months' written notice to the company, to acquire the railway property at its true value, which shall be determined by three arbitrators appointed, one by the city, one by the company, and the third by those two, and the valuation shall be made as though no franchise rights existed, and all franchise rights terminate at once when the city takes over the property. This also gives the city the right to issue its bonds and make them a lien upon the property by a trust deed, together with a franchise to the trustees of the bonds for the benefit of the purchaser of the property in the event of a foreclosure sale of the property.

"At the end of ten months a try-out period of twelve months begins, during which time the fare for adult passengers shall be five tickets for 15 cents, and the entire system during the try-out period will be under the control, direction and management of three commissioners appointed by the city, thus affording the very best opportunity to the citizens to ascertain for themselves whether a 3-cent fare is practical.

"These commissioners will have full access to and control of all the books, records, incomes, expenditures and all the affairs of the company, and will be required to furnish monthly reports to the city setting forth all the information secured relating to the railway business.

"During the try-out period three arbitrators, one chosen by the city, one by the company and the third chosen by the former two, will value the property, which valuation is to be made without reference to any franchise rights or privileges, and shall be made as though no franchise rights or privileges existed.

"The ordinance reserves to the city at all times control over the operation of the system, the character of the equipment, the schedule and routing of cars, the maintenance and extension of lines and the right to fix the fare to be charged during the time the franchise continues, and control of interurbans.

"The proposed ordinance contains many other features suitable to the needs of the city and of the railway system, but the foregoing are perhaps the more salient features of the proposal, to which the committee desires particularly to call attention at this time.

"The ordinance provides definitely for maintaining the railway system and property at a high state of efficiency at all times, which the committee believes will prove very effective and beneficial. It provides for a rearrangement of the railway system, the rerouting and scheduling of cars during the first four months that the ordinance is in effect by a committee appointed by the city, including a proposed crosstown line and necessary extensions. It requires the company to equip the entire system with pay-as-you-enter or pay-as-you-leave cars with fare box receivers, and to do the necessary work during the first ten months of the ordinance to make the existing lines conform to the rearranged system."

Phil Hassenzahl, chairman of the franchise committee, received a letter from Henry L. Doherty on Aug. 2, in which he said that after a conference with his associates in New York it had been decided that the company could not accept the franchise prepared unless the committee asked Council to approve or refuse it before presentation to the voters. Mr. Doherty says that the majority of the members of the Council were elected nineteen months ago on their promise to settle the street railway franchise trouble. Only three months of their term remained. He felt, therefore, that if the members recommend or reject the draft, it can be put before the people upon its merits.

The letter was read to the committee on the afternoon of Aug. 2 and some discussion followed. The members do not agree with Mr. Doherty in the original understanding that the committee was to make the recommendation he asks.

They also consider that the street railway question has already been divorced from politics.

OFFICERS TESTIFY IN RHODE ISLAND ARBITRATION

At the continued hearings at Providence, R. I., in the Rhode Island Company wage arbitration, officers and employees of the transportation and allied departments have testified at length upon the duties, compensation and qualifications of men in the car service. Counsel Vahey for the employees' union stated that the men's side of the case would probably be completed by the end of the first week in August, leaving a week or ten days as the probable time required for the presentation of the company's case.

R. Roscoe Anderson, superintendent of transportation, expressed the opinion that a guaranteed minimum number of hours a day for spare men was undesirable in view of the cost to the company and the tendency toward reducing the amount of work available for the more industrious men. He did not look upon platform work as skilled labor in the usual acceptance of the term. Between 50 and 75 per cent of the blue-uniformed men were first-class workers. No change in the schedules was made after the formation of the union, and the speed of the city cars had not been increased materially.

William D. Wright, supervisor of equipment, described the duties of the shop organization and carhouse forces. Representative hourly wage rates were: painters, 19.5 to 30 cents; wood workers, 25 to 30 cents; blacksmiths, 28 to 31 cents; helpers, 22 to 28 cents; toolmakers, 35.5 cents; machinists, 29 to 32 cents; machine hands, 22 to 28 cents; bench hands, 20.5 to 25.5 cents; overhaulers, 24 to 28 cents; firemen, 25 cents. Frank H. Brown, superintendent of the northern division, testified that in his opinion the maximum wage of motormen and conductors was sufficient. Several men who left the road's employ had returned stating that they could earn more money on the road than outside. Many of Mr. Brown's spare men were earning from \$12 a week up, and regular men frequently earned \$18 or \$20. The younger men appeared less willing than the older employees to work hard.

Brayton E. Sweet, superintendent of the Mount Pleasant division, said that he was "old-fashioned enough to believe that if a man was not satisfied with his pay he could go elsewhere." The work of motormen and conductors in Providence had grown lighter in recent years. The majority of men having full day cars were very well satisfied with wages and working conditions.

William D. Mathewson, superintendent of the Olneyville division, thought the men were being paid enough under present business conditions. The point was brought out that the secret service branch of the company reported meritorious acts as well as violations of rules.

Charles E. Redfern, claim agent of the company, informed the board that the cost of accidents to the road in 1914 was more than \$300,000. About 9000 were reported, of which between 3500 and 4000 called for a money settlement. Many accidents occurring in the neighborhood of cars did not, however, concern the company in any direct way. Ten adjusters were employed by the claim department.

Upon request of the union, the company presented data as to average earnings. In 1908 1343 employees averaged \$606.17 a year, and in 1914 1634 employees averaged \$714.74. In the week ending April 9, 1915, 151 spare conductors averaged \$12.82 and 142 spare motormen \$14.18. The weekly average for all uniformed men in 1914 was \$13.

A. E. Thielson, superintendent of the Danielson division, testified that sixty-three men worked under his direction, including several power plant employees and linemen. Men in the freight service had no regular hours, but probably worked from twelve to thirteen hours a day, with an average wage of 28.5 cents an hour, and 33.5 cents an hour for all time above ten hours. On this branch of the system the chief engineer of the power station received \$28 a week of seven days, working twelve hours a day; two oilers were paid \$21 a week for a twelve-hour day; firemen worked eight hours daily for seven days a week at 25 cents an hour; track greasers worked ten hours a day at 20 cents an hour; trackmen received 20 and 22.5 cents an hour, and foremen 25 and 35 cents.

P. R. T. WITHDRAWS OPPOSITION

The Philadelphia (Pa.) Rapid Transit Company, in a formal document forwarded to the Public Service Commission on July 30, withdrew its opposition to the city's petition for a certificate of public convenience, a technical procedure necessary before the city can proceed to the building of the Broad Street subway and the Frankford elevated. The statement sent to Harrisburg sets forth that one of the reasons for withdrawing opposition to a certificate of public convenience is "in order that public improvements, duly authorized by City Councils, may proceed without delay." The memorandum as filed by the company follows in full:

"The Philadelphia Rapid Transit Company, while asserting its rights under the contract of July 1, 1907, to a ninety-day period within which to accept or reject the construction of the high-speed lines for which the city now asks a certificate or certificates of public convenience, and further asserting its contract rights on Broad Street vested in the Thirteenth & Fifteenth Streets Passenger Railway under the act of March 27, 1873, whereby, in consideration of that company surrendering its right to build and operate a railway along Broad Street, the State of Pennsylvania covenanted that said street should not be thereafter used for transit facilities competing with the lines of said company on the adjacent streets, viz., Thirteenth Street and Fifteenth Street, which contract rights it asserts are inviolable, subject only to taking with compensation under the power of eminent domain duly exercised.

"Nevertheless, in view of the evidence presented at the hearing before this commission, showing that more than twice as many citizens will be served by the high-speed lines if operated by the Philadelphia Rapid Transit Company than if operated by an independent company, and of the statement by the Director of City Transit that in his opinion it is preferable to have them operated by the Philadelphia Rapid Transit Company, and believing that at the proper time a contract for the operation of these lines will be offered by the city of Philadelphia to the Philadelphia Rapid Transit Company which can be accepted and which will fully and fairly protect it from a competition which it is asked to set up against itself, and in order that public improvements duly authorized by City Councils may proceed without delay, hereby withdraws any protest and objection which it may have entered in respect to the granting of the certificate or certificates of public convenience prayed for by the city of Philadelphia."

CHICAGO ELEVATED MEN REJECT OFFER

After a series of conferences between the officials of the employees' union and Britton I. Budd, president of the Chicago (Ill.) Elevated Railways, a tentative agreement was reached in the settlement of working conditions and wages. This was submitted to the employees in referendum, but was rejected by a vote of 1684 against to 659 for the proposal. The essential points in the company's offer to the men included an increase in the maximum wage, which was 34 cents an hour, of 2 cents an hour for the first year of the contract and an additional 2 cents an hour for the second year of the contract. It was also agreed that as soon as a man was made a regular motorman he would receive the maximum wage. Formerly men were required to serve for one year as regular motormen at 30½ cents an hour. The plan of advancement of trainmen on elevated railways in the past has provided that they should start as guards at 23 cents an hour, which amount in the offer was increased to 25 cents an hour at the close of the second year, and advanced successively to extra motormen and then to regular motormen. The offer to the employees provided practically no changes in the working conditions, which were deemed satisfactory. As a result of the refusal to accept the tentative agreement, all questions of wages and working conditions will be referred to a board of arbitration, of which Mayor Thompson will be the referee. State Attorney Hoyne, who represented the employees of the surface lines in their arbitration, will represent the elevated railway employees. Mr. Budd has not selected the company's representative in this arbitration. It is not regarded as likely that the hearings will be held until early in October.

INQUIRY INTO ELEVATED THIRD-TRACKING

The Thompson legislative committee continued on July 30 its inquiry into the work of the Public Service Commission for the First District. It was expected at the session to learn direct from the members of the commission the status of the rapid transit work now under way, but none of the members appeared before the committee. The offer of Travis H. Whitney, secretary of the commission, to testify was rejected. An executive session of the committee was called and it was decided to proceed with the work of looking into the rapid transit situation during the week ended Aug. 7, although the members of the committee had hoped originally to adjourn on July 31 until the fall.

On Aug. 2 Chairman McCall of the commission was questioned more particularly with respect to the third-tracking of the Fulton Street elevated line of the Brooklyn Rapid Transit System, to which objection has been raised by Brooklyn property owners. Mr. McCall objected to elevated structures, but he did not see how the city could afford to spend from \$4,000,000 to \$8,000,000 additional for subways. He said the Fulton Street third-tracking was before the courts, but he did not believe that the courts would decree the third-tracking to be a nuisance.

On Aug. 3 Charles L. Woody of counsel for the Brooklyn Rapid Transit Company said that the consents for the Fulton Street work had been validly and legally procured and that he was willing to lay the consents before the committee. Commissioners Williams and Cram also appeared before the committee on Aug. 3. At the conclusion of the session on that date the committee announced that it had decided to adjourn until Sept. 7.

NEW CLEVELAND GRANTS PROVOKE DISCUSSION

Business men along East Fifty-fifth Street, Cleveland, Ohio, are circulating papers indorsing the electric freight subway that is to be built under that thoroughfare by the Cleveland, Akron & Canton Terminal Railroad. This is an effort to counteract the clamor for a referendum vote on the franchise recently granted the company.

One of the principal objections to the franchise recently granted to the Cleveland & Youngstown Railroad aside from the electrification requirement, which has been promised through an amendment, is the fact that an agreement was not secured from the other railroads to build a union station on the lake front. Councilman Fitzgerald and other minority leaders fear that the New York Central and other large lines will use the station that will eventually be built by the Cleveland & Youngstown Railroad and will refuse to erect the imposing structure on the lake front that the city desires.

H. Holland, manager of the Trolley Supply Company, Cleveland, has suggested that flat, malleable-iron or steel tracks be laid in all the principal streets that have no street cars for vehicular traffic of all kinds. Mr. Holland believes the heavy trucks now in use are very destructive to pavements and that these tracks would cost less than the money required to keep the pavements in proper condition. The tracks should be 15 in. or 16 in. wide, he said, and the rails discarded by the railway company would make a good base for the vehicle tracks. In the wide streets he would have double tracks, and in the narrow thoroughfares a single track would do. Mr. Holland also believes this would keep the vehicles off the streets which have railway tracks and prevent congestion. He conferred recently with Peter Witt, street railway commissioner, in regard to the plan.

The interest fund of the Cleveland Railway on June 30 was \$505,342. It is slowly increasing. When it reaches \$700,000 the 1-cent charge for transfers will be removed. The receipts of the company for June were \$721,115, a gain of \$78,478 over the same month in 1914. The amount received from transfers was \$65,291.

Cut Asked in Franchise Tax.—The trustees of the Rhode Island Company, Providence, R. I., have addressed a letter to the City Council reminding that body of the petition of last May, in which the trustees asked that the city reduce the company's franchise tax.

Hearing of Clay County Suit Postponed.—The motion for rehearing of the suit by the Interstate Railway against the

Kansas City, Clay County & St. Joseph Railway, in which the plaintiff was awarded \$1,500,000 damages, will be heard on Aug. 9 instead of Aug. 2, as first set.

Refund of Excise Tax Ordered.—Judge Dickinson has filed an opinion in the United States District Court at Philadelphia deciding that five subsidiary electric railways operated by the Philadelphia Rapid Transit Company were not carrying on business within the meaning of the excise tax law of 1909 and therefore were not liable to the tax. The government is ordered to refund \$23,913.

Little Rock Honors Judge Kavanaugh.—State, city and county offices and every business house in Little Rock closed on Aug. 4 in memory of the late Judge W. M. Kavanaugh of Little Rock, president of the Little Rock Railway & Electric Company at the time of his death and for fourteen years president of the Southern Baseball Association, for whom Wednesday afternoon was set aside as Kavanaugh Day in the league.

Extension of Detroit Interurban Line Opened.—The 8-mile extension of the Detroit, Almont & Northern Railroad, Detroit, Mich., from Almont to Imlay City will be formally opened on Aug. 20. The new line affords direct connection between Detroit and Imlay City. It will be operated as one of the lines of the Detroit United Railway system. Residents of Imlay City and along the route subscribed funds sufficient to buy the right-of-way and fence it, following the same plan adopted in the extension to Almont fourteen months ago.

Offer to Operate at Cost Plus 10 Per Cent.—Bridge Commissioner Kracke of New York has announced that he is in receipt of an offer from the Third Avenue Railway to operate on the basis of cost of service plus 10 per cent profit, substantially the same local surface car service over the Williamsburg Bridge as that now afforded by the Bridge Operating Company. The contract with the Bridge Operating Company, which is controlled by the Brooklyn Rapid Transit Company and the New York Railways, was entered into by the company and the city in 1905. Mr. Kracke is also in receipt of an offer for service over the Williamsburg Bridge from the Manhattan Bridge Three-Cent Line, which now operates over the Manhattan Bridge.

Franchise Interpretation Requested.—The Gary, Hobart & Eastern Traction Company has asked the City Council of Gary, Ind., to interpret the section of the franchise regarding the entrance of interurban cars into the city over the tracks of the Gary & Interurban Railroad. It is the plan of the interurban line, if the matter of incoming interurban cars can be satisfactorily arranged, to ask for a franchise on Seventh Avenue or Eighth Avenue east to Virginia Street, north to the mill gates and west on Fourth Avenue or Fifth Avenue to Broadway and east on Fifth Avenue to the city limits, thus allowing the Hobart cars to make a loop and carry workmen to the Virginia Street entrance of the mill as well as handling traffic to the towns of Miller and Aetna.

Dr. Wilcox on the Public Service Law.—Dr. Delos F. Wilcox has submitted a statement to the New York legislative committee on investigation of the public service commission law, in which he makes a number of criticisms of the present law as well as a number of suggestions. Among the charges which he brings against the present law is a lack of responsibility of the commissioners to the local authorities in the case of the First District Commission, that the commission has power to enter into contracts with the same companies whose services it is called upon later to regulate, that the telephone and telegraph services in the first district are under the jurisdiction of the commission in the second district, that the public service law in some respects is inconsistent with the present railroad law, that some of the franchises are perpetual while others are limited or indeterminate, and that the commission does not have power to require extensions. He recommends the establishment of one State commission with local municipal commissions with certain powers to control the utilities in the larger cities of the State, and longer tenure of office, but with possibly the power of "recall" in the hands of the people. He also criticises professions on the part of commissioners of belief that the public service corporations are making every effort to serve the public interests.

Financial and Corporate

ANNUAL REPORTS

Philadelphia Rapid Transit Company

The comparative statement of income, profit and loss of the Philadelphia (Pa.) Rapid Transit Company for the years ended June 30, 1914 and 1915, follows:

	1915	1914
Earnings:		
Gross passenger earnings.....	\$22,971,594	\$23,356,876
Receipts from other sources.....	872,011	898,936
Total	\$23,843,605	\$24,255,812
Expenses:		
Maintenance and renewals:		
Maintenance	\$2,435,415	\$2,668,752
Reserve fund for renewals.....	1,141,126	969,620
Total appropriation	\$3,576,541	\$3,638,372
Operation of power plants.....	1,417,239	1,557,965
Operation of cars.....	6,205,100	6,297,115
General	1,329,829	1,527,387
Taxes	1,348,723	1,278,406
Total	\$13,877,432	\$14,299,245
Net earnings from operation.....	\$9,966,173	\$9,956,567
Fixed charges:		
Interest	\$2,259,471	\$2,161,696
Rentals	7,364,997	7,364,635
Sinking fund, city contract.....	120,000	120,000
Total	\$9,744,468	\$9,646,331
Surplus	\$221,705	\$310,236

The gross earnings showed a decrease of \$412,207, or 1.7 per cent for the year, divided 1.65 per cent for passenger earnings and 3 per cent for other receipts. This is accounted for by the continuance of the general industrial depression experienced during the preceding fiscal year, which was aggravated by the further unsettling of business conditions occasioned by the outbreak of the European war in August, 1914, and also by the jitney competition commencing in the spring of 1915.

Although the taxes increased by \$70,317, the total operating expenses decreased \$421,813. This saving was accomplished by making all operating economies possible without impairing the standard of service. The operating ratio for the year was 58.2 per cent.

The fixed charges showed an increase of \$98,137 on account of added interest charges. The resultant surplus for the year ended June 30, 1915, was \$221,704, as compared to \$310,236 for the preceding year, a decrease of \$88,531.

The capital asset account "Leases, Franchises, Construction, Equipment, Advances to Leased Lines, Sinking Funds, etc.," as of June 30, 1915, amounted to \$113,010,043, representing a decrease of \$688,381 during the year. Charges for additions and betterments during the year amounted to \$329,566.

The renewal reserve amounted to \$1,269,036, as of June 30, 1915, as compared to \$1,042,962 at the beginning of the year, the increase being occasioned by the appropriation from income for renewals exceeding the expenditures during the current year. This balance of \$1,269,036 to the credit of the renewal reserve represents the accumulated total of amounts charged to operating expenses to provide for renewals in excess of the actual expenditures for renewals during the five years to June 30, 1915. The renewal fund as of June 30, 1915, amounted to \$1,250,000, of which \$128,246 was in cash. This renewal fund is held against the renewal reserve for the purpose of financing the expenditures for renewals when they may be incurred in the future.

The company's equipment trusts, Series B and C, dated March 1 and May 1, 1913, respectively, provided for a total issue of \$6,144,000 of 5 per cent car trust certificates maturing in equal semi-annual instalments during a twelve-year period from 1913 to 1925. A total of \$1,024,000 of these certificates has been retired during the two years ended June 30, 1915.

The accident reserve amounted to \$1,042,555 as of June 30, 1915, as compared to \$1,110,703 at the beginning of the year, the decrease being caused by the settlement of cases pending at the first of the year. The total suits pending

were reduced from 2529 to 2167 during the year. The records for the four year period ended June 30, 1915, show a reduction of suits pending from 4367 to 2167, a decrease of more than 50 per cent, whereas the accident reserve during the same four years was reduced only about 20 per cent, or from \$1,311,996 to \$1,042,555.

Washington Railway & Electric Company

Net earnings of \$1,103,942 for the first six months of 1915 are shown in the semi-annual report of the Washington Railway & Electric Company, Washington, D. C. The gross earnings during these six months were \$2,601,738, as compared with \$2,527,747 during the first six months of 1914. A comparative statement of earnings and expenses follows:

	1915	1914
Gross earnings	\$2,601,738	\$2,527,747
Operating expenses and taxes.....	1,454,263	1,394,665
Total	\$1,147,475	\$1,133,082
Depreciation of equipment.....	43,532	30,000
Net earnings	\$1,103,942	\$1,103,082
Miscellaneous income and profit and loss items	37,524	12,257
Total	\$1,141,466	\$1,115,338
Fixed charges	593,212	578,059
Net income	\$548,254	\$537,279
Dividends (preferred and common)....	440,000	440,000
Balance	\$108,254	\$97,279
Sinking fund	52,700	49,160
Surplus	\$55,554	\$48,119

Announcement has been made of the resignation of William B. Hibbs from the directorates of all public utility corporations the securities of which he handles in the capacity of a broker. They include the directorates of the Washington Railway & Electric Company and its subsidiary companies. Mr. Hibbs' resignation was prompted by ethical reasons. As a broker he was called upon to buy and sell securities of the several companies of which he was a director, and he was often placed in embarrassing positions. Under the circumstances he felt that it would be better for him to withdraw from the directorates.

Lima Light, Power & Tramways Company

The Empresas Electricas Asociadas (Lima Light, Power & Tramways Company), which holds practically a monopoly of the electric railway, power and light service in Lima, Callao and several of the suburban towns around these cities in Peru, secured revenues from its various branches during 1914 amounting to \$1,913,368, as compared to \$1,981,560 in 1913, a reduction of \$68,092. Gross expenditures were \$1,328,223 in 1914 and \$1,420,594 in 1913, representing an economy of \$92,371. In view of the fact that these results were obtained during the most abnormal year in the history of the company, and the net receipts were the largest yet obtained, the year's results were considered highly satisfactory. The two principal factors affecting the revenues were the disturbed political situation during the first half of 1914 and the consequences of the European war during the second half.

The gross receipts of the urban and interurban tramways amounted during 1914 to \$997,719, a decrease of \$45,511 in comparison with 1913. The gross receipts of the Lima urban tramways were \$457,533, or \$18,560 less than the preceding year. This section was augmented during the year by twelve new American-built cars of the latest type. There was a reduction in the revenues of the Lima-Cherrillas tramway of \$11,689, the gross revenues of the year being \$280,616. The branch from Lima to Callao also suffered decreased revenues to the amount of \$17,465 in comparison with 1913. This was caused by the suspension of maritime traffic and the limitation of business in Callao. The Magdalena Interurban Tramway was the only one that showed an increase in gross receipts, which were \$35,271 in 1913 and \$37,481 in 1914. The number of passengers transported on all the tramway lines fell from 29,020,888 in 1913 to 28,120,425 for 1914. A dividend of 1 per cent was distributed during 1914 in accordance with an agreement entered into with the bondholders.

NEW KANSAS CITY PLAN PRESENTED

Judge W. C. Hook of the United States District Court of Kansas City, Mo., on July 29 in Chicago presented suggestions relative to a reorganization plan for the Kansas City Railway & Light Company. The plan of Judge Hook is now being circulated for signatures among the various security committees, and a few details still to be settled are under discussion. The plan is said to be satisfactory to the city officials, and according to City Counsellor Evans it meets the terms of present franchises and the pending ordinance. Attorneys for the Metropolitan Street Railway are now working on the plan and a new franchise, which will be taken up later by the city.

Judge Hook's plan involves the complete exchange of old securities and the separation of the railway and the light properties. In outline it provides for an indebtedness allowance of \$28,700,000 for the present companies, which is to be borne by two new companies, one representing the railway and the other the lighting interests. This indebtedness includes some underlying liens and some collateral liens of the holding company.

It was decided by Judge Hook that approximately \$5,000,000 of the indebtedness allowed should be borne by the new light company. This would be divided about three-fifths in first mortgage bonds and about two-fifths in second mortgage bonds. The railway company should issue approximately \$8,000,000 of 5½ per cent three-year notes; an open first mortgage, of which \$10,000,000 of first mortgage 5 per cent bonds, for purposes of the plan, should be issued, and \$5,700,000 of second mortgage bonds. The holders of the present securities would be expected to accept the new securities at par and maintain as far as possible the existing liens. There would be issued \$1,000,000 of bonds for immediate capital expenditures on the railway. All of the bonds would mature in 1944, but a sinking fund has been provided in the case of the second mortgage, which would retire all of that issue before maturity.

The plan provides for a board of readjustment managers, composed of Kuhn, Loeb & Company, Blair & Company, Lee, Higginson & Company and H. L. Stuart, the latter acting in an individual capacity for Judge Hook.

SIX PER CENT RATE FOR BOSTON

In reference to the quarterly dividend of 1½ per cent on the stock of the Boston Elevated Railway, payable on Aug. 16, as announced in the *ELECTRIC RAILWAY JOURNAL* of July 31, the directors issued the following statement:

"Although we do not know whether the earnings for the year ending June 30, 1916, will be sufficient to pay four quarterly dividends of 1½ per cent each, the directors have not deemed it just to reduce the established rate, as there is a chance that 6 per cent may be earned. An estimate has been prepared by the treasurer of the probable net earnings for the current year, which shows about 5½ per cent. This is upon the basis that no additional requirements for depreciation shall be imposed upon the company.

"The 6 per cent rate is only about 5 1/3 per cent on the money actually paid in to the corporation by its stockholders, and is less than a reasonable return on the actual investment. Further, the ability of the company to earn and pay at least 6 per cent, with a sufficient margin for depreciation and contingencies, is necessary in order to maintain the credit of the company so that it can obtain from time to time additional capital for the extensions to its service which the public desires.

"The net income of the company has been seriously affected by the large increase in the cost of labor and materials and by the large burdens which have been constantly imposed upon the company, and in the judgment of the directors, it is not likely to be sufficient to provide for continuous 6 per cent dividends, unless some relief is had either by an increase in the unit of fare or otherwise."

Boise (Idaho) Railroad.—It is expected that the old Boise (Idaho) Railroad will soon be segregated from the Idaho Traction Company and that the line and all its equipment will be turned back to E. H. Jennings and his associates, the former owners. The line was sold three years ago, when the three city lines in Boise were consolidated. The old owners have asked the directors to return the property and resign as agreed in the foreclosure case of the other

properties of the Idaho Railway, Light & Power Company recently decided in the federal court, as noted in the *ELECTRIC RAILWAY JOURNAL* of May 8. Two eastern directors have already resigned, and the local directors are expected soon to follow suit. It is understood that H. E. Dalton, who formerly managed the Boise & Interurban Railway, which was financed by Mr. Jennings, will take charge of the Boise Railroad. This railway consisted of the line running from the Natatorium to Main and Thirteenth Streets, thence north of Thirteenth Street to Eastman Street, west on Eastman Street to Eighteenth Street and north on Eighteenth Street to Irene Street. The lines on Eastman and Eighteenth Streets were taken up when the property was acquired by the Idaho Traction Company. The company also owned the line on North Eighth Street as far as Eastman Street, which portion is now used as a part of the city belt line. The South Eighth Street line, which operated into the Riverside Park district and a portion of which was taken up, was also owned by the old company. This is now used for the Cole school car and a portion of it for the interurban cars running to Nampa. Just what the new company will do in connecting up its lines after the transfer is made is not known, but looking toward that end it has connected the loop line at Eighteenth and Bannock Streets and put in additional switches.

Brazilian Traction, Light & Power Company, Ltd., Toronto, Ont.—An announcement will be made to the Canadian Stock Exchange and also in London, England, that the directors of the Brazilian Traction, Light & Power Company, Ltd., have decided upon a 2 per cent reduction in the company's dividend. This action is taken in view of the unsettled conditions surrounding exchange in Brazil and the prolongation of the war. A dividend of one-half of 1 per cent has been announced, payable on Sept. 1, 1915. As the 4 per cent dividend applies for the year 1915, and two quarterly disbursements of 1½ per cent each have already been made this year, shareholders on the present basis should receive another 1 per cent in dividends divided into the two last quarterly payments. The new arrangement is expected to meet with the entire commendation of conservative financiers. The reduction is made in the face of steady increases in net earnings almost month by month for the nine months' war period from September, 1914, to May, 1915, inclusive. The increase in earnings are the more interesting because the general impression prevails that conditions in Brazil are bad.

Chicago (Ill.) Railways.—The directors of the Chicago Railways have declared a dividend of \$4 on the Series 1 participating certificates, payable on Sept. 1 as of Aug. 1 to holders of record of May 20. The last distribution on the Series 1 certificates was \$4 last June, the payment due on Feb. 1, 1915, having been deferred until that time.

Chicago (Ill.) Surface Lines.—The Illinois Public Utilities Commission has authorized the Chicago City Railway to issue first mortgage 5 per cent gold bonds amounting to \$2,242,000, the Calumet & South Chicago Railway to issue first mortgage 5 per cent gold bonds amounting to \$500,000 and the Chicago Railways to issue similar bonds for \$2,726,000. These issues are to cover contemplated capital expenditures for 1915 and are provided for in the 1907 settlement ordinances. Whether they will all be sold at one time or in amounts as funds are required depends upon the condition of the bond market. This item supersedes a notice in the *ELECTRIC RAILWAY JOURNAL* of July 24.

Denver (Col.) City Tramway.—The dispute between the city of Denver and the Denver City Tramway over the tax rate for 1912, 1913 and 1914 has been compromised through the payment by the company of \$378,061 to cover the balance of taxes in 1912 and all of the 1913 and 1914 taxes in question. Under the assessed valuation made by the State Tax Commission the taxes for the three years amounted to \$579,273, including interest and penalties up to July 1. The compromise figures, therefore, show a reduction of about \$200,000. Under the terms of the settlement the company gave a bond to the city and county of Denver covering any claims the State may make for its proportion of the taxes as assessed by the State commission. It is not expected that this figure will be more than \$25,000, even if the State is successful in its claim. Following the payment of taxes the city dismissed the suit for receivership which was started on account of the non-payment of taxes.

Glendale & Montrose Railway, Los Angeles, Cal.—The California Railroad Commission has authorized the Glendale & Montrose Railway to issue 400 shares of stock, par value \$100, to J. Frank Walters for the purpose of reimbursing him for capital expenditures made in behalf of the company. A change in the company's articles of incorporation must be made to provide for this issue. The application for this issue was noted in the *ELECTRIC RAILWAY JOURNAL* of Feb. 20.

Newark & Marion Railway, Newark, N. Y.—The sale of the Newark & Marion Railway, which was advertised for July 20, has been postponed until Aug. 26. This line, which runs from Newark to Marion, a distance of 10 miles, is temporarily operated by steam. Harold C. Beatty is the receiver.

New York (N. Y.) Railways.—The Public Service Commission for the First District of New York on July 27 denied the application of the New York Railways, intervenor, for a modification of the commission's order of Dec. 10, 1912, ordering the company to set aside for depreciation each month an amount equal to 20 per cent of its gross operating revenue. This action was taken without prejudice, however, to the right of the company to renew its application after the courts have decided the certiorari proceedings brought to review orders made by the commission in the Metropolitan reorganization cases. The company desired the commission to modify its order so that 20 per cent of the gross passenger revenue would be set aside for depreciation instead of 20 per cent of the gross operating revenue. In conformity with the order the company had set aside the required amount from Jan. 1, 1912, to Oct. 31, 1914, totalling \$7,868,008. During this time the company spent for maintenance \$6,224,140, leaving a balance in the reserve of \$1,623,867. An amount representing 20 per cent of the gross passenger revenue would have accumulated \$1,348,867, which the company asserts would be ample for all depreciation accrued during the period in question.

Northern Ohio Traction & Light Company, Akron, Ohio.—The Ohio Public Utilities Commission has authorized the Northern Ohio Traction & Light Company to issue \$500,000 of one to five-year 6 per cent collateral trust notes, maturing in five equal installments beginning with July 1, 1915, and ending with July 1, 1920. The notes are secured by an assignment to the trustee of the bonds deposited under the \$1,500,000 collateral trust issue of Aug. 1, 1913, subject to the terms of the indenture securing the latter issue. The bonds when released from that issue will be automatically turned over to the trustee for the security of the new issue. The proceeds are to be used to reimburse the company's treasury for money previously expended from income or to pay obligations for construction work, amounting to \$209,421, and to reimburse the treasury for \$300,000 expended from income for the redemption of matured collateral trust notes used for construction purposes. The provisional sale of these notes to Hayden, Miller Company, Cleveland, pending the authorization by the commission, was noted in the *ELECTRIC RAILWAY JOURNAL* of June 12.

Public Service Corporation, Newark, N. J.—The directors of the Public Service Corporation of New Jersey have decided to issue monthly financial statements for the information of the general public, instead of the one customary statement preceding the stockholders' annual meeting. The first statement issued in accordance with the new policy is for the first six months of this year. Future statements will cover monthly operations as well as the operation for the proportion of the year up to the date of the report. The report now issued states that even with the unsettled conditions of the last six months the corporation shows a gain in gross earnings over the first half of 1914 amounting to \$631,836, or an increase of 3.6 per cent. The balance available—after the payment of operating expenses, fixed charges, sinking fund requirements, etc.—for amortization, dividends and surplus amounted to \$1,597,442. This means that the increase in surplus available for dividends over the corresponding period of 1914 was \$149,596.

Rhode Island Company, Providence, R. I.—Judge Arthur L. Brown of the United States District Court has handed down a decision against George W. Sabre upholding the

legality of the long series of transactions by which the ownership of the Rhode Island Company was brought to its present basis. Mr. Sabre has fought the case since 1902, asserting that the United Traction & Electric Company acted beyond its power in voting in favor of leasing the local street railway to the Rhode Island Company for a period of 999 years. The court held that, however just the criticisms made of the financing disclosed and of the mingling of business and speculation might be, the plaintiff had failed to show that the traction company had exceeded its powers or abused his rights as a minority stockholder.

Winnipeg, Selkirk & Lake Winnipeg Railway, Winnipeg, Man.—The Manitoba Public Utilities Commission has authorized the Winnipeg, Selkirk & Lake Winnipeg Railway to issue \$1,400,000 of first mortgage bonds. The proceeds of this issue are to be used for the purpose of putting the interurban line and the Winnipeg Electric Railway on separate footings. The interurban line owes the Winnipeg Electric Railway \$940,000 for money advanced for construction and equipment purposes, and the sale of the bonds will enable it to satisfy this claim. The bonds are to be sold for not less than 85 when approved by the stockholders.

DIVIDENDS DECLARED

Boston (Mass.) Elevated Railway, quarterly, 1½ per cent.
Brazilian Traction, Light & Power Company, Toronto, Ont., quarterly, one-half of 1 per cent.

Chicago (Ill.) Railways, 4 per cent, participating certificates, Series 1.

Citizens Traction Company, Oil City, Pa., 75 cents, preferred.

Ohio Traction Company, Cincinnati, Ohio, quarterly, 1¼ per cent, preferred.

Union Street Railway, New Bedford, Mass., quarterly, 2 per cent.

ELECTRIC RAILWAY MONTHLY EARNINGS

CITIES SERVICE COMPANY, NEW YORK, N. Y.						
Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '15		\$294,520	\$14,023	\$280,497	\$40,833	\$239,664
1 " " '14		269,586	8,947	260,639	29,167	231,472
12 " " '15		3,977,733	148,170	3,829,563	490,000	3,339,563
12 " " '14		3,399,187	90,985	3,308,202	298,062	3,010,140

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO.						
Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '15		\$244,059	*\$150,250	\$93,809	\$39,341	\$54,468
1 " " '14		249,684	*169,951	79,733	38,947	40,786
12 " " '15		3,059,929	*1,826,643	1,233,286	468,369	764,917
12 " " '14		3,056,760	*1,973,309	1,083,451	486,251	597,200

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.						
Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '15		\$1,115,495	*\$623,533	\$491,962	\$360,096	\$131,866
1 " " '14		1,099,429	*607,077	492,352	332,875	159,477
12 " " '15		14,033,334	*7,536,389	6,496,945	4,321,269	2,175,676
12 " " '14		13,929,915	*7,703,892	6,226,023	4,018,689	2,207,334

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.						
Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '15		\$193,293	*\$118,402	\$74,891	\$63,906	\$10,985
1 " " '14		225,180	*140,968	84,212	55,435	28,777
12 " " '15		2,466,923	*1,450,641	1,006,282	755,812	250,470
12 " " '14		2,732,541	*1,707,886	1,024,655	619,123	405,532

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.						
Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '15		\$474,569	*\$256,295	\$218,274	\$185,589	\$32,685
1 " " '14		530,974	*283,649	247,325	183,987	63,338
12 " " '15		5,737,866	*3,122,692	2,615,174	2,208,889	406,285
12 " " '14		6,701,878	*3,344,610	3,357,268	2,116,201	1,241,067

PUGET SOUND TRACTION LIGHT & POWER COMPANY, SEATTLE, WASH.						
Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '15		\$618,364	*\$382,464	\$235,900	\$159,643	\$76,257
1 " " '14		706,470	*431,040	275,430	153,882	121,548
12 " " '15		7,983,915	*4,856,970	3,126,945	1,887,540	1,239,405
12 " " '14		8,717,661	*5,048,225	3,669,436	1,834,582	1,834,854

REPUBLIC RAILWAY & LIGHT COMPANY, NEW YORK, N. Y.						
Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '15		\$246,691	*\$155,948	\$90,743	\$57,550	\$33,193
1 " " '14		247,828	*152,256	95,572	56,838	38,734
6 " " '15		1,456,919	*916,303	540,616	341,836	198,780
6 " " '14		1,495,732	*929,107	566,625	336,025	230,600

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.						
Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '15		\$770,718	\$490,359	\$280,358	\$132,696	\$147,662
1 " " '14		790,334	470,892	319,442	129,607	189,835
6 " " '15		4,604,537	3,035,016	1,569,521	800,914	768,607
6 " " '14		4,517,553	2,859,475	1,658,078	780,790	877,288

*Includes taxes. †Includes non-operating income.

Traffic and Transportation

JITNEY JOTTINGS

Jitney Seen as a Picturesque Industry Defying Laws of Investment and Production

In commenting editorially on the refusal of the Public Service Commission of Indiana to assume jurisdiction over the jitneys, the Indianapolis *Star* said in its issue of July 30 under the caption "There is Reason in All Things":

"It is unfortunate for more than one reason that the Public Service Commission finds itself unable to take cognizance of the jitney complication in the street car situation. No one would wish to visit any needless hardship on this new and picturesque industry which cheerfully offers to defy all laws of investment and production; but if government is to be fair and just, it must sooner or later take account of losses sustained by public utilities as well as their profits.

"It is all very fine for the authorities of various powers and prerogatives to say that the street car company is making money and must raise wages all around and reduce fares and pay more taxes and build more extensions wherever real estate operators want them and pave 100 miles of track and take whatever the State or the Mayor or the Council or the Chamber of Commerce hands it and like it. But how about when things are going the other way? Does the State propose to go on indefinitely reducing the company's income and increasing its outgo and then when it asks for relief find that nothing can be done? The jitney incident is a small matter, of course; but there ought to be some sense of justice in the public mind toward these utilities in which so many of our citizens have invested their savings and upon whose ability to show earnings depend the quality and quantity of this indispensable public service."

Following the submission to the City Commissioners of Dallas, Tex., of an ordinance regulating the jitneys prepared by the jitney men with a petition for an election signed by 4500 voters, a compromise was made and an ordinance agreed upon by both parties containing features of both previous ordinances to become effective within the next ten days. The license fee under the new ordinance remains at \$75, but \$65 of this amount is for the regular operator and \$10 for a substitute. The principal changes from the city's original law is the privilege to secure permission from the city automobile inspector to make special trips. Operators must live in Dallas sixty days before being granted a license instead of six months as formerly. Licenses may be taken out for a period of six months instead of one year. Not more than one-fourth of all the cars operated on one route may be taken off at one time; the section of the first measure requiring lights in the tonneau and the use of non-skid tires is eliminated. Otherwise the ordinance is similar to the original one, limiting the number of passengers, requiring inspection of cars and examination of drivers and barring smoking. The ordinance is said to be more liberal than any of the fifty passed in various cities and examined in Dallas.

Justice McBride in the Supreme Court at Salem, Ore., rendered an opinion on July 27 to the effect that the city of Portland must show that the local jitney ordinance was passed by the City Council before being approved by the voters. The decision is regarded as a purely technical one growing out of a multiplicity of petitions, plans for referendums, re-enactments, etc., and the court has declared that the city has a legal right to enact a regulatory ordinance. The opinion reverses the decision of Circuit Judge Gantenbein, sustaining the demurrer of H. R. Albee, Mayor and defendant, and the case is remanded with directions to the Circuit Court to permit an answer to be filed within a reasonable time.

One jitney ordinance, to embrace the features of the two that had been originally drafted for passage in the Board of Works and the Common Council of Newark, N. J., respectively, has been decided upon by the finance committee of the Council and the committee appointed by the Board of Works, headed by City Counsel Frazer, to provide regulations for the buses and their drivers. The ordinance provides for license fees ranging from \$50 for a car carrying

five passengers or less up to \$100 for cars carrying more than sixteen passengers. The substitute measure also includes the regulations relating to overcrowding of cars, schedules, routes and other points that up to this time were contained in the ordinance that was to have been acted upon by the Board of Works.

The Wisconsin Assembly has concurred in the Senate bill providing for State regulation of jitney buses by the State Railroad Commission. The bill now awaits Governor Philipps' approval. The measure declares jitneys to be common carriers and provides that they shall not be operated except by permit issued by the State Railroad Commission. A jitney owner is required to file with his application for a permit a bond, to be conditioned on the payment of damages for personal injuries or death in a sum not to exceed \$5,000 to any one person or \$10,000 for any accident caused by negligent use or operation. The Railroad Commission is to determine whether the rate is reasonable.

In the *ELECTRIC RAILWAY JOURNAL* of July 31, page 207, a statement was quoted from the Baltimore *Sun* to the effect that the Baltimore Transit Company, in which the United Railways & Electric Company is interested, was having a score or more of buses made for it. The Baltimore Transit Company has in service fifteen auto buses and has placed an order for five additional cars. The bodies are being built by The J. G. Brill Company and the chassis by the Garford Company.

The Police Commission of Los Angeles, Cal., has notified the Pacific Coast Casualty Company, which is soliciting business from jitney bus drivers, that it must submit a new form of bond, to be approved by the city attorney and the commission. The commission limited the amount which the company may accept to \$220,000, the equivalent of the bonds for eleven jitneys at \$11,000 each. This is a severe setback for the promoters of the jitney men's association, who have been waging a campaign for increased membership on the basis of some kind of a special deal with the casualty company through which members of the association secure their bonds at a reduced rate. The new bond must be presented to the commission by Sept. 30. The Employers' Indemnity Exchange is also soliciting jitney bond business.

The fight between the jitney operators and the Youngstown Park & Falls Railway, Youngstown, Ohio, continues. On July 26 the Jitney Bus Association filed warrants for the arrest of seven employees of Idora Park, owned by the railway company, for violation of Sunday laws. This was in retaliation for the admission charge to the park made to all persons who do not go there on the street cars. On July 22 the company brought suit against Justice of the Peace T. J. Skipp and ten jitney operators for \$30,000 damages. The petition charges illegal arrest of several of its park employees for violation of the Sunday labor laws. In order to keep the affairs of the park and the railroad separate, the Idora Park Company has been incorporated with a capital stock of \$10,000 by R. P. Stevens, E. G. Dunlap, John T. Harrington, Fred J. Hein and Richard Wilson. The park has always been operated separately from the railroad, although owned by it, but the incorporation of a company to own and operate it will result in an entire separation of their affairs. Messrs. Stevens and Dunlap are officials of the railway.

An ordinance has been introduced into the City Council of Springfield, Ill., for the regulation of jitney buses. It provides for the operation of jitneys for eight consecutive hours daily, with certain terminals, the filing of a bond to be approved by the City Council, which is to have power to revoke all licenses upon infringements of the ordinance.

Regarding the jitney situation in Philadelphia the *Ledger* said in its issue of July 29:

"War between the rival associations of jitney men has had the effect of forcing scores of drivers out of both organizations and throwing the business back to where it was when the jitneys started in this city. It seems as if the predictions of those who had observed the rise and fall of the jitneys in Western cities are to be borne out here. Yesterday some of the local jitney men themselves admitted that they could not afford to do business at the 5-cent rate, except on Sundays and holidays when they were busy all the time. It is the opinion of many of the jitney men themselves that next winter will see the end of about half the

business in this city, and that the resumption of the business next spring will bring out only a small fraction of the present number of jitneys. Therefore they are not worrying about court action on the jitney regulating ordinance. Having forestalled it until Sept. 20, they are now prepared to let it go by default and regard with unconcern any further action City Councils may take, going out of business rather than submit to strict regulation."

NIAGARA FALLS WRECK INQUIRY

One hundred and seventy-three passengers, not including a number of children under five years old, were aboard the car of the International Railway when it was wrecked on the grade near Queenstown, Ont., four weeks ago.

Among those at the inquest at Queenstown on July 28 were N. F. Davidson, K.C., of Toronto, Ont., who conducted the session, representing the attorney general of the province of Ontario, Canada; A. Monroe Grier, K.C., Toronto, and Alexander Fraser, K.C., Niagara Falls, Ont., who have been retained as special counsel of the International Railway; T. Herbert Lennox, Toronto, representing the street car union; County Crown Attorney Brennan of Lincoln County; High Constable Boyle of the provincial police; F. Armour, K.C., of the Canada Steamship Lines, Ltd., and counsel representing the St. John's and Woodgreen Methodist churches, of which the excursionists were members.

The superintendent of the International Railway in company with Vice-President Dickson and General Counsel Penney, made a minute inspection of the rails and roadbed on the steep grade where the disaster occurred and they declared everything was found to be in good condition. The motorman of the car testified at the inquest that weeds had grown over the rails, thus adding to the slippery condition of the tracks caused by the rain. As the result of the wreck, orders have been issued by the Ontario Railway Board that there is to be no overcrowding of electric railway cars in the province.

Mr. Dickson was arraigned by the Canadian police on Aug. 5 charged with criminal negligence resulting in death in connection with the Queenstown Heights disaster. He was released in \$20,000 bail. The hearing will be held on Sept. 1.

GROUP INSURANCE OFFER IN BROOKLYN

Outline of Liberal Insurance Terms Secured for Brooklyn Employees

The Brooklyn (N. Y.) Rapid Transit Company has entered into an arrangement with the Travelers Insurance Company, Hartford, Conn., whereby that company will insure the lives of the employees of the transit system who wish to take advantage of the opportunity under the so-called "group" plan. The offer is extended to all employees who have been in active service for two years or more. Those eligible number more than 8000. The company will pay one-half of the annual premium on insurance up to \$1,000, and in certain cases will pay the entire premium. Any employee, if he chooses, may take insurance up to \$5,000, subject to the approval of the insurance company as to his physical condition. If at least 5000 employees take advantage of the opportunity no medical examination will be required. If at least 1000 come into the group, and less than 5000, a medical certificate from the Brooklyn Rapid Transit Company physicians will be required. Assuming that all the employees who are eligible to the insurance join the group and take the minimum amount, namely \$1,000, the total insurance will be upward of \$8,000,000.

The policy is the so-called "term" insurance, namely, insurance taken for one year but renewable from year to year indefinitely. The rate differs with the age of the employee, and the annual premium, which will be paid in the first place by the Brooklyn Rapid Transit Company, is believed to be the lowest at which such insurance has ever been written. For the employees it will mean that those under thirty-two years of age will have their lives insured for \$1,000 upon the payment of about 7 cents a week; employees more than thirty-two and less than forty about 8 cents a week, and so on, gradually increasing as the age of the insured employee increases. The company has agreed to assume the entire premium in the following cases and under the following conditions:

(a) In the case of employees who, after taking out this insurance, may thereafter be retired under pension pursuant to the rules and regulations of the pension bureau.

(b) In the case of employees, who, taking out this insurance and having served at least ten years with the company, are obliged by reason of partial disability not due to accident in the service of the company to accept with the company employment materially reducing their earning capacity from what had been their average annual earnings for the ten years last preceding such change of position.

(c) In other special cases calling for particular consideration.

The company states that in making this offer it desires to reward continuous and faithful service, and by assuming the entire premium in such cases will in effect be furnishing such employees with a paid-up policy for \$1,000 at a time of life when the payment of an insurance premium might be a burden. Employees have the option of discontinuing the insurance after the expiration of any year.

Special privileges have been obtained from the insurance company, whereby any employees not remaining in the service of the transit company, may, within a limited time after leaving such service, take one of the regular life or endowment policies of the insurance company as of the age at which he entered the insurance group by paying the difference in premiums applicable to the different kinds of policies. The insurance policy contains also provision for total and permanent disability, whereby before death the amount of the policy will be paid in installments.

New Louisiana Line Completed.—The construction of the Orleans-Kenner Electric Railway has been completed between New Orleans and Kenner, and it is expected to establish service between those places soon.

New Limited Car Placed in Service.—The Indianapolis, Columbus & Southern Traction Company, Columbus, Ind., has placed in service a new limited car between Indianapolis and Columbus, Ind., to be known as the Columbus Limited.

Near-Side Stop Established in Texarkana.—The city lines of the Southwestern Gas & Electric Company in Texarkana, Tex., have established the near-side-stop practice in order to comply with an ordinance recently passed by the West Side City Council.

Decrease of 25 Per Cent in Accidents.—The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., reports that accidents have decreased 25 per cent during the last two years while the company has been active in its safety-first campaign.

Permission to Reduce Wages Asked.—The British Columbia Electric Railway, Vancouver, B. C., has requested of the arbitration board of Vancouver the privilege of reducing the existing wage scale for employees by 15 per cent. The financial and business depression, the general reduction in wages in practically all industries, and an alleged drop in the cost of living since 1913, are cited as reasons for making the request.

Plans for Skip-Stop in Milwaukee.—The members of the Railroad Commission of Wisconsin, City Attorney Hoan of Milwaukee and the officers of The Milwaukee Electric Railway & Light Company have reached an agreement under which the skip-stop plan will be tried for three months on the Wells-Farwell, the Greenfield Avenue and the Walnut Street lines of the company. A vote of the passengers will then be taken and it is stated that the commission will be governed regarding its permanent order by the sentiment expressed by riders at the conclusion of the experimental period.

Massachusetts Northeastern Wages Adjusted.—The members of the local union of employees of the Massachusetts Northeastern Street Railway, Haverhill, Mass., have voted to accept the final offer of the company, which grants an increased wage scale, with a maximum increase of 2 cents an hour to 28½ cents, to be reached in the sixth year instead of the eighth, as formerly, and readjusts hours and other working conditions. The union first demanded 30 cents an hour as a minimum wage and 35 cents as the maximum rate, the same as was made by the employees of the Bay State Street Railway.

Personal Mention

Mr. J. H. Larmonth has resigned as superintendent of the Edmonton (Alta.) Radial Railway.

Mr. A. W. Richardson has been appointed trainmaster of the City Light & Traction Company, Sedalia, Mo.

Mr. Moritz Rosen has succeeded Mr. George W. Bacon as vice-president of the United Railways Investment Company, New York, N. Y.

Mr. M. R. Botkin has been appointed roadmaster of the Denver & Inter-Mountain Railroad, Denver, Col., to succeed Mr. O. C. Harrington.

Mr. I. N. Randall has been appointed assistant to the general manager of the Ocean Shore Railroad, San Francisco, Cal., to succeed Mr. F. S. Brooks.

Mr. Norman Coryell has been appointed master mechanic of the Moncton Tramways, Electricity & Gas Company, Ltd., succeeding Mr. R. A. McCharles.

Mr. H. A. MacLean has been appointed accountant of the Moose Jaw (Sask.) Electric Railway, vice Captain C. E. McGee, who was killed in action on May 24.

Mr. Guy E. Tripp, formerly president of the West Penn Traction Company, Pittsburgh, Pa., has been elected chairman of the board of directors of the company.

Mr. George S. Skeen has been appointed superintendent of transportation of the San Diego & South Eastern Railway, San Diego, Cal., to succeed Mr. R. Craig.

Mr. W. M. Barnum, New York, has been elected a vice-president of the Pacific Coast Railway, San Luis Obispo, Cal., to succeed Mr. G. H. Higbee, San Francisco, Cal.

Mr. Roy Chambers of the inspection staff of the Springfield (Mass.) Street Railway, has been appointed superintendent of the Westfield Division, succeeding Mr. V. F. Fabian.

Mr. R. Niver, who has been connected with the power department of the City Light & Traction Company, Sedalia, Mo., has been appointed superintendent of the traction department of the company.

Mr. Francis Blossom of Sanderson & Porter, New York, N. Y., has been elected vice-president of the Trinidad Electric Transmission, Railway & Gas Company, Trinidad, Col., to succeed Mr. L. C. Gerry.

Mr. Oscar Kellogg, who has been publicity man for the East St. Louis & Suburban Railway, East St. Louis, Ill., for the last year, has resigned to accept a position in a similar capacity in Philadelphia.

Mr. George B. Williams, superintendent of the Lansford Division of the Eastern Pennsylvania Railways, Pottsville, Pa., has been appointed general superintendent of the company to succeed Mr. C. F. Crane.

Mr. J. W. Crosby, secretary, treasurer and auditor of the Ocean Shore Railroad, San Francisco, Cal., has, in addition to his present offices, succeeded Mr. F. S. Brooks as purchasing agent of the company.

Captain N. C. Pilcher, general manager of the Sherbrooke Railway & Power Company, Sherbrooke, Que., is in the Fifth Mounted Rifles and is going to the front with the Canadian overseas expeditionary forces.

Mr. F. A. Miller, superintendent of power and equipment and master mechanic of the Oakland, Antioch & Eastern Railway, Oakland, Cal., has succeeded Mr. C. M. Mardel as chief engineer of the company.

Mr. B. A. Duncan, superintendent of the traction department of the City Light & Traction Company, Sedalia, Mo., has been appointed general manager of the Cumberland & Westernport Electric Railway, Cumberland, Md.

Mr. J. J. Callaghan, heretofore superintendent of transportation of the Montreal & Southern Counties Railway, Montreal, Que., has been appointed manager of operation of the London & Port Stanley Railway, London, Ont.

Mr. C. A. Vermillion, superintendent of car service and telegraph of the Spokane, Portland & Seattle Railroad, has had his jurisdiction extended to include the Spokane & Inland Empire Railroad and the Great Northern Pacific Steamship Company.

Mr. J. W. Hale, formerly with the United Railroads, San Francisco, Cal., has been appointed manager and purchasing agent of the Humboldt (Cal.) Transit Company, to succeed Mr. F. C. Morrison, who resigned some time ago on account of ill health.

Mr. Albert Haines, vice-president of the Burlington County Transit Company, Mount Holly, N. J., has been elected president of the company to succeed Mr. I. Snowden Haines. Mr. John D. Johnson, Jr., succeeds Mr. Albert Haines as vice-president.

Mr. Samuel Insull, a director of the West Penn Traction Company, Pittsburgh, Pa., president of the Commonwealth Edison Company, Chicago, Ill., and well known in the central station field, has been elected president of the company to succeed Mr. Guy E. Tripp, who is now chairman of the board.

Mr. O. O. Henson, master mechanic of the Gadsden, Bellevue & Lookout Mountain Railway, Gadsden, Ala., has in addition been appointed superintendent and electrical engineer of the company. The position of superintendent with the company is a new one. Mr. Henson succeeds Mr. H. W. Foote as electrical engineer.

Mr. A. J. Mitchell, comptroller for Mackenzie, Mann & Company, and assistant to the vice-president of the Canadian Northern Railway, Toronto, Ont., has been elected vice-president of the Chatham, Wallaceburg & Lake Erie Railway, succeeding Mr. J. D. Morton, assistant comptroller of the Canadian Northern Railway, Toronto.

Mr. Charles A. Barton, master mechanic of the Rio de Janeiro Tramway, Light & Power Company, Rio de Janeiro, Brazil, has been appointed superintendent of equipment of the company. Mr. Barton has been with the company eight years. He was formerly superintendent of equipment of the Worcester (Mass.) Consolidated Street Railway.

Mr. W. M. Whitenton, formerly general manager of the first district of the Chicago, Rock Island & Pacific Railway, and later with the Chicago electrification committee, has been appointed operating assistant of the Texas & Pacific Railway, reporting to the general superintendent and first vice-president, with headquarters in the city of New Orleans.

Mr. V. F. Fabian, superintendent of the Westfield (Mass.) Division of the Springfield Street Railway, has been appointed superintendent of transportation for the system, with headquarters at Springfield. Mr. Fabian has been in the company's service at Westfield for the last five years, and had previous railroad experience in clerical, dispatching and power station work on the lines controlled by the New England Investment & Security Company. He was at one time engaged in steam railroad work in the West.

Dr. A. S. McAllister, editor of the *Electrical World*, has just resigned and will be succeeded by Mr. F. M. Feiker. Dr. McAllister had been connected with the *Electrical World* since 1905 and had been editor-in-chief during the last two years. He will continue as consulting editor of the paper. At a farewell luncheon extended to him at the Engineers' Club on Aug. 6 by his former associates with the McGraw Publishing Company, Inc., Dr. McAllister was presented with a gold watch from the staff of the *Electrical World*. Dr. McAllister was graduated from Pennsylvania State College in 1894 and received the degree of doctor of philosophy from Cornell University in 1905.

Mr. C. F. Crane, superintendent of railways of the Eastern Pennsylvania Railways, Pottsville, Pa., has been appointed superintendent of transportation of the Wilkes-Barre (Pa.) Railway. Mr. Crane became connected with the Eastern Pennsylvania Railways in 1907 as general passenger agent. In January, 1911, he was appointed superintendent of railways of the company. Before becoming connected with the Eastern Pennsylvania Railways Mr. Crane was passenger and freight agent of the Rochester & Eastern Rapid Railway. The employees of the Eastern Pennsylvania Railways presented a gold watch to Mr. Crane as a token of their confidence and esteem for him.

Mr. Byron T. Burt, who was recently appointed vice-president of the Rutland Railway, Light & Power Company, has also been appointed general manager of this company,

the Western Vermont Power & Light Company and Pittsford Power Company, to succeed Mr. I. M. Frost, resigned. Mr. Burt was formerly manager of the Chattanooga Electric Company until its consolidation with the Chattanooga Railway & Light Company. When the Chattanooga & Tennessee River Power Company was organized to construct the hydroelectric plant at Hale's Bar on the Tennessee River he was made general manager of the company. He later resigned that position to become vice-president of the Rutland Railway, Light & Power Company.

Mr. W. E. Moore, vice-president and general manager of the West Penn Traction Company properties, has resigned his position with the various companies to go into business under his own name as consulting engineer, opening an office in Pittsburgh. Mr. Moore has been with the West Penn properties for more than twelve years, during which time they have grown from gross receipts of approximately \$500,000 to about \$5,000,000. The properties consist of 316 miles of city and interurban railway system, much of which was built under Mr. Moore's direction. There are also many electric lighting companies scattered over the western part of Pennsylvania, a portion of Ohio, and West Virginia, embracing about 125 municipalities. The companies' power system now consists of 80,000 hp. in generating plants and has connected approximately 125,000 hp. in motors, electric railway, and power, besides a large amount of lighting, most of which has been added during Mr. Moore's incumbency. Mr. Moore is to continue with the company until the staff can be reorganized, his successor not having yet been appointed.

Mr. F. M. Feiker, who has been appointed editor of the *Electrical World*, has for the last three years been chairman of the editorial board of the A. W. Shaw Company, Chicago, publisher of *System*, *Factory*, and books on business. Born in 1881 at Northampton, Mass., Mr. Feiker was in 1904 graduated from the electrical engineering course of Worcester (Mass.) Polytechnic Institute, and spent the following year in special research work on high-potential generation and transmission as private assistant to Prof. H. B. Smith of Worcester. From 1906 to 1907 Mr. Feiker served as technical journalist for the General Electric Company. Joining the staff of *Factory* magazine at Chicago in 1907, he was appointed technical editor, and in 1909 managing editor. In the latter position he continued until 1912, when he was made chairman of the editorial board of both *Factory* and *System*, which post he held until his resignation to join the staff of the *Electrical World*. In 1912 Mr. Feiker delivered a course of lectures on industrial organization at Harvard University. He is an associate member of the American Society of Mechanical Engineers and of numerous organizations for the advancement of science, education and management. He is a member of the Engineers' Club, New York City; the University Club, Chicago, and the City Club, Chicago.

OBITUARY

George William Smith, who was president of the Frederick & Middletown Railway, Frederick, Md., before it was consolidated with the Frederick Railroad, now the Hagerstown & Frederick Railway, is dead. Mr. Smith was born near Frederick eighty-three years ago.

Clark O. Simpson, statistician of the accounting department of the New York (N. Y.) Railways, died on July 17, after an operation for appendicitis. Mr. Simpson was born in Troy, N. Y., on Aug. 20, 1865. At an early age he went to the Southwest, where he took up ranching for a few years. He then entered railway work and held positions with the United Railways, St. Louis, Mo.; Meridian Light & Power Company, Meridian, Miss., and the Birmingham Railway & Power Company, Birmingham, Ala. In 1902 he was appointed auditor of the Montgomery (Ala.) Street Railway, and two years later became manager of the Little Rock Railway & Electric Company, Little Rock, Ark. In 1905 he went into the banking business, but in February, 1909, he entered the service of the receivers of the Metropolitan Street Railway, New York. He was shortly afterward promoted to the position of statistician, which he held until his death. Mr. Simpson is survived by his widow and two sons and two daughters.

Construction News

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

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

RECENT INCORPORATIONS

*Jackson & Eastern Railway, Jackson, Miss.—Incorporated in Mississippi to build a steam or electric railway from Jackson to Union. Incorporators: S. A. Neville, R. W. Harris and C. J. Currie, Meridian.

*Cleveland & Sharon Rapid Transit Company, Cleveland, Ohio.—Incorporated with a capital stock of \$10,000. Incorporators: C. A. Blake, C. H. Felton, A. J. Schneider, C. A. Snyder and P. J. Potter.

*Dayton & St. Marys Traction Company, Covington, Ohio.—Incorporated to build a section of electric railway that will furnish a short line between Dayton and St. Marys. Incorporators: Judge Dennis Dwyer, Dayton, well known in electric railway circles; Julius Boesal, Thomas J. Brennan, C. V. Ruenke, J. B. Raterman, G. M. Apple, J. Guy O'Donnell, R. F. Alberty, Perry Moyer and F. E. Ratcliff. Capital stock, \$10,000.

*Mitchell Street & Interurban Railway, Mitchell, S. D.—Incorporated in South Dakota to construct 30 miles of trackage in Mitchell and vicinity. Capital, \$200,000. Incorporators, O. E. Cassem, L. E. Cassem, D. N. Hill, A. N. Hill, F. E. Hill, all of Mitchell.

FRANCHISES

*Mt. Clemens, Mich.—A Mr. Jacobson of Detroit has asked the Council for a franchise to construct an electric railway through Mt. Clemens. The line is to extend from Mt. Clemens to Armada.

Charlotte, N. C.—The Charlotte Electric Railway has asked the Council for a franchise to change the location of its First Ward line. The company desires to take up its tracks on Seventh Street from Davidson Street to Brevard Street and on Brevard Street from Seventh Street to Eleventh Street, and extend its line on Davidson Street from the point where the removal of tracks is begun to Ninth Street.

Portland, Ore.—The County Commissioners of Multnomah County have approved two franchises, one for O. M. Clark and associates, and the other for the United Railways, for use of the St. Helens Road to Linnton. The franchises approved were redrafts of franchises submitted by the two interests. Should the franchise to O. M. Clark and associates be accepted, work of constructing the railway to Linnton must begin in ninety days, and must be completed within one year. The United Railways already have track and equipment in place, so no time limit was made. The franchise granted to the United Railways provides only for freight traffic, while the Clark franchise provides for both freight and passenger service to Linnton, with twelve passenger trains daily each way, and a 5-cent fare.

*Bingham Canyon, Utah.—Harry S. Joseph has asked the Council for a franchise to construct an electric railway in Bingham Canyon to connect with the Salt Lake & Utah Railroad.

TRACK AND ROADWAY

Alabama Power Company, Anniston, Ala.—This company is considering the advisability of building an electric railway between Anniston and Blue Mountain City as an extension of the lines of the Anniston Electric & Gas Company.

Pine Bluff (Ark.) Company.—This company is rebuilding its line on Cherry Street at a cost of \$30,000. The orders for material have all been placed.

San Jose Traction Company, San Jose, Cal.—This company has placed in operation its 3-mile line from South Jacksonville to Hollywood.

Danbury & Bethel Street Railway, Danbury, Conn.—Plans are being made by this company to reconstruct its tracks on Main Street and Franklin Street. An extension

will also be built to connect with its present road operating from Bridgeport to Long Hill, thereby making a through route from Danbury to Bridgeport. The company is also extending its power lines.

Connecticut Company, Hartford, Conn.—The Public Utilities Commission of Connecticut has approved the application of this company for permission to build in Hartford on Myrtle, Grove, Broad and Washington Streets and Farmington and Commonwealth Avenues for a distance of about 7200 ft.

East St. Louis & Suburban Railway, East St. Louis, Ill.—This company has established regular service to Jones Pool, a popular bathing beach.

Peoria & Chillicothe Electric Railway, Peoria, Ill.—At a meeting of the stockholders of this company held in Peoria on July 24, the following officers were elected: E. A. Mitchell, Chillicothe, president and treasurer; John F. Lynch, Chillicothe, vice-president, and Arthur C. Black, Peoria, secretary. [July 17, '15.]

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—This company is now operating cars on schedule time between Wabash and Huntington, repairs to the tracks during the recent heavy rains having been made. It will not be necessary for this company to build new track as was feared at the time of the storms a few weeks ago.

Union Traction Company of Indiana, Indianapolis, Ind.—This company is reballasting its Muncie and Portland line between Portland and Red Key. Twenty thousand new ties will also be used in repairs on this line.

Arkansas Valley Interurban Railway, Wichita, Kan.—Material has been received and work will be begun at once on the extension of this company's line on Avenue A to the east limits of the city.

Ohio Valley Electric Railway, Ashland, Ky.—An extension of this company's line from Ashland to Russell is under consideration.

***Winnipeg, Man.**—Plans are being made to construct a line from Winnipeg to Transcona, 10 miles. Gasoline motor cars will be used. It is expected that the line will be completed by October and will be extended to the south side of Transcona early in 1916. H. W. Adcock, Winnipeg, is interested.

Bay State Street Railway, Boston, Mass.—It is expected that the work of extending the double tracks of the Bay State Street Railway in Methuen will start soon. The new line will extend from the present terminus at the corner of Hampshire, High and Lowell Streets to Railroad Square on the east side of the tracks of the Massachusetts North-eastern Street Railway.

Worcester (Mass.) Consolidated Street Railway.—Work has been begun by this company repairing its track in Grafton.

***Hillsdale, Mich.**—N. H. Pound, who has been at work on the proposition to establish an electric railway between Hillsdale and Pioneer, is said to have received a communication from the Toledo & Western Railroad offering to lease the line, furnish the rolling stock and operate it, giving to the builders of the line 5 per cent on their investment, and splitting all earnings above that amount. Mr. Pounds may be reached through the Hillsdale Improvement Association.

Cleveland, Alliance & Mahoning Valley Railroad, Alliance, Ohio.—This company is now operating its new extension from Ravenna through Leavittsburg to within 4 miles of Warren. The company expects to complete the line to Warren this fall.

Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, Cincinnati, Ohio.—It is stated that negotiations are under way for the building of a high-speed electric railway from Anderson's Ferry, the terminus of the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, into the business center of Cincinnati. The lines of the company stop 6 miles from Cincinnati, and are without an entrance into the city. Plans now provide for securing a franchise from Cincinnati for the new line, which would be built on private right-of-way and would cost about \$100,000 a mile.

Sand Springs Railway, Tulsa, Okla.—This company plans to extend its lines 8 miles to the coal mines.

Shenandoah, Frackville & Pottsville Railway, Pottsville, Pa.—J. B. Trexler, 165 West Windsor Street, Reading, Pa., has been awarded the contract for grading between Frackville and St. Clair, 5 miles distant, for the new line of this company. The Shenandoah, Frackville & Pottsville Railway will connect at St. Clair with the Eastern Pennsylvania Railways.

***East Berlin & Abbottstown Railroad, York, Pa.**—About 100 citizens of Abbottstown, Gettysburg and East Berlin met at the latter place recently for the purpose of considering the question of restoring railway communications to East Berlin and Abbottstown. It was decided to organize a company to be known as the East Berlin & Abbottstown Railroad, with an authorized capital stock of \$70,000. A committee of twelve, which is virtually a temporary board of directors, was appointed to devise ways and means to perfect a permanent organization. This committee is composed of U. L. Gladfelter, S. K. Sowers, E. S. Brown, Dr. T. C. Miller, P. C. Smith, I. S. Miller, D. E. Brandt, H. J. March, W. D. Myers, C. C. Spangler, W. T. Baker, John O. Bosserman. A portion of the roadbed of an abandoned railroad was purchased several days ago by a private citizen for \$8,000, and the interest of this man will be handed over to the new company. The road is about 9 miles long, and extends from East Berlin to what is known as East Berlin Junction, where there is a connection with the Western Maryland Railroad. The motive power of the road has not yet been determined upon.

Washington Water Power Company, Spokane, Wash.—The municipal affairs committee of the Chamber of Commerce, in proposing the Clear Lake aviation site to the War Department Commission, which is searching for a suitable site for an aviation school, states that this company will extend its Medical Lake interurban line to the aviation grounds, providing the Clear Lake site is selected. The proposed extension would be 4 miles.

SHOPS AND BUILDINGS

Arkansas Valley Interurban Railway, Hutchinson, Kan.—The construction of the new brick passenger station of this company on Second Street East, Hutchinson, will be begun as soon as the present frame structure now on the site has been razed.

Detroit (Mich.) United Railway.—The company's engineering department has been instructed to proceed at once on plans and estimates to replace the Chelsea depot of the Detroit, Jackson & Chicago Railway, destroyed by fire last year.

Oregon Electric Railway, Portland, Ore.—The Oregon Electric Railway plans improvements to its local freight terminals in Eugene which will almost double their capacity. The company has under way a warehouse 50 ft. x 100 ft. at Harrisburg, for the storage of grain, wool, hops, etc., and warehouses at Forrest Grove, Woodburn and Butteville.

Southern Pacific Company, Portland, Ore.—It is reported that the Southern Pacific Company will construct a downtown station in Corvallis for its electric trains after the West Side line between Whiteson and Corvallis is electrified. The company has an option on property bounded by Sixth, Monroe, Fifth and Madison Streets, where it is thought the station will be built.

POWER HOUSES AND SUBSTATIONS

Ogden, Logan & Idaho Railway Company, Ogden, Utah.—This company has ordered from the Westinghouse Company two stationary substations, each consisting of a 500-kw. motor-generator set; 2300-volts, three-phase, sixty-cycle, 900 r.p.m. synchronous motor; 1500-volt d.c. generator; 10-kw. d.c. exciter; three 235-kva., single-phase sixty-cycle O.L.S.C. transformers, 45,000/2300-volts and a switchboard to control same; also a portable substation with similar equipment using three 187½-kva. transformers. This apparatus is in addition to the original order given the Westinghouse Company a year ago and is for the completion of the line between Ogden, Utah, and Preston, Idaho.

Manufactures and Supplies

ROLLING STOCK

Salina & Northern Railroad, Salina, Kan., has ordered gasoline locomotives for the passenger equipment of its new 100-mile line from the Internal Combustion Locomotive Company, Wilmington, Del. Delivery will be made in November.

Ogden, Logan & Idaho Railway, Ogden, Utah, noted in the *ELECTRIC RAILWAY JOURNAL* of July 10 as having ordered six trailers from the American Car Company, has specified the following details of this equipment:

Seating capacity	72	Cables	West.
Booster centers, length,	39 ft. 10 1/2 in.	Car trimmings,	Brill and Dayton
Length of body	51 ft. 2 1/2 in.	Junction boxes	West.
Length over vestibule,	61 ft. 7 3/4 in.	Couplers	O. B.
Width over sills	9 ft.	Curtain fixtures	Nat'l L. W.
Width over all	9 ft. 2 in.	Curtain material	Pantasote
Height, rail to sills	42 1/2 in.	Pilots	Am. Car Co.
Sill to trolley base,	9 ft. 8 1/2 in.	Hand brakes	Lord
Body	all steel	Heaters	Consol.
Interior trim,	polished bronze	Journal boxes	Brill
Headlining,	hard finished Agasote	Paint	Am. Car Co.
Roof	plain arch	Sash fixtures	Nat'l L. W.
Underframe	metal	Seats	Brill "Winner"
Air brakes	West.	Seating material,	dark green leather
Axles	Brill	Springs	Brill
Bumpers,	angle iron, Am. Car Co.	Step treads	Universal
		Trucks, type,	Brill 27-MCB-3X
		Varnish	Murphy
		Ventilators	Ry. Utility

TRADE NOTES

Ohio Brass Company, Mansfield, Ohio, has issued a folder on its flexible extruded trolley wire ears.

R. M. Campbell, for several years with the Ohio Brass Company and later with the Detroit Graphite Company, has resigned to accept a position with the Electric Cable Company, New York, N. Y.

Federal Signal Company, Albany, N. Y., has appointed S. J. Turreff, formerly superintendent of construction of its Western district, as office engineer with headquarters in New York City.

Automatic Ventilator Company, New York, N. Y., has received an order to equip with ventilators the compromise-type roof car which the Public Service Railway is constructing in its shops.

Cleveland Fare Box Company, Cleveland, Ohio, has received an order to equip with sixty No. 2 aluminum fare boxes the new cars recently purchased by the Detroit United Railway. This type of box is a size larger than the standard box used by this company.

Edgar F. Fassett, formerly general manager of the United Traction Company of Albany and for a number of years representative of the National Products Company, New York, N. Y., has been appointed special representative of the Electric Cable Company, 17 Battery Place, New York, N. Y.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has appointed W. P. Cochran, formerly branch manager at Baltimore, as assistant district manager of the Philadelphia district, including Baltimore, with headquarters in the former city. M. H. Jones, assistant to manager, will have charge of the Baltimore branch office of the company.

Edwin G. Hatch, New York, N. Y., consulting engineer, has been retained by the Victoria Falls & Transvaal Power Company, London, England, to handle the testing and inspection of a 9000-kva. transformer now building at the Westinghouse works at East Pittsburgh, Pa. Five similar transformers were shipped to the company's plant in South Africa in 1912.

Electric Cable Company, New York, N. Y., has established an office in the People's Gas Building, Chicago, Ill., under the management of James W. White, who, for a number of years, has been connected with the Union Switch & Signal Company as special representative and assistant to the vice-president in charge of sales. James M. Brown, formerly with the Lorain Steel Company, and Cyrus R. King, formerly with the Pittsburgh Steel Products Company, have also been assigned to Chicago.

S. K. F. Ball-Bearing Company, New York, N. Y., has received recent orders for journal bearings from the following electric railways: New York State Railways, for one experimental maximum-traction truck car, the body of which is now being built by the G. C. Kuhlman Car Company; Binghamton (N. Y.) Railway, for one Baldwin maximum-traction truck car, the body being built by the Cincinnati Car Company; Nerton and Taunton Street Railway, Norton, Mass., for eight Brill single-truck cars, the bodies of which are being built by the Wason Manufacturing Company.

H. M. Byllesby & Company, Chicago, Ill., have organized a trading company to build up commerce between the United States and Central and South America. This concern is already incorporated and doing business under the name of the Byllesby Mercantile Corporation, with offices at 17 Battery Place, New York City. H. M. Byllesby of Chicago, for thirty-five years prominently identified with the development of electrical and other utilities, is president; vice-presidents are H. P. Schuck, formerly with W. R. Grace & Company, T. K. Jackson, president of the Mobile Electric Company; general manager, Chester H. Lewis, formerly of London, England. The new corporation will do a general exporting and importing business with Central and South America, Mexico and the West Indies, and its radius of activity may later be enlarged. It will be conducted entirely separate from the Byllesby steamship enterprise, the Caribbean & Southern Steamship Company, which is operating freight lines to Central and South America, Russia and Sweden.

ADVERTISING LITERATURE

McKeen Motor Car Company, Omaha, Neb., has issued a catalog describing and illustrating the latest developments in its railroad gasoline motor cars. The catalog contains illustrations of a 200-hp. gasoline motor car built by this company for the Central New York Southern Railroad, and of a 70-ft. post-office, express, baggage and power (300 hp.) car for the Union Pacific Railroad which pulls a standard steel passenger coach. The catalog also contains views and data of the McKeen highway coach, which may be equipped with rubber tired wheels for street and road service, or with railroad flanged wheels, for operation on urban rail lines. This highway coach is equipped with individual chairs, which have special pneumatic shock-absorbing cushioned seats.

Electric Service Supplies Company, Philadelphia, Pa., has recently issued a booklet "How Dollars Are Lost," in which there is an interesting calculation of the losses which result from poor rail bonding. For the purpose of illustration, a single-track railway 5 miles long was selected, with rails laid on rock ballast or on dry sand soil so that conductivity of the earth as a return conductor could be neglected. The resistance of the bonds, contacts and rails, under perfect conditions, is given as 0.2178 ohm, and a return current is assumed averaging 500 amp. at 600 volts, flowing 18 hr. per day, 365 days per year, at a cost 1 cent per kilowatt-hour. Then the annual loss due to resistance in the rail return will amount to \$3,577, of which \$3,292 is chargeable to the resistance of the rails themselves and \$284.78 to the resistance of the bonds. But if the bond resistances showed increase to an average of 10 ft. of unbroken rail, the cost of the increased loss would be \$849, or fixed loss, or if the bond resistance should increase to an average of 30 ft. of unbroken rail, the annual additional loss would amount to \$3,117. It has also been calculated that should 25 per cent of the 1758 bonds installed in the 5 miles of road have a resistance of approximately 0.001 ohm each that they would cause an annual loss of \$1,951 in addition to the normal or fixed loss. The book also contains data on rail, contact and bond resistances never before compiled in a single book.