

Electric Railway Journal

Published by the McGraw Publishing Company, Inc.
Consolidation of STREET RAILWAY JOURNAL AND ELECTRIC RAILWAY REVIEW

Vol. XLVIII

NEW YORK SATURDAY, JULY 15, 1916

AN ADVOCATE OF FAIR PLAY

Not often does a public service commissioner overcome his reluctance to discuss publicly specific questions that have come or might come formally before him for judgment, and when he does it may be deemed certain that the natural reserve of his quasi-judicial position has been broken through only because of the dictates of fair play and sound equity. A case in point has to do with the recent remarks of Commissioner Campbell, noted elsewhere, in regard to conditions confronting the Portland Railway, Light & Power Company, Portland, Ore. Here is a company, Mr. Campbell says, that is giving service as good as or better than that of any similar railway in the United States, but it has been and is operating at a loss. Of course, the company has suffered from the especially acute business depression in the Northwest, but serious contributing causes to the unfavorable showing have been the continued competition for light and power business, and particularly the unlicensed and unregulated competition of jitneys. Unless these conditions improve, it is said, the company will be compelled to come to the commission for relief. This warning is the result of Mr. Campbell's three-year study of the case, and his words ought to be accepted by the citizens of Portland as authoritative. Some others in the Northwest are alive to the need of stopping utility oppression, as is evident from the recent editorial exhortation of the Portland *Oregonian* that the public silence the demagogues and invite capital to come in by giving it a square deal, but the Northwest needs many more apostles of such a gospel of fairness.

BEARING THE BURDEN OF OBSCOLESCENCE

At a recent hearing before a public service commission the statement was made that by replacing obsolescent apparatus and handling its cost through a suspense account, "future generations" are inequitably compelled to pay for the retirement of apparatus used by their ancestors. This is an assertion that hardly finds justification in either engineering or accounting theory. Obsolescence is caused by advances in the art which render certain apparatus uneconomical for use, as compared to other types of later development and of greater efficiency. Hence if a piece of property is replaced because of obsolescence it naturally follows that the use of the new apparatus will save enough money to pay all charges for making the change. Good engineering will not recommend it unless this is so. Outside authorities, of course, may force the replacement of property before it is really obsolete, but then the cost burden cannot be said to fall without fairness upon the

patrons who will henceforth enjoy the improvement. But even if the replacement occurs when economically desirable, "future generations" are not harmed by the fact that the property has become obsolete. Rather are they benefited by the more favorable showing possible with the new property than if the old had been kept in operation. Once there might have been a danger to future patrons of a steadily increasing suspense account used simply to defer unduly the proper proportional charges to the annual operating expense, but the present official restrictions upon the creation and use of a suspense account for obsolete property chargeable to operating expenses makes this danger negligible.

THE RAILWAY OFFICIAL AS A CITIZEN

We are pleased to note that Gen. George H. Harries was honored by his fellow citizens in Omaha by being chosen to deliver a public address on Memorial Day and again on Flag Day this year, and that he discussed the very live issue of military preparedness on which he is, of course, an authority. It is not the subject of the addresses nor their treatment to which we wish to call attention at this time, however, in spite of the great popular interest in the subject of preparedness. It is to the opportunity which civic events of this kind offer for men engaged in different kinds of business in the same city to become acquainted and to the probability that if they do so they will learn that they have many similar aims, and in most cases are guided by the same principles and lines of thought. We believe that if more public utility officials took an active part in civic affairs there would be less distrust of the motives of public utility corporations. The public would find by contact that those directing the affairs of the utility are reasonable-minded men who do not want extraordinary profits but only that fair return on their investment which every city should be willing to give every enterprise within its borders an opportunity to earn, and, conversely, we believe that the utility manager would often find by acquaintance that some of the strenuous complainants of his service are men who were animated only with the desire of seeing that the city and the citizens obtained what they considered fair treatment from the utility. If they can be convinced that this is the case, their objections will disappear. We realize that it is not every manager who is able to act as an orator on patriotic occasions, but every official can, or ought to be able to, take an active part in the affairs of citizens' associations, such as boards of trade and chambers of commerce, and their participation in such direction should be of great benefit to all.

THE BAY STATE CASE

The report of B. J. Arnold to the Massachusetts Public Service Commission, containing the results of his study of the Bay State Street Railway, materially advances the final settlement of this celebrated case. Mr. Arnold's report was summarized in the *ELECTRIC RAILWAY JOURNAL* for July 1, on page 13 *et seq.* In brief, Mr. Arnold, acting as the transportation expert of the commission, concludes that economies in operation amounting to nearly \$700,000 per year can be attained but that when the savings estimated are considered, including an adequate depreciation allowance, the gross revenue of the property is insufficient to return 5 per cent on the investment. He inferentially recommends that this increased revenue be secured through the use of prepayment cars, the adoption of the one-man car for use on short lines in suburban territory during at least the greater part of the day, the attraction of traffic through higher schedule speed, an increase of interurban fares to 1.5 cents or 1.75 cents per mile, a more extended development of express and freight business and a curtailment of service through a rearrangement of schedules on certain portions of the system. Such conclusions, when made by a disinterested expert retained by and reporting to the commission, must have great weight with that body.

Looked at from another angle, Mr. Arnold's findings fully support the position taken by the officials of the Bay State Street Railway in the wage controversy arbitrated in the early part of 1915. The company contended that it could not afford to advance wages unless it were forthwith permitted to increase its earnings. In spite of this contention, wages were advanced by the board of arbitration, as it now appears, to the disadvantage of the stockholders. The position of the street railway was very similar to that of the railroads. Wages were advanced without any provision being made to produce the required additional revenue. The stockholders were obliged to bear the brunt and wait in the hope that tardy relief would be provided.

Fortunately for the Bay State Street Railway, the precedents of decided cases are distinctly in its favor. The Massachusetts Public Service Commission has not heretofore hesitated to advance fares or give proper relief when it had been shown that existing conditions worked a hardship to the investors in public service companies. It may be confidently expected that this enlightened policy will be continued. Even though the commission gives the company the necessary authority to increase its revenues, the stockholders will not have received full and exact justice. There will be at least a year's delay between the time that the wage increase was granted and the time that the increase in revenues was provided for.

It does not appear to be possible as yet to secure recognition of the fact that in passing upon wage questions, the security holders' interests must receive equal consideration with the needs of the workmen. Wages should not be advanced unless a company is, at the same time, enabled to pay the advance and still return

a fair profit to its owners. If the earnings of the company do not justify added expenditures, an increase in wages should not be made unless the earning power of the company is concurrently increased by appropriate action. In the present case, as in most disputes of like character, the board of arbitration passing on the wage controversy had no authority over fares. The existence of such a situation is intolerable.

TESTS FOR COLOR BLINDNESS

Railway men, like mariners, have to deal with the ability of employees to distinguish the color of signals, and we wonder whether those whose duty it is to test employees are finding the same trouble which is reported to have been experienced in the testing of men for the navy, that is, the inability on account of the war to get a reliable supply of the colored worsteds or the necessary dyes for the method of testing commonly used. It is reported that the navy authorities are in great need of material. As our readers know, the commonest test for the color vision of employees is the use of the Holmgren worsteds, a set of little skeins of worsted yarn dyed according to a very carefully worked out scheme in colors, the selection of which affords a very convenient index of color vision. These skeins have to be handled and assorted by the men under test, eventually get dirty or faded, and then are liable to cause trouble. In default of either a supply of the wools themselves or of the necessary dyes to prepare them, carrying out of vision tests is a rather difficult proposition as well for railway men as for the navy.

At this juncture it seems particularly pertinent to suggest that a good time has arrived for changing the system of testing from the worsteds, so difficult to obtain, to the well-known lantern tests used by a number of our large railway systems, for instance, the C. B. & Q. The lanterns are made in America, do not get faded or soiled or out of order, and in many respects are much more satisfactory than the older system even more generally used. From the standpoint of psychology the lantern has an enormous advantage, for the man being tested does not feel that he is on a sort of old woman's job of matching colors. Not understanding the significance of his bad matches he sometimes feels seriously aggrieved at being thrown down by reason of what to him is a very trivial matter, although to the examiner it may imply defects which would render the man under test very liable to confuse a green and a red light with disastrous results. In the lantern test the objects seen may be made to simulate exceedingly well the signal lights as they will have to be observed in their natural state, through haze or fog, and at a considerable distance. It looks like a practical man's test even to the most casual observer, and having its own uniform lighting system it is independent of the daylight in which the worsteds are intended to be examined, and is, on the whole, quite as simple and more reliable.

The difference between a clouded day and a bright blue sky may lead, in doubtful cases, to false conclusions with the Holmgren test, while the lantern is re-

liable, first, last and all the time. In addition, its indications are so definite that they can be seen by any onlooker with normal color vision, and if a man thinks he is being unjustly rejected, any observer knows better. More than once it has happened that a railway man, highly disgruntled, has been accompanied to a second test by some of his union officials who observed his mistakes with the lantern and gave him very cold comfort. It is unfortunate that the supply of well-known testing material has been cut off, but it may be a blessing in disguise both to the railways and to the navy in leading to the adoption of a more satisfactory and practical method.

VISUALIZING ENERGY LOSSES

It is worth quite a mental effort to visualize energy losses; to develop an instinctive feeling of their magnitude and of the practicability of reducing them. Energy is one of the most difficult quantities to grasp concretely. All that one can do is to translate it into terms which come nearest to his every-day life. A unit which is entirely comprehensible to a man engaged in one occupation may be Greek to one in a different line.

In an editorial in the issue of this paper for June 24 a general survey was taken of the losses involved in moving a car in city service. The purpose of this analysis was to render these losses somewhat more tangible. In order to do this the losses were roughly grouped into three approximately equal divisions: "inertia" losses, main friction losses, and electrical and sundry losses. In addition, the total loss in city service, assumed to average 125 watt-hours per ton-mile, was restated in mechanical terms, namely, as 166 ft.-tons. In other words, the amount of energy consumed per ton-mile in all of the above losses, involving an average number of stops per mile, would lift a ton 166 ft. or 166 tons 1 ft. With the energy consumption at the rate assumed, 125 watt-hours per ton-mile, the total energy required for a car-mile would also raise the entire car 166 ft.

In trying to visualize such a quantity of energy as 125 watt-hours per ton-mile one man can see this best in the mechanical form such as that already suggested, 166 ft.-tons, or as about 10 hp.-minutes. To another, the fact that this amount of energy will light a 20-cp. tungsten lamp for five hours will appeal strongly. To still another the fact that it will, barring radiation losses, raise the temperature of a cubic foot of water about 7 deg. Fahr. will make it seem most tangible. The man accustomed to reducing energy to financial terms will say to himself: "At 1 cent per kilowatt-hour that means $1\frac{1}{4}$ mills", or "At the rate which I pay for residence lighting, say 10 cents per kilowatt-hour, that is the equivalent of $1\frac{1}{4}$ cents."

Facility in translating energy from electrical into mechanical, thermal, financial or other terms, or vice-versa, requires practice, but such facility is very convenient, not to say necessary, if one is to follow with ease the rapid development of energy-saving devices in car operation and elsewhere.

LINE DEPARTMENT NEEDS SELF-PROPELLED TRUCKS

There are few men in any electric railway organization who cannot get benefit from a careful reading of the leading article in this week's issue, that by J. D. Kent describing the experience of a large railway system with automobile trucks in maintenance work. The executive who has bills for equipment to approve will find reference data of value in checking line truck bills for reasonableness, while the foreman or the superintendent who feels that he could use one or more automobile trucks to advantage can find ammunition here for a purse-string-loosening campaign. The author has set forth very clearly and frankly the salient facts of this subject which the practical man wants but finds it usually very difficult to get.

In comparing the automobile truck with its horse-drawn rival, the considerations are: over-all costs per unit of work done, extent of field of application and general usefulness, degree of interference with street traffic, and reliability. The first two of these items must be considered together, for there is, of course, such a tremendous advantage possessed by the automobile truck in that it can do many things which the horse-drawn vehicle cannot do, or at least cannot do economically, that a dollars-and-cents comparison is only fair, when interpreted broadly. The automobile truck can be driven so much faster, can carry loads so much heavier, can produce so much more tractive effort for use on so many jobs, that a broad basis of comparison is necessary in considering the automobile truck from the financial side. Then there is the matter of blocking the streets. By the very nature of its occupation, the line wagon or truck is bound to be more or less of a nuisance; it is a necessary evil on the streets. It is here that the compactness and the speed of the automobile truck greatly favor its use, while its mobility, also, should not be overlooked. In shifting the position of a horse-drawn vehicle, the intelligence of the driver has to act through that of the horse, and much time, nervous energy and space are required for the simplest evolutions.

In reading Mr. Kent's article one is impressed with the applicability of the automobile truck for all kinds of duties. Wherever powerful pulling, pushing or lifting has to be done, it is there with the horsepower behind it. There is no limit to its utility but that set by the ingenuity of the user. But how about reliability? says the manager from Missouri. Will not a few breakdowns under awkward circumstances more than offset the unquestioned advantages enumerated? These pertinent questions can now be answered from experience. Reliability is so essential that unremitting efforts have been exerted by manufacturers to secure it, and these efforts have been entirely successful. The automobile truck is so well established as the most economical device, in general, for the haulage of goods over short distances, and data regarding reliability are so easily secured, that there need be no question on this phase of the subject.



THIRD AVENUE LINE TRUCKS—EQUIPMENT USED ON UNION RAILWAY PREVIOUS TO INSTALLING AUTO TRUCKS

Overhead Line Maintenance Trucks of the Third Avenue System

By JAMES D. KENT

Electrical Engineer Union Railway, New York City

The Writer Describes Various Types and Capacities of Gasoline Motor Trucks, Modifications in Them Developed by Experience, Valuable Special Uses, Means of Checking Operations and Facilities for Maintenance

AS the line department of the Union Railway and allied roads in the Borough of the Bronx, New York City and Westchester County, forming part of the Third Avenue Railway system, has been using motor trucks since 1910, our experience in this field of equipment may have something of value to others. Except for one gas-electric truck, our experience has been confined to gasoline-driven trucks.

The trucks start out in the morning to do certain work, or to cover certain territory, and to inspect and repair the overhead where required. They do not report except by telephone nor do they return to the garage until their day's work is done. Each truck carries a complete equipment of tools and necessary material.

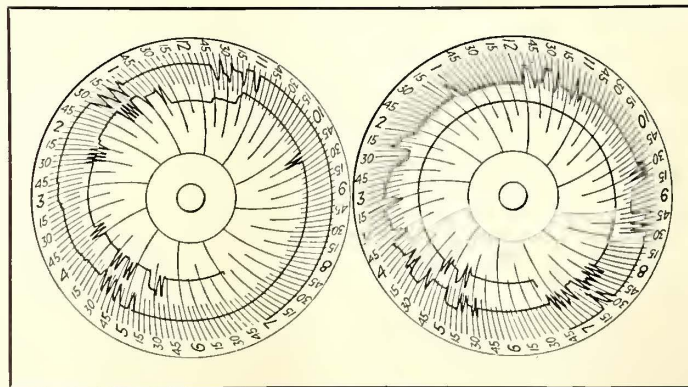
The tower-equipped trucks comprise the following: Union Railway, operating 150 miles of single track and 80 miles of street—one 3½-ton gas-electric Couple-Gear, four-wheel drive; 16-ft. 7-in. wheelbase, length over chassis 21 ft. 2 in.; weight loaded, 14,000 lb., including men and tools (1500 lb.); height of tower down,

11 ft. 6 in.; 48-hp. Schlosser four-cylinder engine direct-connected to 12-kw. variable-voltage compound-wound generator of 100 per cent overload continuously and 200 per cent overload capacity momentarily; one 3-hp. motor of the same characteristics in each wheel; used for combination wrecking, emergency, and heavy construction in all overhead and underground cable work.

Four 3-ton T. C. Packards, chain-drive; 12-ft. wheelbase; length 19 ft. over all; height of tower down, 11 ft. 4 in.; width over all, 7 ft. 1 in.; weight, 10,000 lb. loaded, including crew and tools; four-cylinder, 32.4-hp. gasoline engine; in all respects, except body, of standard commercial truck construction; used on overhead work.

One 1500-lb. two-cylinder horizontally-opposed Buick truck, tool and small emergency wagon. This is soon to be replaced by a 1-ton Mack truck equipped with covered body similar to one now operated by the Westchester Electric Railroad.

Westchester Electric Railroad, operating 37 miles of single track in the cities of Mount Vernon and New



THIRD AVENUE LINE TRUCKS—SAMPLE GRAPHIC RECORDS OF TRUCK PERFORMANCE



THIRD AVENUE LINE TRUCKS—UNION RAILWAY GARAGE, SHOWING EQUIPMENTS AND CRANE

Rochelle and adjacent villages—One 2-ton chain-drive Packard tower; four-cylinder gasoline engine of 26.4 hp. with Trenton tower; used for line purposes. One 1-ton worm-drive Mack truck with covered body, used for general purposes such as carting material, tools, etc., and for line work not requiring tower equipment.

Yonkers Railroad, operating 42 miles of single track in the city of Yonkers, Westchester County—One 1½-ton chain-drive White, four-cylinder gasoline truck equipped with Trenton tower for line purposes; one 3-ton chain-drive White four-cylinder truck, platform stake body, used originally for hauling material of all description; changed to tower equipment and now in the shop for change to combination tower, platform and reel truck.

Adaptations to Railway Conditions

All trucks are as purchased, with the following exceptions:

The 3½-ton Couple-Gear truck was lengthened to 21 ft. 2 in. over all. Its rear wheels were fastened in line to eliminate the four-wheel steer and increase the tool and material space; a General Vehicle Sprague Type-E16 electric winch was mounted at the left rear of the tower with "nigger-head," no drum, projecting over the left running board for pulling purposes when the truck is standing alongside the track in proper position according to traffic rules. This winch has a capacity of

3000 lb. pull at 50 ft. per minute and has proved ample for severe service.

A 16-ft. 8-in. x 8-in. yellow pine boom, tapered to 5 in. x 5 in., is mounted on the rear end of the truck, supported by an 8-in. channel-iron brace, with ratchet

SUMMARY, INCLUDING HORSE TRUCKS

Union Railway

- Four 3-ton Packard towers purchased 1911.
- One 3½-ton Couple-Gear, purchased July, 1910.
- One 1500-lb. Buick, express body, purchased 1913.

Westchester Electric Railroad

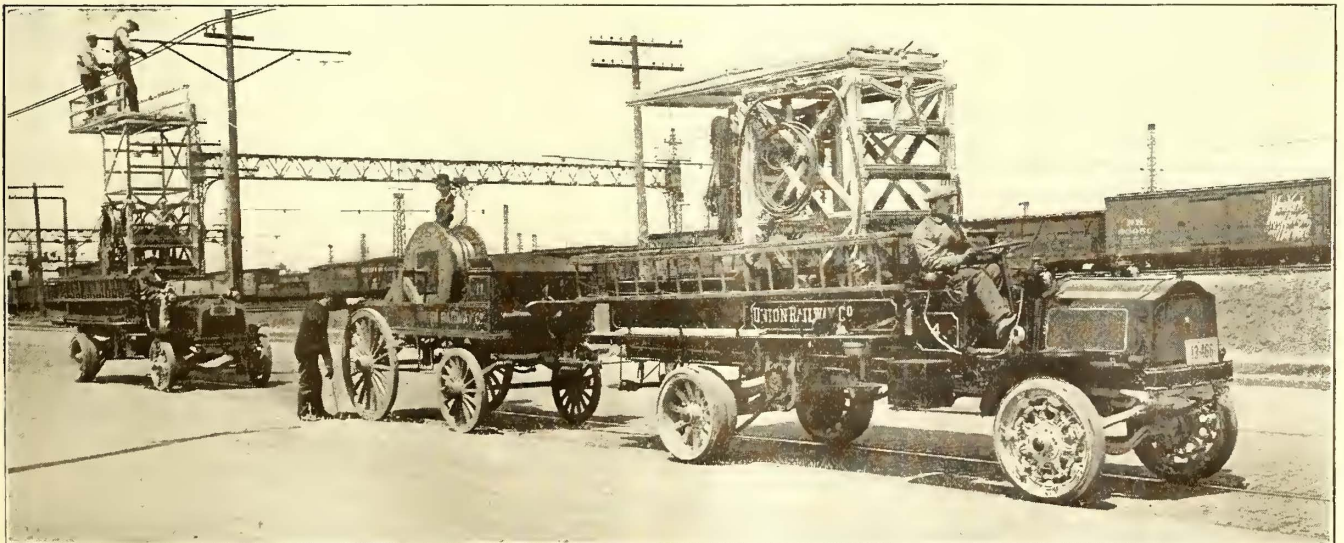
- One 1½-ton White tower, purchased October, 1912.
- One 3-ton White, stake platform, purchased October, 1912.
- One 2-ton 2B Packard tower, purchased January, 1913.
- One 1-ton Mack, covered platform, purchased June, 1915.

Horse Trucks

Union Railway

- One tower carpenter's wagon.
- One 12-ft. reach pole wagon.
- One 1500-lb. pole gang tool wagon.
- One reel wagon trailer.

hoisting and lowering device similar to the tower apparatus. The foot of this boom is supported on a roller made of an old pinion, with shrunken band, and is adjustable for height by means of a small screw jack. so that in service practically all the weight of the boom and its load is carried on the pavement. The boom is not lowered when changing positions, for short distances, except when necessary to clear overhead structures. We removed all housing also in reconstructing this truck, partly for the sake of safety and partly for better work-



THIRD AVENUE LINE TRUCKS—3-TON TRUCKS AND TOWERS, WITH TRAILER REEL WAGON

ing conditions, as it was extremely difficult for the driver to hear instructions when the men were working on the tower.

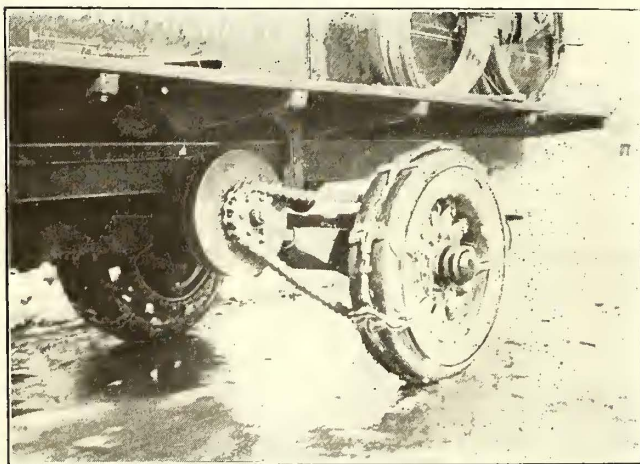
One of the 3-ton Packards was equipped with 37-in. x 5-in. single front and double rear pneumatic tires for the greater allowable speed of 15 m.p.h. as against 12 m.p.h. possible with the Packards equipped with solid tires. Owing to the maintenance cost of this type of tire (although the truck manufacturers called our attention to the decreased wear of the parts on this truck as compared with the others when overhauled by them), the pneumatics have been eliminated and replaced with solid rubber. However, the front wheels have been replaced with Sipe spring wheels to approximate the greater resiliency and greater mileage of pneumatic tires. These solid tires on Sipe spring wheels are guaranteed for 20,000 miles in two years as against 8000 miles in one year on rigid wheels, a ratio of 5 to 1.

The 3-ton Packards cost approximately \$4,000 each, delivered. They are thoroughly overhauled about every 10,000 miles. Nearly all are equipped with Goodrich solid rubber wireless tires, which give an average of 7000 miles and a maximum of nearly 16,000 miles on the solid rear wheels, and an average of more than 12,000 miles on the Sipe spring wheels used at the front. We consider our service severe on tires. One reason

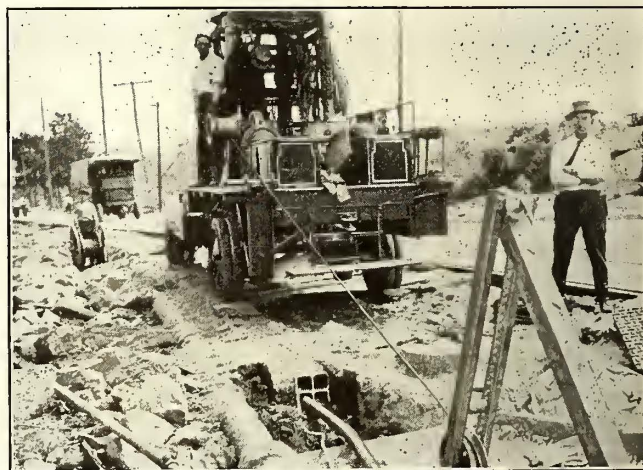
This capacity permits greater cruising radius, is more economical and provides greater speed. Line department work requires a ruggedly-built truck, due to the twisting and straining received in climbing over high rails. Hence cars of the very best make will eventually prove the cheapest, even at higher first cost. The maintenance costs are also contingent on having a reliable, conscientious mechanic in charge of repairs and on giving him the opportunity to maintain his trucks at high efficiency with due regard to useless or unnecessary expense.

When our trucks were purchased 3 tons was the lowest load capacity we could get. Since then smaller units have been placed on the market.

The question of mechanical starters on trucks for



THIRD AVENUE LINE TRUCKS—DRIVING WHEELS EQUIPPED WITH NON-SKID DEVICE, REINFORCED WITH SPAN WIRE

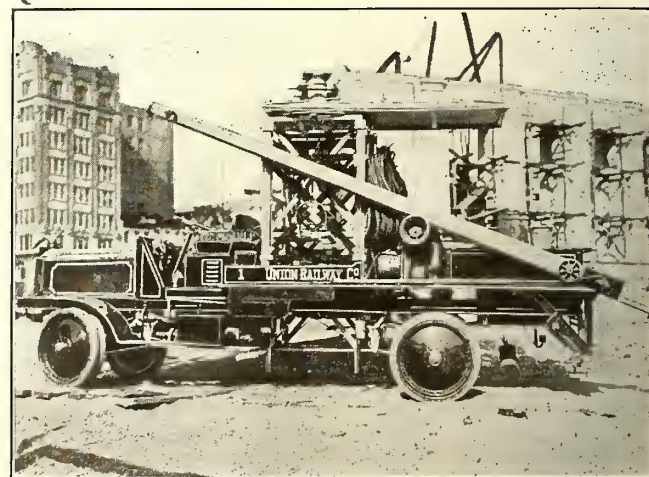


THIRD AVENUE LINE TRUCKS—REMOVING CABLE IN A STREET LOWERED 3 FT. WITHOUT INTERRUPTING SERVICE

is that as we operate the trucks at only one-third of the normal rated load capacity, they are not so flexible on their springs, and the vibration is greater. Hence they do not ride as smoothly as would a lighter truck, or one loaded to capacity.

The 3-ton White truck has been equipped with a tower removed from one of the horse trucks, as it was found that there was not sufficient hauling for a platform truck on a 35-mile division. During its present regular overhaul we are widening the rear platform in order to carry a 1-mile reel of trolley wire between the tool boxes, and also to get more space for tools and allow the hauling of freight that is not too long or too bulky.

One horse-drawn tower truck is being used for repairs to the overhead trough work where the lines are operated under many miles of elevated structure. The pole (reach) wagon and reel wagon can be drawn by horses or used as trailers with auto trucks, whichever is more convenient.



THIRD AVENUE LINE TRUCKS—COUPLE-GEAR TRUCK, PRESENT EQUIPMENT, SHOWING POLE HOIST

The Choice of Size in Trucks

It has been our experience that for straight overhead line work, a capacity of 1½ tons or 2 tons is ample.

this class of service is worth considering, especially on lines of greater headway than is possible in the Bronx, as the men have to be cautioned constantly to shut down their engines whenever possible. This would not be the case if the trucks had a simple and reliable starter.

This is a special problem for electric railway men, due to the low mileage and the frequent starting and stopping. Hence its solution may not appeal to the manufacturers who do not meet this condition in other lines of truck operation, namely the necessity of allowing cars to pass and then to resume position on the tracks until the next car comes. Delays to cars in excess of five minutes, due to tower trucks working on

the track, are subject to explanation unless absolutely unavoidable.

Comparison of Auto Trucks with Horses, Winter Service, Etc.

It is rather difficult to compare the performance of auto towers with horse-driven vehicles, whether for mileage, standing time, or costs per mile of overhead line. Yet it is significant that a 40-per cent increase in overhead line mileage has been handled without an increase in equipment. During the time that we had but one unit, we promptly took care of two serious breaks which would have caused much delay to the transportation department if horse equipment only had been available. On that day the recorder registered 75 miles for

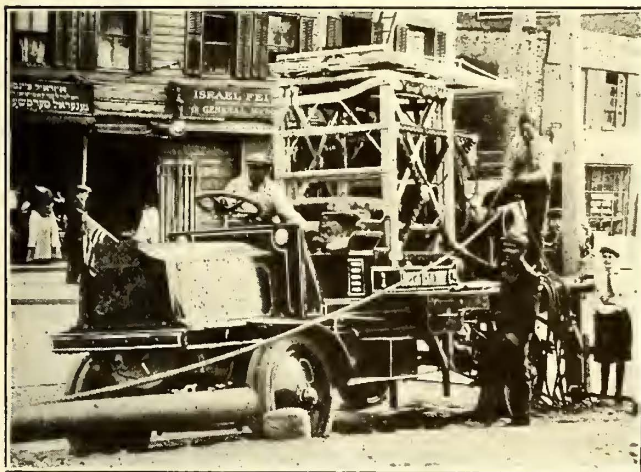
In another fifteen minutes, the chain was replaced and the truck was ready for service again.

During and after storms in the winter of 1914-1915, practically all the time of our crews was spent in pulling loaded automobile trucks off of the tracks. In one case a Packard truck pulled for ten blocks, a disabled auto truck loaded with 5 tons of coal, before a street was found into which the absence of high snow outside of the railway area would allow it to be placed.

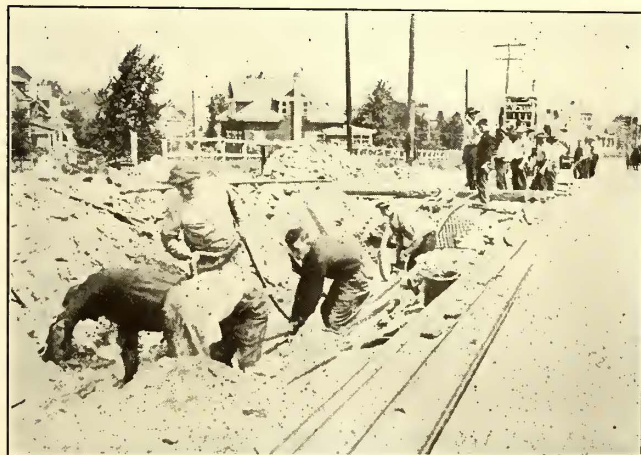
We have tried several kinds of skidding chains but only one, which is built similar to pleasure-car skid chains, has been really successful. Even this shears off very rapidly, due to the weight of the truck and to driving on and off of the car tracks so often. In an emergency, 5/16-in. span wire has been wrapped around the tire as shown. Such an anti-skid is comparatively cheap. Caution must be used to prevent the wire from cutting or wearing off and jamming in the driving chains.

Special Uses of Motor Trucks

A series of four pictures, reproduced on page 94, shows the use of the Couple-Gear truck in pulling wooden poles, (set for temporary use) on Webster Avenue in the Bronx during the construction of a trunk sewer. This was the first time the truck was used for that



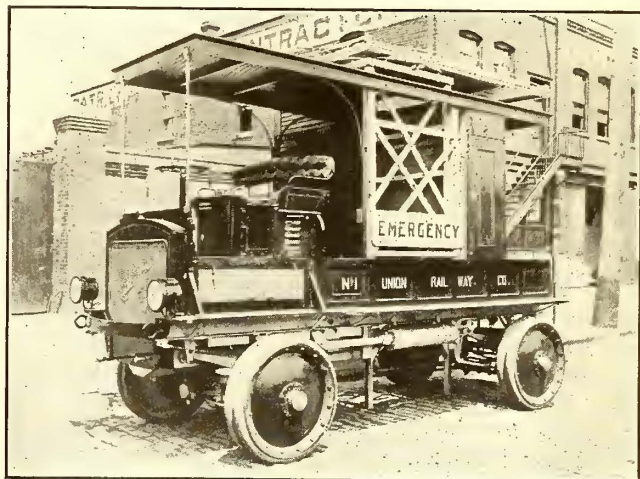
THIRD AVENUE LINE TRUCKS—USE OF WINCH IN PULLING OUT AND DRAGGING POLES ABOUT 250 FT.



THIRD AVENUE LINE TRUCKS—DRAWING CABLES OVER ROPE MATTING TO PROTECT LEAD SHEATH AGAINST ABRASION

ten hours' work and a maximum speed of 20 m.p.h. The allowable speed has since been reduced to 15 m.p.h., which is ample in congested districts for a vehicle having a total weight of 7 tons.

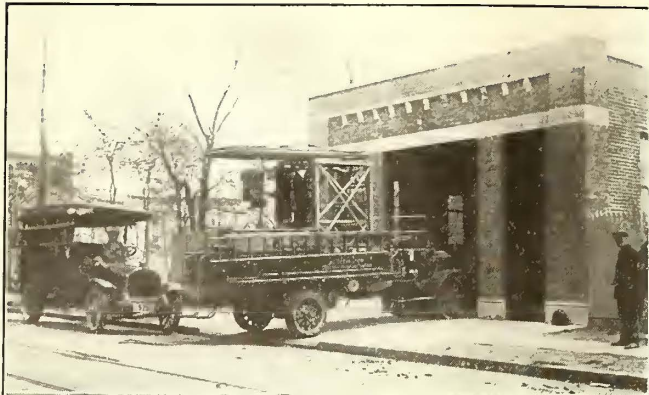
One of the best illustrations of the worth of motor trucks is shown by their records in heavy snowstorms. During the winter of 1913 and 1914 no delays due to truck breakdowns were recorded, except that once, on the night of the heaviest storm, a truck on call got stuck in a snowdrift with a broken driving chain. The driver left a helper on the truck as a watchman, returned to the garage, procured another truck, attended to his call and then returned towing the disabled car to the garage.



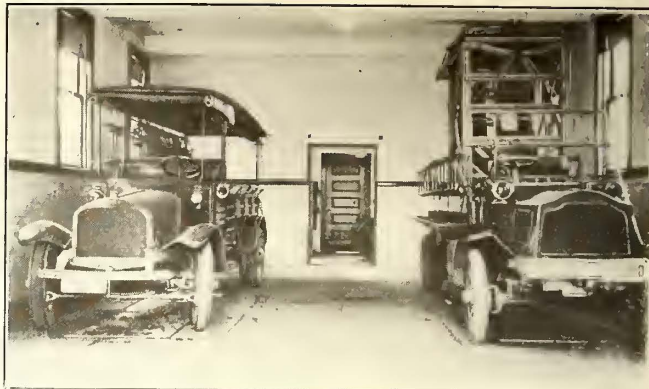
THIRD AVENUE LINE TRUCKS—UNION RAILWAY COUPLE-GEAR TRUCK WITH TOWER

purpose. In six hours thirty-nine poles were removed, including one which could be removed by hand only and in much more time. In the same number of hours this truck enabled us to set twelve 900-lb. iron poles on a steel structure, including loading of the poles on the reach trailer, hauling them four blocks, unloading them on a bridge where 150 vehicles were passing per business hour with one roadway torn up, and placing each pole posed for bolting up. One pole was set in place on the stone abutment of the bridge alongside the bridge-tender's house, outside the railing, in less than forty-five minutes. This period included the time for building the runway to get the car on the sidewalk, and maneuvering the truck in a space less than 2 ft. wider and 10 ft. longer than the truck without damage to the bridge gates or the truck. This was really a demonstration of unusually good handling on the part of the truck driver, as he had only the width of one driveway to start with, the track section being torn up, so that he had to climb the curb.

Two other pictures show how the equipment of the same truck is used to draw and pull in 6600-volt three-phase high-tension cable. They also illustrate the con-



THIRD AVENUE LINE TRUCKS—LINE EQUIPMENT ENTERING GARAGE AT MOUNT VERNON, N. Y.



THIRD AVENUE LINE TRUCKS—INTERIOR OF WESTCHESTER ELECTRIC RAILROAD GARAGE

ditions under which most trolley roads operate. At the point in the picture showing the winch in service, the street grade has been lowered nearly 4 ft. in rock excavation. It was necessary to maintain cables in continuous service during drilling, blasting and excavation, and to build a new duct line parallel to and below the old line, also in rock. The truck is shown making changes of cables from the old to the new duct line. The same rope mat used by the contractor to protect his blasts was employed by us to cover the end of the duct line to avoid abrading the lead armor of the cables. These cables for a distance of 600 ft. were changed over one by one with no increase in cable nor any breakdowns to date.

During structural changes at Manhattan Bridge, Manhattan Borough, it was necessary to remove the poles used for temporary purposes on the Manhattan side. Some of these poles were inaccessible owing to construction changes and the truck had to remain in the street more than 250 ft. away. By means of temporary gin poles and a 1½-in. rope used for installing feeder cable, these poles were drawn out in record time and dragged to the street to be loaded on to reach trucks and hauled away.

Shortly after the same gasoline-electric truck was purchased, and before the installation of the winch, it

was necessary to remove from the Harlem River some submarine cables 600 ft. long. This truck, and a similar one used as a tractor by a lumber company, were hitched tandem, pulling (by direct pull) the cables which were buried in the mud. The cables were thus withdrawn in a fraction of the time possible by any other method. For pulling purposes, the Couple-Gear truck cannot be excelled by a straight gasoline vehicle.

Checking the Doings of Motor Trucks

Practically all of our trucks are equipped with Jones recorders, Model D, which give an actual twenty-four-hour record of the performance of the truck, showing the speed at which it is operated, the distance traveled and the number and duration of the stops made. These records serve two purposes: They give assurance that the truck will not be abused, and they provide a check against the linemen's report for the distance traveled. When going to breaks, the men are instructed to reach them at the greatest speed for which the governor is set. For inspection, however, we know that a greater speed than 6 m.p.h. is not efficient when the lineman sitting on the front seat endeavors to locate by sight all wire or material likely to cause trouble,



THIRD AVENUE LINE TRUCKS—WOOD POLE REMOVAL: TRUCK IN POSITION READY FOR HOISTING, POLE HOISTED AND CLEAR OF GROUND, LOWERING AWAY AND JOB COMPLETE, ALL AT THE RATE OF FIFTEEN TO TWENTY PER HOUR

while the helper riding on the rear end of truck is expected to watch materials and keep off intruders.

The 4½-in. diameter chart, on which the Jones device records all movements of a truck, is inserted in an eight-day clock movement every morning by the garage foreman or his helper. This chart shows the speed in miles per hour by the number of swings (of ½ mile each) to each five-minute interval, the time the truck leaves the garage in the morning and its return (by the number of ½-mile changes), the distance traveled, as indicated by a straight line, and the stopping time. For example: The right-hand chart on page 90 was inserted at 6.45 a. m., the truck left the garage at 7.22 a. m., traveled 2 miles in thirteen minutes, speed not constant on account of doing repair work; between 7.35 and 8.35 a. m. it was standing still most of time; it left at 8.35 a. m., traveled about 1¾ miles, made a stop of five minutes and then traveled about ⅝ mile, etc.; it stopped for the lunch hour at 12 o'clock noon; resumed work at 1.05 p. m., and reached the garage at 5.37 p. m. The night crew took the truck out on call at 6.50 p. m., made three stops in 8 miles, and returned to the garage at 7.55, remaining until 4.45 a. m. It then received another call requiring a trip of 4 miles, returning at 5.25 a. m. and remained until relieved by the day crew. It may be added that the night crew simply repairs breaks and returns to the garage to wait for calls.

The only objection to these charts is that on extremely short distances, such as moving the truck to allow a car to pass and then returning to the track, the record is so small that it looks almost like standing time. For their moral effect alone, however, these recorders have paid for themselves many times over.

Costs

The operating and maintenance costs of all our motor trucks follow:

	1914	1915
Total mileage	31,561	34,471
Cost of gasoline per mile.....	\$0.0575	\$0.0444
Cost of oil and grease.....	.0071	.0073
Drivers' labor .....	.1753	.1573
Garage labor .....	.0433	.0430
Repair parts .....	.0717	.0540
Tires .....	.0618	.0242
Total cost per mile traveled.....	\$0.4167	\$0.3302

During the year 1914 we had an extra amount of overhauling work and changes in equipment.

The Union Railway's trucks are housed in what was



THIRD AVENUE LINE TRUCKS—3-TON TOWER TRUCK IN SERVICE

formerly the West Farms power house. The front of the old 75-ft. x 125-ft. engine room is used for the office, garage and shop, and the rear of the same room is used for storage of material and of trucks not in service. The 20-ton engine-room box crane, which spans the building, is ideally placed for loading trucks with heavy material, lifting up trucks to remove wheels and other work where a crane is of advantage.

The shop erected in one corner is partitioned off by wire screening which does not obstruct light or air. The machinery is new and bought for the purpose. It comprises a drill press, a lathe, emery and buffing wheels, work benches, a small Apple generator set for charging sparking batteries, and a spare pulley and belt for revolving motors and bringing bearings into proper working condition before installing them in trucks. All tools are driven by an electric motor which is set on a concrete pedestal 4 ft. high, in accordance with insurance requirements.

The gasoline is stored in a 250-gal. steel tank buried in concrete in front of the building and fitted with a vapor pipe to the roof line. The fluid is drawn through a Geyser gasoline measuring pump.

An old extension to the building has been made into a locker room, furnished with steel clothes lockers, wash basins, toilets, urinal and shower bath with hot



THIRD AVENUE LINE TRUCKS—3-TON TRUCK ON ORIGINAL PNEUMATIC TIRES



THIRD AVENUE LINE TRUCKS—TOWER TRUCK USED BY YONKERS RAILROAD

and cold water. The shower bath is well patronized in the summer time and is well worth its cost.

The Westchester Electric Railroad houses its two trucks in a new one-story garage. This neat building harmonizes with the office building adjacent to it, and which was erected in 1913. (See article published in the Nov. 1, 1913 issue of the *ELECTRIC RAILWAY JOURNAL*.) The garage is provided with gasoline storage equipment, wash basins and toilet outfit. Its easterly end is partitioned off for line storeroom facilities. The wainscoting of the interior walls is faced with white enameled brick, capped with hardwood molding, above which it is hard white plaster finish like the ceiling. A novel feature of the cement floor is a raised step or platform carried along the walls, high enough to keep the wheels of trucks from climbing it and wide enough to prevent the hubs from striking and chipping off the enamel brickwork.

The Yonkers Railroad's two trucks are housed in a portion of the carhouse at Buena Vista Avenue and Main Street. Owing to the contour of this property it was possible to partition off a portion of the second floor back of the offices and to enter it from a side street. The brick partition separates it entirely from the rest of the building. The easterly end of the original second floor transfer table was filled up with ashes and then covered with a cement floor, with a runaway inside of the garage to the street. This space was not adaptable for car purposes owing to the encroachment of the offices and association rooms, which have since been moved up from the ground floor for lack of space. This garage does not detract from the rest of the building. It has proved to be a good investment, both as to garage charges and the concentration of all departments in one building.

Denver & South Platte Railway Saved A Sweeping Decision of Colorado Supreme Court Clearly Defines Powers of State Utilities Commission

BY CHARLES B. WELLS

Recently Assistant to Manager Denver Tramway Company

TO carry passengers over a line $4\frac{1}{2}$ miles long and to receive no revenue for 1 mile of the haul is an experience to which few electric railways are subjected. Yet this is precisely what the Denver & South Platte Railway Company has been forced to do for nine years.

This company operates a line running southerly from a connection with the Denver Tramway Company's terminal at Englewood, to the town of Littleton. Believing that the Tramway Company would allow them a reasonable division of the fare, the promoters of the South Platte road entered into a contract with the town of Englewood to carry passengers between the Denver central loop and Cherrelyn, a point 1 mile south of Englewood, for a fare of 5 cents. On the ground that it was already losing money by carrying passengers from the center of the city to Englewood, a distance of 6.84 miles, for 5 cents, the Tramway Company refused to accede to any such arrangement. But notwithstanding that the South Platte Company was struggling for its very existence, the town of Englewood insisted that it continue to carry passengers between Englewood and Cherrelyn free of charge. Many of the suburbanites living in the South Platte Company's revenue territory have made it a practice to walk long distances to Cherrelyn, and thus get the benefit of a free ride to Englewood. And so for nine years the owners of this property have faced the commercial shambles.

When Manager R. C. Larkin took hold of its destinies, he realized that only by a solution of the fare problem

could the South Platte investment be saved. Legal advisers whom he sought gave him little hope, on account of the fact that the company's contract with the town of Englewood was embodied in its franchise. Upon his own initiative, however, Mr. Larkin appealed to the Colorado Utilities Commission. This board immediately recognized the injustice of the company's contract and ordered that fare be collected between Englewood and Cherrelyn. The town of Englewood then took the case before Judge Class of the district court. They secured a ruling to the effect that it was not within the province of the utilities commission to abrogate any part of a contract existing between Englewood and the company.

This action of the district court, affecting as it did every rate decision made by the commission up to that time, enlisted on behalf of Larkin and his company the services of Attorney General Fred Farrar, Frank C. West, his assistant, and H. M. Aylesworth, attorney for the Public Utilities Commission. These gentlemen appealed the case to the Colorado Supreme Court, and on Monday, July 3, this tribunal rendered a sweeping decision reversing the finding of the lower court and defining the powers of the utilities board. The supreme court says in part:

"It fully appears that the Legislature intended to delegate to the Public Utilities Commission the administration, supervision and regulation of all service rendered to the public throughout the State, including municipalities. Rates and regulations fixed by contract are specifically included within the powers of the commission.

"From what has been said, it will be seen that the town of Englewood had no express authority to fix a rate of fare, so as to limit or prohibit the assumption of such power by the Legislature."

While the rate of fare between Englewood and Cherrelyn has not yet been fixed, it is probable that the consent of the utilities commission will be asked to sell fare tickets at ten for a quarter.

The Public Utilities Commission of Colorado has from the beginning of its administration shown a disposition to co-operate in absolute fairness with the utilities of the State. It is to the enterprise of this body and to the spirit of men like Manager Larkin, who never know when they are whipped, that the South Platte Railway owes its future existence.

Production of Pig Iron in 1915

The production of pig iron, including ferroalloys, in the United States was 29,916,213 gross tons in 1915, compared with 23,332,244 gross tons in 1914, an increase of 28 per cent, according to figures published by the American Iron & Steel Institute on Feb. 26, 1916. The pig iron, exclusive of ferroalloys, sold or used in 1915, according to reports of producers to the United States Geological Survey, was 30,384,486 gross tons, valued at \$401,409,604, a gain of 36 per cent in quantity and 34 per cent in value. The average price per ton at furnaces in 1915 as reported to the survey was \$13.21, compared with \$13.42 in 1914. At the close of the year, however, prices of pig iron had advanced 35 to 40 per cent.

The Pennsylvania Railroad conducts correspondence courses of instruction in which nearly 10,000 of its employees are enrolled as students. Upward of 2300 of these are Italians who are studying the English language by mail and so are fitting themselves to be citizens and better workmen. The remainder of the students are enrolled in the courses in mathematics and practical electricity.

How to Appraise Public Utility Property

Some Important Points to Be Borne in Mind About Planning Appraisals, Co-operating with the Employees of the Appraised Company, Handling Company Records and Designing Forms

By GEORGE W. KUHN, M. E.

THE object of the appraisal is fundamental in determining the nature and scope of the inventory. A variation in methods and in items considered will occur, dependent on whether the property is to be appraised on a basis of original cost, cost to reproduce new, reproduction cost less depreciation or any other basis. Such matters as the use of the appraisal in connection with rate-making, sale of property, control of security issues, taxation or rentals, joint operation, etc., will also affect the procedure to be followed in making the inventory.

PLANNING THE APPRAISAL

The inventory will, in general, be required to show the property in such detail as to distinguish used property from unused property; to divide used property into that in public use and that not in public use; to give data regarding age and condition of property, etc. As to the amount of detail necessary, it is evident that, where the purpose is to approximate roughly the value of the property, much less detail will be required than where the appraisal is to be subject to criticism or close examination or where it is to form the basis for a perpetual valuation of the property. In the last case mentioned, the detail required will probably be greatest in amount.

Description of property should, in all cases, specify a definite date as of which the inventory is made. It should also refer to location, type, size, method of operation, date of installation, estimated condition and whatever other matters may be needed to identify the property absolutely for the information of the appraiser. In short, the description should be so detailed that it will be possible to check the inventory against the company's books and accounting records and to identify and allow for new additions and late retirements of property.

It is a fact to be borne well in mind that an inventory or appraisal having the lowest first cost is not necessarily the most economically prepared. There must also be considered such matters as the total allowable expenditure of time and money to complete the entire work; the probable amount of extra information which will be required by the regulating commission; the amount and arrangement of information available at the company's office, and the probable amount of co-operation which may be expected from the company. The cost of developing and expanding the organization and performing the work should also be weighed against the cost of engaging outside specialists to handle part or all of it. All of these things and more should be kept in view during the drafting of the general plan of procedure, so that it may be made possible to keep the expense as low as possible while at the same time providing an amount of carefully detailed information capable of being used as a reliable foundation for any conclusions which may have to be based on it.

The plan of procedure should, of course, be as complete as possible before the work is started. It will be found to be the almost invariable rule, however, that changes in and additions to the original plan will be necessary because of unforeseen conditions and happen-

ings. Such changes and additions, when incorporated into the plan of work, should be made to apply to the past as well as to the present and future work, so that the results of the modified plan will form a complete and consistent whole.

THE FILING SYSTEM

Probably the most important feature to be considered in recording an inventory is the arrangement of its subdivisions. While many schemes may suggest themselves as convenient and economical means of recording the various items of property, the ultimate uses to which the results will necessarily or probably be applied, should be listed and used as the basis of choice. The groups of property should be segregated according to some standard logical system which will definitely assign each item of property to one of the groups. The particular uniform system of accounts in use by the company being examined is recommended as the best basis, for the reason that the results of the appraisal so obtained may be most readily compared and checked against the bookkeeping records of the company. Such arrangement will make possible the comparison of the groups with similar groups belonging to various other companies whose accounts are kept according to the same uniform system.

When finally chosen, the filing scheme, based on the general classification used, should cause the data gathered to be classified automatically as recorded and to be readily accessible during and after completion of the work. It should necessarily afford complete flexibility and expansibility to allow the inventory to be prepared in an orderly and systematic manner. A system of filing as outlined above has been evolved by the writer and will be explained in a second section of this paper.

THE APPRAISAL FORCE

The engineer in immediate charge of the work and his assistants should be men of experience in construction and appraisal work. They should also have a working knowledge of accounting methods and should make themselves familiar with the particular accounting procedure followed by the company being investigated. They should be thoroughly familiar with the object and the scope of the appraisal and the general policy according to which the same is to be made. The subordinate force should be composed preferably of men having experience in appraisal work and a thorough technical knowledge of the kinds of property being appraised. It is evident that men having such qualifications can most intelligently interpret records and cover in the notes of their field inspections such data referring to type, physical conditions, etc., as are necessary. Intelligent working knowledge of results desired and of the property being examined serves very often to eliminate errors and inconsistencies in the records of the company.

In so far as time and convenience will allow, the men in charge should endeavor to instruct all the men in the various branches of the work. This may be accomplished by means of personal talks, written instructions and

shifting of men from one kind of work to another. If office record transcription work be interspersed with examination of actual construction work in the field, the results will be an increased ability and interest in the work, greater familiarity with detail and a greater amount of work done. Another most important result will be the possibility of using the men as instructors for new men in case it may be necessary to expand the force quickly or to any marked extent.

To obtain the greatest efficiency in carrying on the work, the man directly in charge of the appraisal should assign to each of his principal assistants the responsibility for obtaining desired data on specified classes of property, arranged preferably by accounts. By constant and close supervision of the work of such assistants and by conferences with them the engineer in charge eliminates practically all possibility of duplication of work and inconsistency in applying methods. By transmitting all general instructions in writing, the matter in hand is made more clear both to the man in charge and to the men instructed, the responsibility is placed definitely and possible future misunderstandings are largely avoided.

PRICES OBTAINED FROM RECORDS

The first step in the determination of prices is the fixing of the basis on which they are to be considered. The general instructions should specify the information which is to be gathered, and written notice of the same should be given to the men in charge of the work.

Prices have at least as important an effect as have quantities in the appraisal of property. They are dependent more on judgment and are subject to more extended examination and criticism than are the quantities, which are almost entirely dependent on fact. Price study usually involves considerable work on the premises of the company, especially as regards unit-labor costs. It is recommended that the work of pricing should be carried forward along with the preparation of the inventory and that, in so far as possible, the men in charge of the inventory of particular groups of property should confer frequently with the men in charge of the work of pricing these groups.

In the work of pricing it should be remembered that certain classes of property consisting of similar units varying in type, price, etc., may have total values of comparatively small consequence in determining the total value of the plant. Care must be exercised to keep the expenditure for the study of such classes as nearly proportionate as possible to their effect on the final result. The cost of failure to exercise such care will emphasize too late the necessity of determining in advance the amount of detail required and may have a serious effect upon the possibility of obtaining much more important information about other groups of property examined later on in the work.

CO-OPERATION WITH APPRAISED COMPANY

As part of the general preliminary work, conferences should be held with the officers of the company, the character and the extent of the records ascertained, the company's consent obtained for the use of such records by the appraisers, arrangements made for the assignment of office space, and general provision made for co-operation between the company's employees and the appraisal force.

Attempts should be made to secure the co-operation of the company by affording an opportunity for its representatives to be present to observe in detail the methods used in the inventory of the property. This is especially valuable in the case of engineering representatives, because questions of fact can be settled at once and at first hand. The work of the inventory is facil-

itated if certain groups of the property are listed by the employees in charge of such groups and familiar with them. This applies particularly to groups of property made up of many items of small importance or low cost, since the inventory by the company's employees may be quickly checked by the appraisers, and the double examination eliminates errors which might creep into a single inventory made by the appraisers.

Instructions should be issued by the company's officials to all employees in charge to pass the appraisers into the several premises of the company, and passes should be issued to the appraisers so that unnecessary telephone communication may be avoided and the intrusion of strangers may be prevented.

In addition to the examination of the graphic and written records of the company's property, the opportunity should be sought constantly to confer with officials, foremen and other employees of the company who are familiar with past and present practices regarding methods, costs and records. Information obtained from such sources will often prove of exceptional and unique value in solving problems that arise.

The forces of the examining or regulating body should also see to it that they co-operate among themselves to the fullest possible extent. Thus the engineering, legal and accounting bodies interested in the work of carrying on a given appraisal should all recognize their interdependence upon one another and should confer as frequently as may be necessary to keep the basic policy to be pursued clearly outlined before all and to prevent divergence from such plan. There should be no hesitation in recognizing the particular ability of each department to carry on the part of the work assigned to it, and information useful to a given department should be freely asked and received from another department when it can best be obtained by the latter.

EXAMINING OFFICE RECORDS

In the handling of office records of the company's property it will be found advisable to examine them on the premises of the company, because such records are more or less in constant demand by the company's employees and much time would be wasted if it were necessary to go any considerable distance to consult them. Besides this, the records are often very valuable and rather perishable, and serious damage might result to them if they were moved.

The company's consent should be obtained for the placing of special check marks by the appraisers on items listed in the company's records as such items are included in the inventory. The advantages here are that men listing items will be warned against listing an item a second time by the sight of the check mark and, by a quick examination of the entire original record later, omissions will be evident because of the absence of such check marks. Moreover, such marking is necessary because the original records are subject to constant use and daily change by employees in accordance with current construction work while still under examination by the appraisers. To avoid interference with the work of the appraiser or delay in the current work of the company, the work should be so divided that several sets of records may be used by the appraiser at the convenience of the company. This may be readily done without confusion, by requiring that progress records showing degree of completion of work on the several files be kept by those engaged in the work of listing.

The preparation of the inventory is generally started before and may not be completed until after the date as of which the appraisal is to be made. In case the transcript of the record of the different classes of property should be practically completed before that date

the record, and under similar circumstances. An accurate and non-overlapping record may be obtained most conveniently by showing the structures and property involved, such as duct lines, manholes, pole lines, transformers, etc., diagrammatically and in some specified sequence on forms arranged to accommodate sketches as well as lists. When complete, such records are valuable, not only because they eliminate duplications and omissions but also because they permit reference to the location of individual structures by pages and item numbers instead of requiring lengthy and less specific written description. At the same time they afford the fullest detail description of the structures mentioned. In the absence of an extensive field check to verify the written records, such sketch records serve to show the property as a consistent whole, furnishing a valuable check on the reasonableness of the inventory. When used in conjunction with field verification, either random or complete, their advantages as bases for comparison are readily apparent.

The use of sketches to accompany lists of property is shown by Form II (double, 10⁷/₈ in. x 8¹/₂ in.). This form is so printed that the face of one sheet (shown as the lower part of the illustration) gives a detail description of the component runs making up the duct banks, while the back of the preceding sheet (upper part of the illustration) affords space for sketches of the various runs spoken of in the lists. It is obvious that such sketches may be made to show information as to the location of duct lines with respect to intersecting streets and adjacent structures, which could not be incorporated into the lists without excessive written description. These sketches may also be used in con-

File No. _____		Sheet No. _____	
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Company _____</p> <p>Subject _____</p> <p>Computer _____</p> </div> <div style="width: 30%;"> <p>Date _____</p> <p>List of Dist. Lines _____</p> <p>Checker _____</p> </div> <div style="width: 30%;"> <p>Sketch Back of Page No. _____</p> <p>From Man or S.P. No. _____</p> <p>To 18 in. or 24 in. No. _____</p> </div> </div>			
Component Runs			
Kind	Size	No High	No. of Runs
Material	Builder	Depth	Location
Other	Notes	Remarks	
Aggregate Banks			
Kind	Material	Builder	Notes
Length	Area	Per Foot	Per Yard
Per Foot	Per Yard	Per Foot	Per Yard

APPRAISAL WORK—FORM II—DOUBLE FORM ILLUSTRATING THE USE OF SKETCHES TO ACCOMPANY LISTS OF PROPERTY

Company _____		Date _____		File No. _____		
Subject _____		Manholes and Service Boxes		Sheet No. _____		
Computer _____		Checker _____		Inv. No. _____		
Sketch on Back of Page No. (Phos. File)	M.H. or S.P. No.	Material	Type of Head	Long	Deep	Wide
				Feet	Feet	Feet
Sewer Conn.	Vent Cover	Builder	Date	Orig. Part.	Pres. Part.	

APPRAISAL WORK—FORM III—LOOSELEAF SPECIMEN RECORD FOR MANHOLES AND SERVICE BOXES

nection with records of other groups of property, as is shown by the headings on Form III (8¹/₂ in. x 10⁷/₈ in.), where the reference to the "sketch on the back of page No. ..." identifies the location absolutely when the manhole or service box number is known. In a recent appraisal this same sketch space on Form II was used to portray the location and graphic description of the Edison tube system efficiently and very conveniently.

It is frequently the case in card records of meters, transformers, poles, etc., that each item is given an identifying number which is recorded on the card, although the cards themselves are grouped and filed according to some other characteristic such as street location, type of equipment, etc. By making use of a form on which all the identifying numbers in use by the company at the time of examination are shown in regular sequence, the card record may be transcribed in the order found, while the actual entries of the appraiser appear opposite the identifying numbers in their proper order. In addition to preventing duplications, pointing out omissions and showing actual error, an inventory list so prepared often indicates ways to solve problems connected with age of items, size and growth of the company, etc.

The second portion of this paper, dealing with the field check, summation of data, labor costs and presentation of appraisal data in evidence, will be published in a subsequent issue.

Manila Company Offers Pulmotor to City

C. Nesbitt Duffy, general manager of the Manila Electric Railroad & Light Company, Manila, P. I., has offered the Manila public, through the police department, the free use of one of its two pulmotors. In making his offer Mr. Duffy stated that, in line with its safety-first policy, the company had purchased in the United States two pulmotors, the latest and most efficient apparatus of its kind on the market. One of these had been installed at the power plant, and the other at the general offices. Mr. Duffy suggested that one of these be installed for the use of the public at the Meisic police station where the Philippine Health Service has a station. The board accepted the offer with thanks.

The Champagne Française de Tramways (Indo-China) reports receipts in 1915 of Fr. 848,247 as compared with Fr. 872,662 in 1914. Part of the decrease is attributed to the war, which was also the cause of the delay in the completion of the electrical equipment. At the annual meeting held in Paris on May 11 a vote was passed declaring a dividend of Fr. 50 per share on the capital stock and Fr. 20 on each participating certificate. The company owns a tramway at Szigon in Indo-China.

Storehouse Methods That Reduce Labor

A Description of a Unique System of Arranging Stock and Keeping Storehouse and Accounting Records Which Have Greatly Increased Efficiency

By W. V. C. BULKELEY

Purchasing Agent Columbus Railway, Power & Light Company, Columbus, Ohio

A STUDY and an investigation of storekeeping and store department accounting methods, covering a period of more than two years, developed the fact that most of the systems in general use provided for a more or less unsatisfactory arrangement of stock in the storerooms from both the distributing and inventory standpoints. Entirely too much clerical labor was required for the results obtained, both in the storeroom and in the accounting department, and serious inaccuracies in records of prices and quantities of materials frequently occurred. With these points in mind, I endeavored to develop a system for the Columbus Railway, Power & Light Company whereby the storekeepers would be brought into closer touch with their stocks and eliminate as far as possible the clerical labor of keeping records as well as keep the prices approximately correct. At the beginning of this development work, I received very valuable assistance from H. C. Pearce, purchasing agent and general storekeeper of the Seaboard Air Line.

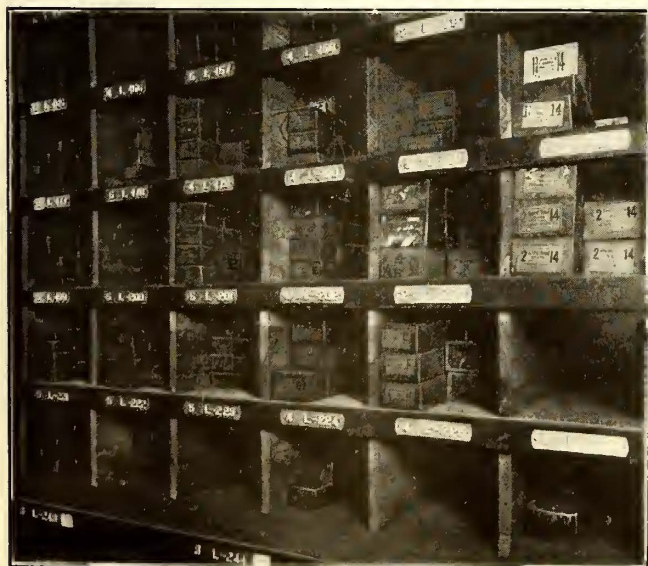
First of all, the materials carried in stock were divided into twenty classifications which were indicated by the letters of the alphabet. The purpose of this is to indicate at any time, just how much money is invested in the different classes of stock, so that any excess stock may be located and that particular classification checked. For convenience these twenty classifications were made logical divisions of the materials generally carried in the stock of a railway and lighting electric property. For instance, classification *A* indicates electric motor and control apparatus, generators, incandescent lamps, arc lamps and parts; *B* indicates in general, overhead and underground line material; *C* includes material generally classified as station hardware; *D* includes chemicals, paints and oils; *H* includes all wire; *J* all kinds of tools; *N* all metals, including structural steel and pipes, etc. These natural divisions of

material readily fix the classification in the minds of those making requisitions on the storehouse. Furthermore, when an inventory is taken of any particular classification the discrepancies found are confined to that class of material, and do not affect the remainder of the storeroom records.

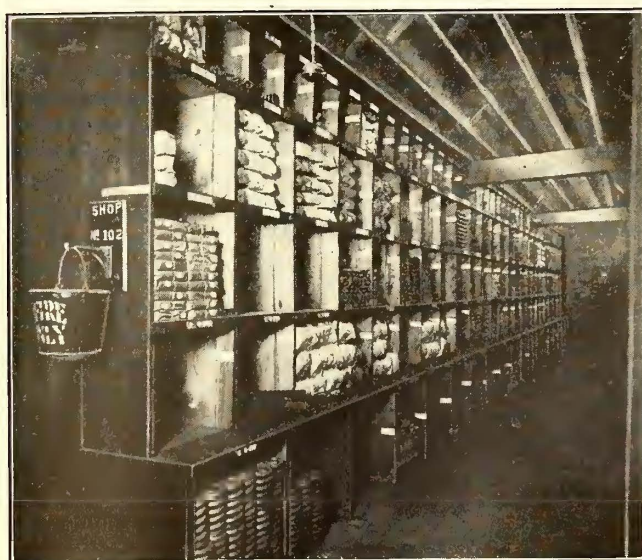
When materials are requisitioned from the purchasing agent by the classification method, all the requirements for any one class of materials are indicated at one time by all the storehouses on the system, thus reducing routine work in the matter of purchasing. Each item in each classification has a number, according to its location in the storeroom bins. It is not necessary to have classification *A* at the beginning of the storeroom and then follow out the alphabetical arrangement. On the contrary, the stocks are arranged in the manner most convenient for receipt and distribution and, with bins properly marked, the greatest flexibility is obtained. It is, however, highly important that a place be provided for every item of stock and that stock located in its proper place, so that if it is not there, that item of stock is exhausted.

STANDARD ARRANGEMENT OF STOCK

Standards of arranging stock were then adopted, so that when inventories are taken the stock is not touched, it being possible to see at a glance just how many items there are in each compartment or pile. This arrangement is clearly shown in the accompanying illustrations. For instance, note the compartment marked 5 L-177 at the left of the view in the opposite column. This compartment contains 1½-in., No. 6, round-head, brass wood-screws. The figure 5 shows the depth arrangement, the L-177 is the stock classification and number. We have adopted a standard pile of five or less, ten, twenty-five, fifty or 100. Five or less can be observed at a glance, and in this case the



COLUMBUS STOREHOUSE SYSTEM—VIEW OF STOCK BINS SHOWING METHOD OF MARKING



COLUMBUS STOREHOUSE SYSTEM—VIEW SHOWING STYLE OF BINS AND STANDARD PACKAGES

boxes are piled five high and five deep, therefore, there are twenty-five boxes of the screws in each full pile. Again referring to the particular bin, it will be noted that there are two full piles, and the third pile is short two boxes on the front row. This stock, therefore, shows immediately that there are seventy-three boxes of these screws in stock.

In the second view will be noted another example of how time can be saved in taking an inventory. The end compartment in the third row from the bottom, marked "3 G-227," contains a certain kind of brake-hanger spring. In each of the packages there are twenty-five of these springs, and the packages are stacked ten high and three deep, therefore, there are 750 of these springs in each full stack. Two full stacks can be noted in the illustration, therefore, these contain 1500 springs. There are also seven packages which can be observed when one stands directly in front of



COLUMBUS STOREHOUSE SYSTEM—VIEW SHOWING METHOD OF MARKING ON ENDS OF BINS

the bin or in the position occupied when an inventory is taken. These contain 175 more springs, and three springs are shown in the photograph, these being less than a standard package. Taken all together, 1678 of these springs can be counted almost at a glance.

ADVANTAGES OF STANDARD ARRANGEMENT

After all the different items of stock had been classified and numbered, an alphabetical index of the stock was prepared in loose-leaf form, so that it can be corrected from time to time and kept up to date and distributed to each of the operating department heads. I will not enumerate the forms that we use, as these necessarily must differ for various locations and conditions, I will simply state that when any materials are required from stock it is only necessary to indicate the quantity and the stock number, the latter being obtained from the catalog of stock. The requisition thus prepared, upon being presented to the storekeeper, indicates automatically just where that stock is located, so that the storekeeper or his helpers can go immediately to the compartment and withdraw the material required without any doubt or delay. This system furthermore guarantees that the operating department is charged for just the material it obtains, and not what the accounting department must guess was obtained in cases where improper names are used to indicate a material taken from the storeroom.

It will further be noted that the only marking on the bins is the depth number and stock number, which show in bold letters and figures, and greatly facilitate the location of stock. For instance, referring again to the first view, suppose that stock number L-185 should be desired. By a glance at the numbers on the end of the bin section, it will be noted that the marking on the top row is L-133, on the next row, L-155, then L-177, then L-199, L-221 and L-243. Now, inasmuch as L-185 must be in the row commencing with L-177, the eye follows along this until L-185 is reached.

The third view gives a general idea of how the bins are arranged, their form of construction and the index tags which appear on the ends of the bins toward the main aisles. It will also be noted that the bins are constructed on the stair principle. This eliminates the use of step ladders with their resultant danger and lack of efficiency. Furthermore, there are no retaining strips or other obstructions at the bottoms of the compartments, and the numbering strips are placed at the top of each bin. In the first illustration, it will be observed that at the compartment to the right of L-203 there is no back wall to the bin. All bins are built double so that the storekeeper can see at a glance when a compartment is entirely empty or nearly so. In addition, this style of construction facilitates cleaning of the bins.

STOREHOUSE RECORDS SIMPLIFIED

The only record that the storekeeper has to keep is the stock ledger, which simply shows the quantity consumed for the previous year (this being a yearly record), the average monthly consumption, and, of course, the stock number and a brief description. The results of the monthly inventories, referred to later, receipts of materials and open orders are also shown in his record. It will be noted that the issuances of materials are not recorded, and as this constitutes the bulk of the clerical work in the storeroom where the card system is used, considerable work is saved. The entire stock is inventoried every month so that it may be replenished. This taking of inventories is divided into eight periods, requisitions being received in the purchasing department on the four Tuesdays and the four Fridays in each month. In like manner, the annual inventory is dispensed with, this being distributed over a period of eight months in the year, and once in each month the inventory, which is taken for the purpose of replenishing stock, is forwarded to the accounting department where it is priced.

This plan eliminates any duplication of work and further obviates the prodigious task incident to the pricing and adjusting of a complete inventory. Inasmuch as the time required for making the inventory has been reduced in the storeroom illustrated from approximately 600 hours for one man to forty-two hours for one man, it will be seen that this monthly inventory consumes very little time. Moreover, considerable time is saved in requisitioning and ordering supplies under the new plan. By this method the storekeeper must see just how his stock actually stands in each item twelve times each year, and there is no excuse for a storekeeper running out of stock on account of the errors on the cards. Then, there being twenty-five items to a page, by referring to the stock ledger it is possible to check at a glance just how much twenty-five different items have moved in a period of two years.

The operating departments, in preparing estimates for work to be done, are now furnished with the prices at which they will be charged for materials taken from stock. These prices are kept up to date by supplements issued by the purchasing department on the first of

each month. These supplements also cover cancellations from or additions to the stock. Inasmuch as all department heads have a complete, up-to-date list of all materials in stock, this helps in a large measure to keep the obsolete stock at a minimum.

ADVANTAGES TO ACCOUNTING DEPARTMENT

In the accounting department where the stock ledgers were formerly carried, by far the larger part of the clerical labor has been eliminated by the use of the classification accounts. It is no longer necessary to open a separate account for each item of stock and to enter all receipts of materials, total price, unit price, etc., as well as all issuances with the necessary subtractions, etc. This is entirely taken care of now by what is termed regular and supplemental classification accounts. In an article of this kind it is impossible to describe in detail just how these accounts are operated, except to say that the regular account is credited and charged for all materials issued and received at the unit prices as shown in the catalog of stock and catalog of prices. These catalogs, of course, are the same, the former having an alphabetical and the latter a numerical arrangement.

In the event that materials are purchased at prices in excess of those shown in the catalog, the regular classification account is charged at the catalog price and the excess takes the form of a debit in the supplemental classification account. If materials are purchased at less than the catalog prices, the regular classification account is charged at the catalog prices, and the difference becomes a credit in the supplemental classification account. Of course, all materials are issued at the catalog prices, therefore the supplemental classification account is only used by the accounting department. If it is necessary to increase the catalog prices a credit requisition is issued, on which the quantity of material affected on hand at the time of adjustment is shown. In the event of a decrease in the catalog prices, the same procedure is followed except that a debit requisition is used. These differences are then either credited or charged to the supplemental classification account, as the case may be. Therefore, the regular classification indicates at all times the value of material in stock, as the units multiplied by the unit prices should equal this amount, and the supplemental classification indicates fluctuations in prices of materials.

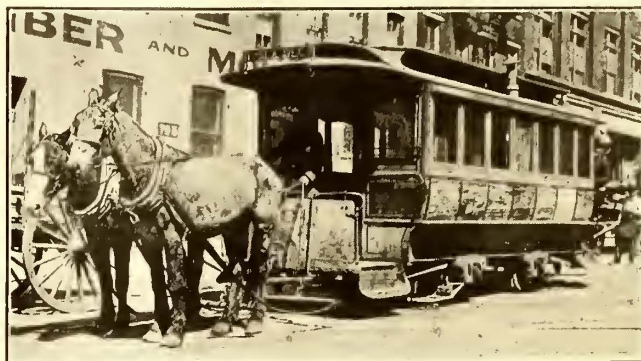
In this way the supplemental classification has no bearing on the amount of material in stock but constantly indicates whether materials are being charged out at the proper values. At the same time the total of the regular and supplemental classifications indicates the current market values of the materials in stock. In actual operation this system, so far, has met and even exceeded our expectations. It has also developed many desirable features that were not apparent when the work, preliminary to the installation of this system, was being laid out.

Manganese-Tread Wheel

In an article describing the new Davis cast-steel wheel with manganese tread recently put upon the market by the American Steel Foundries of Chicago, and printed on page 69 of last week's issue, through a typographical error a misleading statement appears in the third sentence. This should read "Its wear life is more than twice that of a cast-iron wheel because of the toughness given to both the wheel treads and flanges by manufacturing them of manganese steel."

The Last New York Horse Car

The accompanying illustration is reproduced as an appropriate valedictory to the closing era of transportation in New York City. While agreeing heartily with any timely sentiment that may attend the departure of this form of locomotion, one cannot suppress a



THE LAST NEW YORK HORSE CAR

little exultation at the thought that the storage-battery car has supplanted the horse car in New York. It will not be so common now to pass through moments of nervous panic when time is scarce and the passenger endeavors to "make" the Fall River boat via a cross-town horse car line.

Steam Railroad Statistics for 1915

The Interstate Commerce Commission has issued an abstract based upon its compilation of steam railroad statistics for the twenty-eighth annual statistical report covering the fiscal year ended June 30, 1915. The advance figures given in this abstract may be slightly modified by revision before final publication. On June 30, 1915, the roads represented 257,569.32 miles of line operated, including 11,279.64 miles used under trackage right. The aggregate mileage of railroad tracks of all kinds was 391,151.51 miles.

The total steam railroad capital actually outstanding on the above-mentioned date was \$19,719,893,944, consisting of \$8,635,319,368 of stock and \$11,084,574,576 of funded debt. The total amount of railroad capital, including the securities held by the companies concerned, was \$21,127,959,078, divided \$8,994,894,721 for stock and \$12,133,064,357 for funded debt. Of the total capital stock actually outstanding \$3,415,472,806, or 39.55 per cent, paid no dividends. The amount of dividends declared during the year was \$328,477,938, being equivalent to 6.29 per cent on dividend-paying stock. The average rate of dividends paid on all stocks actually outstanding, was 3.80. The investment in road and equipment as of June 30, 1915, for companies with annual operating revenues of more than \$100,000 was \$17,247,101,881, this being an increase of \$263,155,774 over the preceding year.

The operating revenues of all railroads for the year ended June 30, 1915, were \$2,956,193,202, or \$11,538 per mile of line operated. Operating expenses were \$2,088,682,956, or \$8,152 per line of mile operated. For companies with annual revenues of more than \$100,000, the number of passengers carried in 1915 was 976,303,602 as compared to 1,053,138,718 in 1914, while the number of tons of revenue freight carried, including freight received from connections, was 1,802,018,177 in 1915 as compared to 1,976,138,155 in 1914. The operating ratio showed a decrease from 72.22 per cent in 1914 to 70.52 per cent in 1915.



INTERIOR OF LARGE STEEL TRAIL CAR ON SALT LAKE & OGDEN RAILROAD

Large Steel Trail Cars in Operation on Salt Lake & Ogden Railroad

IN connection with the inauguration of its summer schedule, the Salt Lake & Ogden Railroad recently placed in operation six new excursion-type trail cars, the order for which was noted in the *ELECTRIC RAILWAY JOURNAL* of Dec. 18, 1915. These cars are especially designed for accommodating the railroad company's heavy traffic to Lagoon, a pleasure resort situated about half-way between Salt Lake City and Ogden, Utah.

As shown in an accompanying illustration, the car is very large, having a seating capacity of eighty passengers. It is 61 ft. 6¾ in. long, 9 ft. 6 in. wide, 12 ft. 7 in. high and weighs 56,000 lb. The body framing is entirely of steel, the posts are of composite construction, with T-iron and wood fillers and the letterboards are of steel. The roof is of wood, covered with canvas, and the floor is of wood, double thickness. The seats are Hale & Kilburn No. 300A in quarter-sawed oak. Sliding duck curtains are provided in the window openings. The vestibules are arranged for through train operation with a swinging door in the center at each end.

The car is equipped with both seven-wire General Electric and eleven-wire Westinghouse control cable so as to operate in trains with other cars equipped with either type. The Orem line and the Ogden, Logan & Idaho Railway with which the Bamberger line has con-

nection, are also equipped with Westinghouse control apparatus.

The underframing of this car is of heavy steel. The center sill is of 8-in. I-beam, 18 lb. per foot, while the side sills are of 8-in. channel bars, 13¾ lb. per foot. The intermediate sills are of 6-in. channel bars. The distance between truck centers is 39 ft. 2 in. and the trucks have a 6-ft. 6-in. wheelbase. They are equipped with standard 36-in. steel wheels with 6-in. axles and 5-in. x 9-in. journals. The cars are furnished with Westinghouse complete trailer brake equipments including the American slack adjuster. Each end of the car has a Janney radial M.C.B. coupler and is also fitted with a cast-steel spring buffer. The trucks were made by the Baldwin Locomotive Works, while the cars were built by the Jewett Car Company of Newark, N. J.

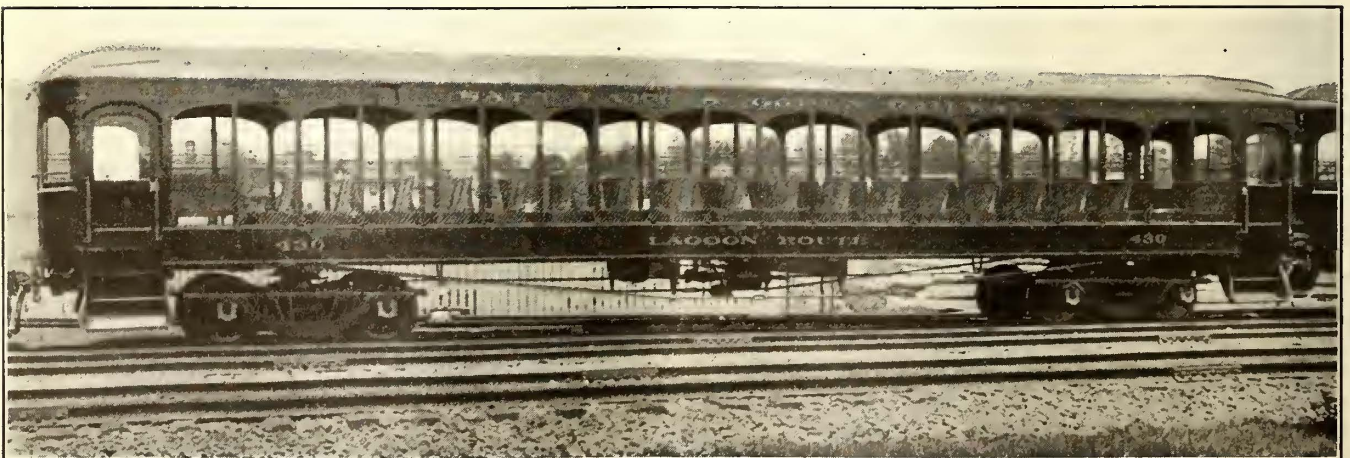
Safety-First Work of Pittsburgh Railways

IN a feature section published in connection with the Pittsburgh Safety Exhibit held the week of June 19, the *Pittsburgh Post* of that date had this to say of the safety-first work of the Pittsburgh Railways and other public utility companies:

"Officials of the Pittsburgh Railways, Duquesne Light Company and Equitable Gas Company have for years been active in their efforts to prevent accidents not only among their patrons but among their employees. Every possible safeguard against accident has been installed and campaigns of education have been conducted with a view to teaching employees how to spread the gospel of safety throughout the Pittsburgh district.

"Pulmotor stations have been established in every portion of Allegheny County by the Equitable Gas Company, Duquesne Light Company and Pittsburgh Railways to assist in saving the lives of persons overcome by gas, smoke, drowning or electric shock. Employees were instructed how to use these pulmotors and physicians were made familiar with their use through free lectures and motion pictures and demonstrations of the apparatus.

"Officials of the Pittsburgh Railways have been persistent in their efforts to teach their employees how to take care of themselves and how to safeguard the public. Every possible safeguard has been installed in shops and power houses, and motormen and conductors have been instructed in safety-first schools what to do in any emergency and how to do it. Emergency stations in various parts of the city have proved of immense value in the general campaign of safeguarding



STEEL TRAIL CARS WITH CAPACITY OF EIGHTY PERSONS NOW OPERATING ON THE SALT LAKE & OGDEN RAILROAD

lives. Here are a few of the things which make the Pittsburgh Railways stand out as one of the foremost exponents of safety always:

"First city railway to adopt steel cars for surface line.

"All shop machinery equipped with safety guards for employees.

"Eighty men always sanding track and keeping rails in safe condition on steep grades.

"Cards with 'dont's' for teachers and children placed in every school room in Allegheny County and the co-operation of principals and teacher secured to caution their pupils how to avoid accidents.

"For the safety of children all cars are stopped at all school buildings during school hours.

"A second guard rail placed on all summer cars.

"Window guards placed on all double truck closed cars.

"Established free pulmotor service at many stations in Pittsburgh district.

"Developed first practical low-step car.

"Developed quick-acting safety car door. Five hundred cars equipped.

"All double-truck cars equipped with automatic safety air brakes.

"Steep grades and railroad crossings equipped with safety switches and safety trolley guards.

"Proportionate share of expense in elimination of grade crossings.

"First to adopt near-side stop."

COMMUNICATIONS

Moral Obligation of Witnesses

FIFTH AVENUE COACH COMPANY

NEW YORK, July 10, 1916.

To the Editors:

After reading the article partly dealing with the work of claim agents, which appeared in the June issue of *Good Housekeeping*, aptly criticised in your editorial of July 1, I am disposed not to say anything more harsh than that the author does not know—as we claim agents and others connected with transportation companies as well as a large portion of the general public know—about the methods used in the handling of accidents and the claims arising therefrom.

In regard to the advice given in the magazine article that witnesses to accidents should decline to give their names to conductors, it should be said that while it is true that there is no law requiring witnesses to furnish such information, anyone who will stop to give the matter a little consideration cannot fail to realize that in the interests of justice and a square deal to all concerned, a strong moral obligation rests upon all witnesses to furnish their names. On blank cards furnished to conductors by the company I represent is printed the following, but nearly all transportation lines use similar forms: "The management respectfully requests your assistance that fair treatment may be given to all concerned, proper discipline imposed, and accidents and discourtesies to the public prevented." This, of course, means just what it says—that the company desires the co-operation of witnesses so that exact justice may be rendered to all parties, the injured person, the employees and the company itself.

It would be most erroneous to suppose that the refusal of witnesses to give their names could result

to the detriment and inconvenience of the railway only. Many times accidents occur in which the transportation line is in no way concerned, but since they happen near the cars, the employees report them and often secure the names of the only witnesses obtainable. I have thus furnished many witnesses to injured persons or their attorneys when no other witnesses could be found, and their absence would have resulted in serious loss and injustice to honest injured persons.

If the situation were reversed, how would injured parties feel if witnesses refused to come forward and aid them, when such witnesses were of the greatest importance in the interests of justice? But such a point need not be discussed. As before stated, a strong moral obligation rests on witnesses to furnish their names, and I know from long experience that the public as a whole recognizes this obligation and most people freely give their names when requested to do so. Indeed, many persons voluntarily sent their names to the interested parties, feeling that, in so doing, they are acting in the interest of fair dealing. Hence, while the magazine article referred to may do some harm for a short time, its bad effect will soon vanish, and the public at large will continue to aid in bringing about justice and right.

In regard to the advice to shun the adjuster and consult a lawyer, I again repeat that the writer of the article does not know. I frankly admit that the offering of such advice twenty-five or thirty years ago would have had some justification, but there is none at this time. In this connection I quote from my paper before the fourth annual convention of the Pacific Claim Agents' Association: "In those early days the claim agent who could boast about the number of settlements he made in cases of exceedingly serious injuries for very small sums of money regarded himself as the only person fit to act in the capacity of claim agent. This kind of claim agent, however, could not, should not and did not last. Such men were gradually forced out of business as claim agents."

Such methods of conducting claim department work could not fail to result in a short time in harm not only to the claim department but also to the company as a whole. As I stated in the paper before mentioned, the successful claim agent of to-day is the man who can look everybody squarely in the eye, who is regarded as a good citizen and fit to mingle with the best people in his community. The confidence of the public in his integrity is one of his strongest and best assets in handling the business of his department, and such confidence can be established only by fair dealing.

I know personally nearly every man forming the American Electric Railway Claims Association and also personally many of the claim agents of the steam railroads, and can truthfully say that they are just the stamp of man described above. They all aim to deal fairly with claimants injured by their companies and are not men to be shunned by injured persons. This the writer of the magazine article does not know. There may be claim agents who resort to sharp practices in handling their business. If there are such, I do not know them. The men who compose the Claims Association have no time for such claim agents, and there is no place for such men in the association. The proceedings of this association for many years past contain numerous papers and discussions advocating square dealing with claimants as being the best and only safe policy to follow in the handling of claim work, apart entirely from the moral phase of the situation. That such a policy is pursued by claim

agents, there is no question. In my opinion, unfair claim agents, if there are any, are as scarce as the "white crows" mentioned in the article.

As to the advice about referring the claim agent to the claimant's lawyer, my views are entirely similar to those expressed in your editorial. No claim agent objects to any claimant being represented by a reputable attorney, and in many cases welcomes such representation. I would be the last to say a word against an honorable profession of which I am proud to be a member. Unfortunately, however, as in all other professions there are those in the legal profession who are not to be depended upon, and many persons injured in accidents have cause to regret bitterly ever having employed an attorney to represent them. I could cite from personal knowledge numerous cases of this kind in which large sums of money were paid to attorneys and only a small portion ever reached the claimant. In one case, in which \$5,000 was paid in settlement, the injured person received nothing. Hence in advising the employment of attorneys, it should be emphasized that the greatest care should be exercised in their selection.

GEORGE CARSON, Claim Agent.

Efficiency in Military and Industrial Preparedness

J. G. WHITE & COMPANY, INC.

NEW YORK, July 5, 1916.

To the Editors:

Inclosed find copy of a letter which I am sending to several United States senators and congressmen. This letter deals with a subject of most vital importance to the American people, and I believe that this general subject should receive earnest and continued attention from yourself and all other editors who have a sensible view of what really contributes to the welfare of the American people of all classes, including members of labor unions.

If now or later you can in any way contribute toward helping to build up a sentiment among your readers in favor of efficiency in all directions, whether in government departments or manufacturing establishments, you certainly will be performing a patriotic service to the country.

In the long run this subject is one which ranks practically on the same plane with the broad question of national military preparedness for adequate, effective defense. In season and out of season efficiency should be preached both as relating to military preparedness and industrial preparedness.

In every state in the Union advisory boards to the Naval Consulting Board are giving freely of their time and money to assist in procuring information which would help the Army and Navy Departments quickly and effectively to utilize the industrial resources of the country in case of war.

Patriotic citizens generally are most anxious to assist in any efforts which will increase the military and economical preparedness of the country. It seems improbable that, at such a time, legislation should be urged (and have serious prospect of passing) which encourages inefficiency during a period when all patriotic citizens should be working toward efficiency.

J. G. WHITE.

[LETTER OF MR. WHITE]

New York, July 5, 1916.

Dear Sir:

My attention has been called to the Tavenner bill (H.R. 8665), prohibiting time studies and other methods looking toward efficiency of those engaged in government work, also to the Van Dyke bill (H.R. 8677), the object of which apparently is similarly to discourage possible increased effi-

ciency in the Post-office Department. I understand that similar legislation in the way of riders, or otherwise, may be attached to the post-office appropriation bill, the naval appropriation bill, army appropriation bill and fortifications appropriation bill. I earnestly hope you will do all that you possibly can to defeat any such pernicious and foolish legislation.

As the active head of a large engineering and construction organization in this country, and also of another organization which we have built up, with headquarters in London, to do foreign work (the head men of which are Americans, but most of the staff being British, French, Swiss, Dutch, etc.), I have some appreciation of the importance of this general subject.

At the present time the United States is enjoying exceptional prosperity, due largely to our exports of munitions, together with other exports which are made possible, or at least largely helped, by the fact that the nations at war are unable to compete for this foreign business in many lines. After the war is finished there are many evidences to indicate a probable prolonged struggle for export business. On the part of the nations at war, the maximum exports will be of the utmost importance to enable them to take care of their huge debts and rehabilitate their financial systems. Before and during the war Germany had, and has, shown wonderful efficiency, particularly in all lines of manufacture. This has been due largely to the remarkable encouragements which were from time to time given by the Kaiser and the German government generally to increased efficiency in all lines of German endeavor, particularly those which would increase German exports.

I am sure that you earnestly desire the continued prosperity of the United States. While our unparalleled natural resources tend to assure us prosperity, irrespective of our own efforts and efficiency, yet this will carry us only to a certain extent, and beyond that the nation must prove its efficiency or its prosperity will be largely curtailed.

Considering all of these and other conditions which might easily be mentioned, it would seem to be extremely important that our government should, in all reasonable ways, encourage efficiency in all directions. The legislation herein referred to has absolutely the opposite effect. If efficiency in government departments is discouraged or prohibited, certainly this must reflect on efficiency in private establishments and tend to interfere with the prosperity of the United States.

A good example of the pernicious effects of legislation inspired by such forces as are apparently back of the Tavenner bill, may be seen in the La Follette, or seamen's bill, the effect of which has been to hand over to the Japanese practically the entire control of the shipping of the Pacific Ocean and almost the entire carrying of the Oriental imports and exports of the United States. If the government, by the passage of the Tavenner bill, or other similar legislation, is to discourage or prevent efficiency or the development of American industries, it must inevitably materially increase the seriousness of the economic situation which will confront us after the close of the European war.

You, of course, know that exports on a large scale have been possible, in spite of the extraordinarily high wages paid in this country, only because of the high efficiency of our highly-paid labor. The urgent demand for munitions has led to careful time studies in connection with munitions manufacturing in practically all European countries, and this tends largely to decrease the difference in efficiency which formerly existed as between American and European labor. This is another reason why efficiency at home should be encouraged in every direction.

Considering the above and other facts which might be referred to, I earnestly hope that you will do everything possible not only to avoid discouraging, but on the other hand, actually to encourage in all legitimate ways, efficiency, both in government and private industrial departments of enterprises.

Very respectfully yours,
[Signed] J. G. WHITE.

[NOTE.—The attention of the readers of this paper was called to the evils of the Tavenner bill and of the Van Dyke bill in an editorial entitled "Stupidity in Legislation," published on the first page of the issue of this paper for April 1, 1916. We indorse anything that Mr. White has to say about them, as well as his remarks about the necessity for the introduction by manufacturers during the war of efficiency methods if they are to compete with European manufacturers after the war is over. This point was emphasized in an editorial on "Preparedness for Peace Conditions," in the issue of this paper for June 24, 1916.—EDS.]

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.

Car-Lighting Improvements and Costs on the Los Angeles Railway

BY J. L. CLARKE

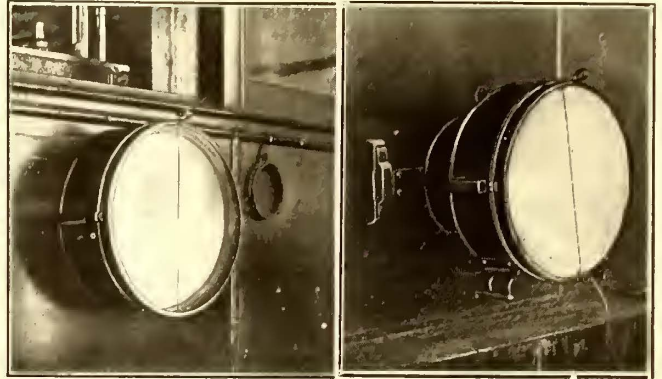
Superintendent of Electrical Repairs, Los Angeles Railway

A study of the cost of Mazda as compared with carbon incandescent lighting on the cars of the Los Angeles Railway has been made for several years, the results of which show a saving on the Mazda over the carbon lamps of \$18 per car-year.

Heretofore the operating and maintenance cost of twenty-five 16-cp. carbon incandescent lamps per car, based on three hours lighting per day, including the maintenance cost of the carbon-arc headlights, has been \$32 per car-year. The headlight, of course, is operated in series with the incandescent lamps.

The cost of changing the lighting circuits for a uniform distribution of nine Mazda 56-watt lamps, and equipping them with safety shade-holding sockets and glass reflector shades, but not including the cost of the Mazda lamps, was \$26, while the cost of changing the arc headlight to the Mazda incandescent style, including the credit on the material scrapped, but not including the cost of the 56-watt Mazda lamp, was \$1. The total, therefore, was \$27.

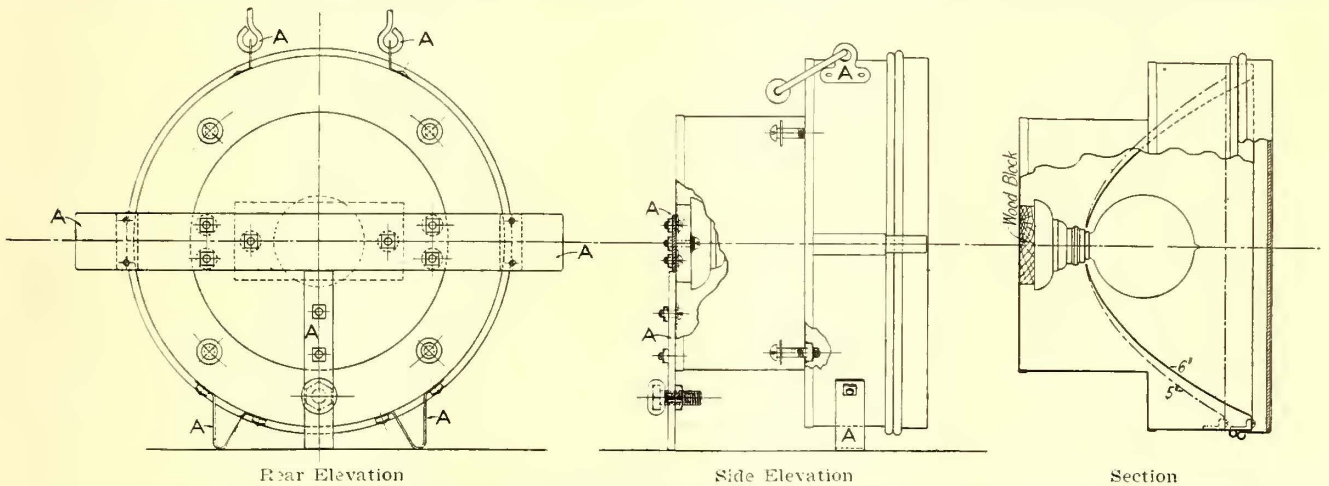
The operating and maintenance cost of the nine 56-watt Mazda lamps and the one 56-watt Mazda headlight, based on three hours lighting per day, is \$14 per car-year. This provides for supplying twenty-four



HEADLIGHT SUPPORT INSERTED IN CAR DASH AND HELD IN PLACE BY SUSPENSION BRACKETS

lamps and step lighting, as we have made no changes in these. In the near future we intend to replace the ten 16-cp. carbon incandescent lamps used for these purposes with 23-watt Mazda lamps, which should result in an additional saving of approximately \$2.50 per car-year.

In changing from the carbon-arc headlights to Mazda headlights, no changes were necessary in the exterior of the case or frame, except to cover the hole formerly required for the ventilating cap. When replacements are necessary on account of badly-damaged headlight frames, they are made as shown in the accompanying



Note.—All parts marked "A" to be removed when headlight is inserted in dash

Headlight arranged for a 5-in. and 6-in. reflector

SECTION, SIDE AND REAR ELEVATION OF HEADLIGHTS ON LOS ANGELES RAILWAY REBUILT AT SMALL COST FOR USE AS EITHER INSERTED OR SUSPENDED TYPE

lamps per year to cover replacement of defective and stolen lamps, and includes 5 per cent replacement of reflector shades and periodical cleaning of the shades. Hence the saving on Mazda over carbon incandescent lighting is \$18 per car-year, which covers the entire cost of new lighting installation expense in eighteen months, and after that time effects a net saving of \$18 per car-year.

The above cost data do not include car-sign illumi-

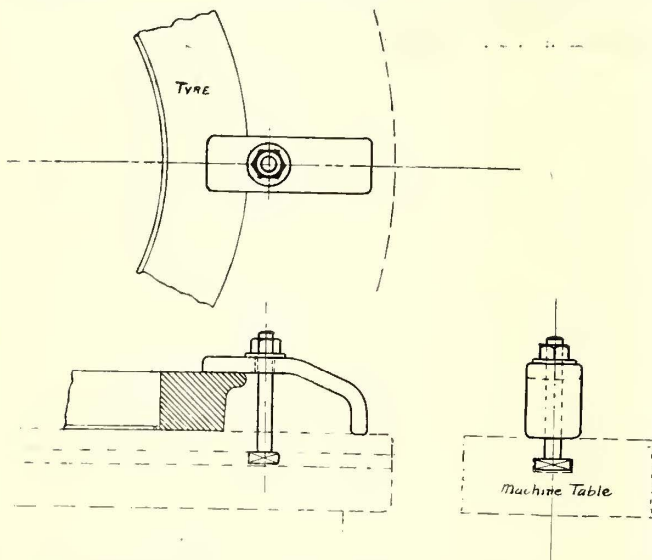
ination so that they may ultimately be recessed or inserted in the car dash whenever it may be decided to use two headlights per car, but in the meantime they can be used with our old method of support at the suspension brackets on the car dash. This new recessed headlight frame, which was suggested some time ago by C. A. Henderson, assistant general manager of the company, costs only 35 cents more than the old one, and is obviously more useful.

Machining Tires

BY "VULCAN"
A.M.I.C.E., A.M.I.E.E., England

The vertical boring mill is now almost universally preferred for boring out the tires for electric tramway cars, and on the larger systems it is generally used. As compared with the wheel lathe, the chief point in its favor is, of course, the ease and saving of time in putting into and removing the tires from the machine. The best plan for holding the work is to have the machine table constructed as a chuck with the four jaws shaped to suit the tread of the tire, and arranged both for universal and independent operation.

By this means tramway tires in large numbers can be turned out at low cost, but on the smaller systems where there is not sufficient work to keep a man solely employed on this work, tire boring is commonly carried out in the wheel lathe. In such cases this method often proves to be the more economical in the end, because only one operator may be needed to deal with the



CLAMPING RIG FOR USE IN MACHINING TIRES IN VERTICAL BORING MILL

whole of the wheel work, *i.e.*, retreading tire and center-boring, etc., and where this obtains there is no justification for installing an expensive vertical boring mill which will stand idle most of the time. If one were installed, the increase in the capital charges would probably be more than the small saving in working costs that its adoption might be expected to effect.

In many shops where the vertical boring mill is used, there are no chuck jaws with the machine, the tires or wheel centers in such cases being attached to the work table by bolts in the tee slots and common straddle clamps. The latter require supporting at the back end, and as it is often thought that any old bit of scrap will suit the purpose, one sometimes sees the required height being made up by the use of two or three packings for each clamp. When a tire is put on or taken from the machine table, it becomes necessary on each occasion to handle a number of separate parts, made up of bolts, straddle clamps and packings, and this results in much waste of time due entirely to the multiplicity of these fittings.

An improvement devised and used by the author for such cases consists in making new clamps of flat bar with a hole in the upper portion, through which the bolt passes that holds the bolt down. The rear ends are bent downward, forming a heel to take the place of the

ordinary packings. The arrangement is shown in the sketch and is self-explanatory. To remove the clamping rig the nut is loosened and the bolt with clamp attached can then be withdrawn from the tee slot. On many repetition jobs on other machines such clamps have been found useful time savers, and by their use the annoyance of lost or misplaced packings is avoided.

Oxy-Acetylene Cutting Practice

BY B. P. LEGARE

Engineer Maintenance of Way and Construction United Railroads of San Francisco

An apparatus which has proved to be a very valuable addition to our engineering equipment is an oxy-acetylene outfit which has been in service for sixteen months. The principal shop work for which this outfit is used is in cutting rails in irregular shapes for built-up frogs, crossings, etc., and in cutting irregular shape steel plates and building up broken cast-iron gear teeth. These are applications where the use of the electric welding outfit is not practicable.

In street work the oxy-acetylene is employed only where the electric welding outfit cannot be used, in work such as building up depressions and cuts in cable tracks where power is not accessible, and where there is cutting of rails or other material. All cutting is done by the oxy-acetylene outfit. There are a great many old cable tracks where the conduits were filled in many years ago and electric rails installed, leaving the yokes under the pavement. These yokes from time to time stick up in places where the pavement has worn down, and it is necessary to have them removed. Instead of sawing them off the oxy-acetylene apparatus is used to cut off the ends.

Where there are electric lines crossing the cable lines, the slot tends to close up on account of expansion in the heavy electric rails. Heretofore it has been necessary first to take out the pavement in order to cut off the rail at the arm of the crossing, and then to shove back the crossing in order to open up the slot. Instead of the above process we now cut a thin strip off one side of the slot rail, as shown in an accompanying illustration. This has been done on a heavy manganese double crossing, making a cut of 46 ft. at a cost of \$19. If the slot had been widened in the usual manner by taking up the crossing and forcing it back into position, the cost would have been approximately \$150 to accomplish the same result. The yokes mentioned above and also the rails were cut off at about



WIDENING CABLE SLOT IN SAN FRANCISCO WITH OXY-ACETYLENE FLAME



CUTTING RAILS IN IRREGULAR SHAPES WITH OXY-ACETYLENE FLAME

one-half what the work would have cost if done in the usual way with hacksaws.

When breaking in an operator at first, we procured the assistance of an expert employed by the sellers of the apparatus. It was necessary to call upon him repeatedly for the first six or eight months, as considerable trouble was experienced with the apparatus such as leaks, dirt in torch and valves, torch getting out of order, etc. At times, the trouble was a serious delay to the work. Now when a new operator is being used in the welding work he is kept continually in close touch with the foreman and expert, and gradually obtains the knowledge necessary to eliminate these difficulties and delays.

Reinforcing Tubular Poles Internally

BY S. L. FOSTER

Chief Electrician United Railroads of San Francisco

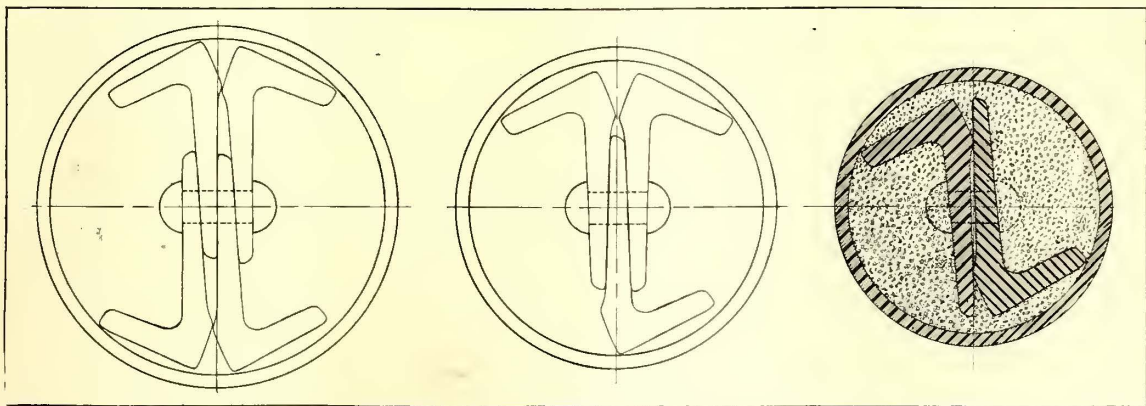
Of the various types of poles, tubular steel ones are generally admitted to be preferable for side-pole trolley work in urban districts. They are equally strong in all directions, are as unobtrusive as possible, can be kept painted cheaply, and are easily repaired when broken, etc. Situations are met with, however, where it is desirable to have greater strength without increasing the

I-beam shape. There is at once, then, presented a problem in higher mathematics to solve, namely, to design an I-beam section of minimum weight and maximum moment of inertia to go inside a given circle. Even that does not settle the matter, for, with a three-section tapering pole, a tapering I-beam is called for which in the present state of the art cannot be produced in a rolling mill except possibly in the shape of an expanded web-beam.

Reinforcing has been done in some cases in a rough and ready way by inserting a piece of old girder or T-rail large enough to fill the lowest section of the pole. An objection to this method is that it increases the strength of the lowest section only, the pole being left unsymmetrically strong and as liable to fail at the first or second joint insertion as before the rail was added. Another way has been to use a rail only large enough to fill the top section of the tubular pole but equal in length to the full length of the pole. This plan is better, but, while increasing the strength of the top section to a reasonable limit, it does not increase that of the other sections proportionally nor as much as was possible and the pole is still unsymmetrically strong.

The United Railroads of San Francisco solved this problem in an unusual way along I-beam lines many years ago. They devised and constructed an economically built beam of moment of inertia larger than that of the pole, made it tapering and used condemned scrap metal for the purpose. By the addition of 151 per cent of metal at an increased cost of 50 per cent a pole is produced whose strength is 126 per cent greater than before without any increase in external diameter or change in external appearance. This result is accomplished by building a beam of 38 lb. per yard slot rail or, more correctly speaking, slot angle steel rejected as practically unsaleable from old cable railway lines that had been rebuilt as electric. The construction in the cuts show how four of these angles are used for the bottom section of the pole, three for the middle and two for the top section. The angles are riveted together and distorted a little by forging at the two steps in the number of shapes corresponding to the joint insertions in the pole. This provides a symmetrically strong pole that has been used as standard for all unusual strains up to 5000 lb. For 10,000 lb. and 15,000 lb. corner feeder-cable strains special box-girder poles are used.

After this built beam is inserted in the pole, the



LOWER, MIDDLE AND TOP SECTIONS OF STANDARD PIPE POLE OF 8-IN. 7-IN. AND 6-IN. DIAMETERS, REINFORCED WITH FOUR, THREE AND TWO SLOT ANGLES RESPECTIVELY

size of the pole or detracting from its slender appearance. Guying or external strengthening not being approved, there is nothing left but increasing the strength by adding the reinforcing inside the pole before it is set.

The ideal design for this internal reinforcing is an

voids between beam and tubular envelope are filled with Portland cement concrete to fix the beam permanently in the pole and to protect all the metal surfaces inside from corrosion.

The result is what is called a "filled" pole that has its

maximum strength along a line through the web of the built beam. The concrete used inside the pole, beside serving to preserve the iron from oxidation, adds strength to the compression side of the "shape" and gives stiffness to the whole.

The standard size of pole so filled locally and used for heavy dead-ends, curve pull-off strains, feeder turns, guy poles, etc., is a 30-ft. 6-in., 7-in., 8-in. standard pipe pole. The moment of inertia of the unfilled pole is 71.98 and of the built beam alone 90.53. Such a pole unfilled is good for about a 1045 lb. pull at a point 24 ft. from the 6-ft. setting with a fiber strain of 18,000 lb. per square inch, or a factor of safety of about three. Filled with the built beam described it is good for a safe load of 2400 lb. (without considering the strength added by the concrete)—an increased strength from the presence of the beam of 126 per cent. One corner pole so filled was unavoidably loaded for some time with feeder cables to 5900 lb. without failure.

The unfilled pole formerly cost, at 3.15 cents per pound, \$26. The beam filling cost in 1916 in place \$13.17, or 51½ per cent additional. To-day such a pole unfilled will cost more nearly 4½ cents per pound, or \$37.

The original pole weighs 825 lb., the beam 1250 lb. and the completed pole with concrete and all, 3100 lb.

This innocent looking 6-in., 7-in., 8-in. filled pole is the sort of a pole that defies wild automobiles and auto-trucks. Heavy runaway, double-truck passenger cars also have so far come out second best after colliding with one of them. Altogether the idea has proved a most excellent one for furthering the construction and maintenance of permanent, sturdy, guyless urban overhead trolley lines. There are several hundred of these in service, and none has ever failed, though many of them have been in continuous service for the past nineteen years at the ferry terminus.

This slot rail-beam idea is also applicable, and has been utilized locally in strengthening several other sizes of tubular poles as, for example, 4-in., 5-in., 6-in. and 5-in., 6-in., 7-in. standard pipe and 6-in., 7-in., 8-in. extra strong pipe in times of shortage of suitable sizes in stock and insufficient time available for delivery from the Eastern factories.

Where cheap slot rail is not procurable from which to construct built beams for such internal reinforcing, another, though much more expensive way of doing this strengthening, would be to construct a three-joint tubular pole of smaller diameters especially designed to fit inside the 6-in., 7-in., 8-in. pole as closely as possible—in this case one of "standard" or "extra strong" 5-in., 6-in., 7-in. pipe—and fill the annular space between the two poles with a mixture of cement and sand.

Such a pole for internal use and made of extra strong pipe (double extra strong would be too large) would weigh 16 per cent less than the slot rail beam, would cost (at 4.5 cents per pound for pole filling only) 359 per cent more than the beam filling in place, and would make the combination pole only 82 per cent as strong as the slot rail beam makes it. It would, however, have the advantage of being equally resistant in whichever direction the strain might be applied, whereas the beam-filled pole has only one line of maximum strength, namely, parallel to the web of the built beam.

The 6-in., 7-in., 8-in. extra strong and the double extra strong pipe poles cost to-day respectively 14 and 63 per cent more than the built beam filled pole and have but 65 and 99.7 per cent as large moment of inertia respectively.

From its uniqueness of design and smallness of cost the United Railroads idea seems to offer the most efficient method of internal reinforcing to date and the

cheapest pole for the heavy unidirectional or resultant pulls to be anticipated. Obviously the composite pole is most resistant when the side by side angles in the middle section are in tension.

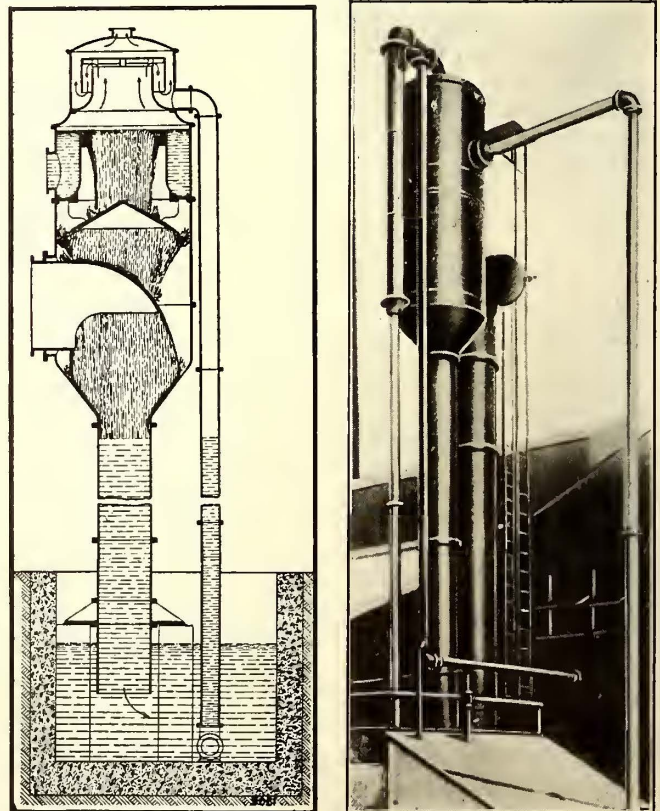
As the coefficients of expansion of cement and iron are nearly the same, and as cement exerts an inhibitive action on the oxidation of iron there has been no tendency for the outer tubular envelop to be strained or ruptured by internal stresses of expansion.

New Type of Barometric Condenser

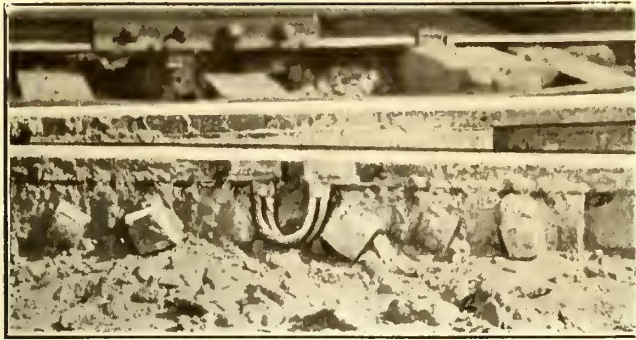
The illustrations shown herewith are of the Beyer barometric condenser which has been placed on the market recently by the Ingersoll-Rand Company.

It is of the counter-current type, in which air and cooling water flow in opposite directions. The steam inlet is at the bottom of the condensing vessel, the water inlet above and the air removal opening at the top. The sheets of cooling water overflowing the pool at the inlet point meet the entering steam. The two are brought into intimate contact by conical baffle plates assisting the water to absorb to its full capacity the latent heat of the steam. The non-condensable air liberated in the condensing action rises through the falling water to the removal point at the top, being cooled to practically the temperature of the incoming water. Ample opportunity is given for the removal of the air content of the water before it mixes with the steam. This not only facilitates the mixing process but permits the removal of air and vapor at a comparatively low temperature, a distinct advantage, as the reduced volume saves in vacuum pumpage horsepower.

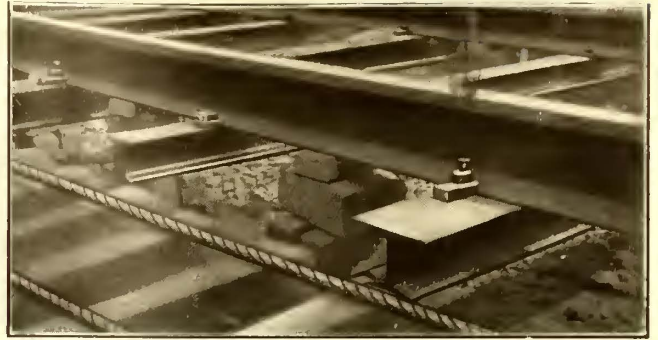
The steam inlet is of large diameter to secure low velocity, and is hooded to discharge the steam into the center of the condensing vessel. The air removal opening is also of ample area and is protected by a self-draining baffle and trap. This, it is said, positively



NEW TYPE OF BAROMETRIC CONDENSER



CONCRETING TRACK—VIEW OF OXY-ACETYLENE WELD BOND



CONCRETING TRACK—TRACK BLOCKED UP FOR CONCRETING

prevents water being carried over into the vacuum pump.

The hot waste water is discharged through the self-draining tail pipe. This pipe straddles the hot well and rigidly supports the condenser.

Concreting Track in Fort Smith, Ark.

Decreased track construction costs and increased efficiency have been obtained by the track department of the Fort Smith Light & Traction Company, Fort Smith, Ark., through the introduction of labor-saving concrete-handling equipment. The particular piece of track construction on which this equipment was used was 3 miles long. This track was built with 6-in., 72-lb. plain girder rails laid on Carnegie steel ties placed at 5-ft. intervals, with inverted sections of 60-lb. standard-section rails spaced at 2 $\frac{1}{2}$ -ft. centers with the Carnegie ties. This structure is supported on a concrete foundation extending 12 in. below the base of the rails, and the track subgrade is drained with 6-in. jointless vitrified tile laid along the track center line. A 60-lb. standard-section rail was removed from the old track and this was cut into tie lengths with an oxy-acetylene cutting torch and drilled for rail clips in the repair shops of the company.

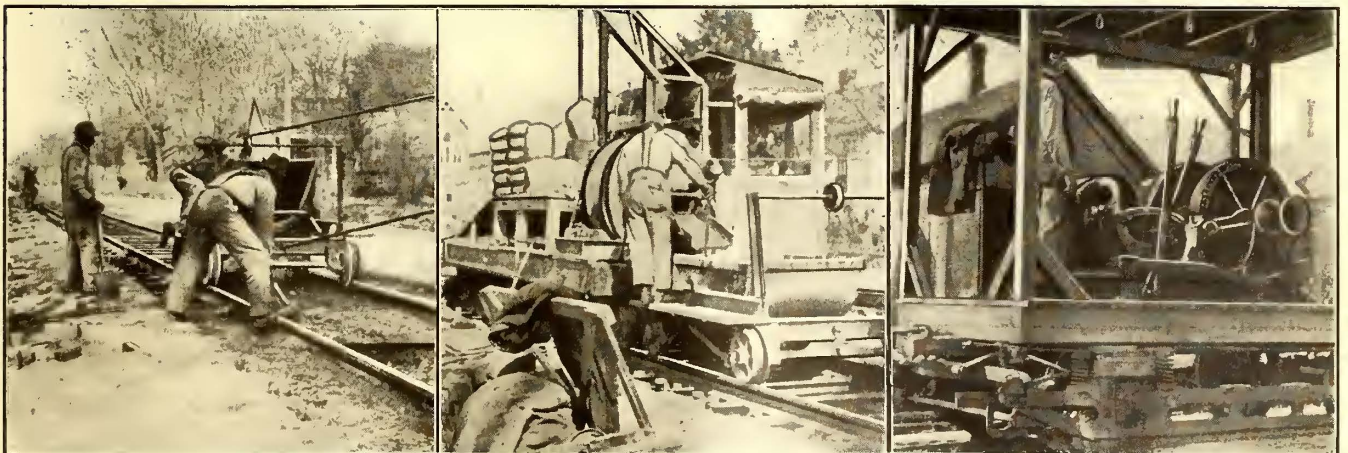
After the track structure was completely assembled it was jacked up to surface, lined and blocked in position on brick piers placed midway between the ties. The manner of blocking is shown in one of the accompanying illustrations. During the assembling of the track structure, concrete material, consisting of sand purchased from a local company and crushed stone obtained from a local quarry and crushed at the railway company's plant, was delivered beside the track trench. The sand was delivered by teams to a single pile at one end of each block. The crushed stone was deliv-

ered on flat cars, from which it was wheeled in wheelbarrows across a short platform to the mixer. The sand was also wheeled to the mixer over a narrow incline leading from the street pavement to a platform on the charging side of the mixer. Cement was delivered to the concrete mixer as it was required and a 1:3:5 mixture was used in the track foundation.

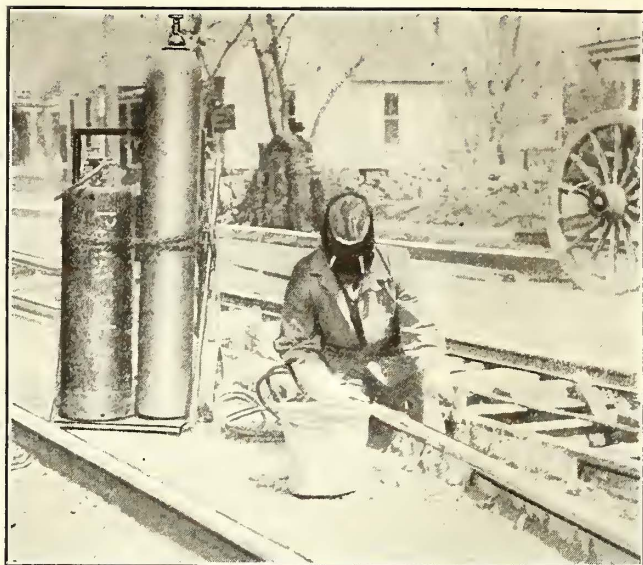
The assembled concrete-mixing outfit is shown in one of the accompanying illustrations. It consists of a Koehring $\frac{1}{2}$ -yd. batch mixer operated by a 15-hp. continuous-current General Electric motor, and a 1-yd. dump car which is moved the length of the block by cable attached to a winch car which is placed at the other end of the block from that occupied by the concrete mixer.

Special features of the concrete-mixing plant are the 1-yd. dump car and the winch car, which moves the dump car back and forth over the track being concreted. The dump car is placed beside the mixer where it is loaded with two $\frac{1}{2}$ -yd. batches. Upon signal to the operator of the winch car at the opposite end of the block the dump car is moved to the point where the concrete is to be deposited in the track. The design of the dump car is unusual in that it consists of a steel frame supporting the steel body, mounted on two pairs of wheels. The concrete is dumped at right angles to the track by the car operator, and the concrete is spread to the level of the tops of the ties by one of the hinged sections of the drop bottom.

The movement of the car along the track is quite rapid, and the round trips between the mixer and the point where the concrete is dumped are practically continuous. As soon as the car reaches the desired spot the operator gives the signal for the return trip and dumps the car simultaneously. In other words, at the time the car is dumped the winch operator reverses the cable and the car is returned to the mixer. In so



CONCRETING TRACK—DUMPING THE CONCRETE; CONCRETE MIXING PLANT; VIEW OF WINCH CAR



CONCRETING TRACK—BONDING RAILS WITH OXY-ACETYLENE

doing the concrete is spread along the center of the track, and the only delay in the operation is that necessary for the car to receive the two batches of mixed concrete. Including the foreman, the full crew necessary with this concrete mixing and placing plant comprises eighteen men. The concrete is distributed by two men and the rest of the crew is engaged in delivering crushed stone, sand and cement to the mixer and the mixer operating crew. An average of 115 cu. yd. of concrete per ten-hour day is the capacity of this plant when it is operated continuously.

After the concrete foundation had set the Ohio Brass Company's oxy-acetylene welded bonds were installed. One of the accompanying illustrations shows the operator in the act of welding one of these bonds. Following this a mortar cushion 1 in. thick and of a 1:9 mixture was spread over the foundation and thereafter a vitrified brick pavement was laid and grout-filled as promptly as possible. Special brick were not employed to form the wheel flangeways, but the brick were laid with a considerable crown between the rails, and the courses adjoining the rail were set under the head.

New Types of Lightning Arresters

The first illustrations shown herewith are of the condenser type of d.c. lightning arrester, designated K-3, which has recently been placed on the market by the Westinghouse Electric & Manufacturing Company. This arrester was designed for use on voltages from 100 to 1500 either in d.c. generating stations or on railway equipment. It is made in two forms, one for car and station service, the other for line mounting.



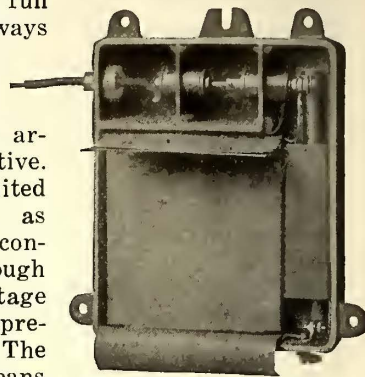
CONDENSER-TYPE LIGHTNING ARRESTER READY FOR MOUNTING

The first consists of a condenser in parallel with a resistor and both in series with a spark gap between line and ground. The second consists of the condenser alone without series gap or shunt resistance. The condenser

is of the flatplate form, but has been modified and improved from the ordinary type by the use of a new insulating wax of much higher dielectric strength than paraffin. For the protection of station apparatus and

railway equipments up to 1500 volts, a condenser of 1 mf. capacity is used, while for line mounting the capacity is only 0.3 mf.

In the first form, the resistance in parallel with the condenser is high, and serves to keep the condenser discharged so that its full capacity may be always available. The spark gap, which is adjustable, can be set very close, thus making the arrester extremely sensitive. It can be even short-circuited without causing harm, as the resistance of the condenser shunt is high enough to stand the line voltage without wasting any appreciable amount of power. The spark gap provides a means of noting the discharge of the arrester by placing a test paper in the gap.



CONDENSER-TYPE LIGHTNING ARRESTER WITH COVER REMOVED

In the line arrester without gap or resistance the condenser is charged up to line voltage, but having no gap is ready to discharge all static formed at any voltage. A resistance is not necessary in this form of arrester.

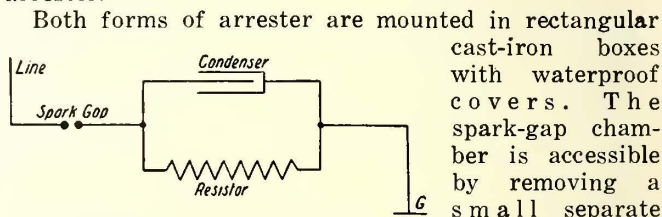


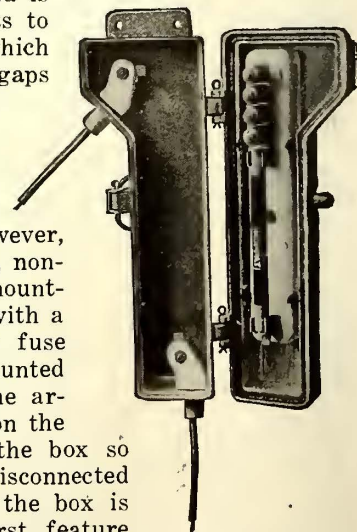
DIAGRAM OF CONDENSER-TYPE LIGHTNING ARRESTER CONNECTIONS

cast-iron boxes with waterproof covers. The spark-gap chamber is accessible by removing a small separate cover. They are easily mounted

underneath or on the roof of a car and in any position on a wall or pole.

Another type of arrester for use on a.c. circuits of any commercial frequency and on voltages from 1000 to 2500 and of a wide range of capacity is the Type CR lightning arrester illustrated herewith. This arrester

is for pole mounting and is similar in many respects to the Type C arrester, which consists of six spark gaps between knurled non-arcing metal cylinders, but which has no resistance in series with the gaps. The new Type CR arrester, however, consists of four knurled, non-arcing metal cylinders mounted on a porcelain base with a series resistor held by fuse clips, the whole being mounted in a cast-iron box. The arrester unit is mounted on the inside front cover of the box so that it is automatically disconnected from the circuit when the box is opened. This safety-first feature eliminates all danger of accidental shocks to linemen when making inspections and repairs. Like the Type C unit, the Type CR arrester is designed particularly for the protection of distributing transformers, and is unlimited in application, the maker points out.



LIGHTNING ARRESTER WITH RESISTOR

NEWS OF ELECTRIC RAILWAYS

CLEVELAND INTERESTS TAKE OVER THE NICKEL PLATE

Electrification Considered Likely, Although Nothing Definite Has Been Announced—Relation of Road to Present Lines Entering the City

O. P. and M. J. Van Sweringen, Cleveland, and their associates who purchased the New York, Chicago & St. Louis (Nickel Plate) Railroad, have made no definite statement regarding the reported electrification of the road, but the election of directors to take the place of the New York Central Railroad representatives on the board would indicate that electric railways in and about Cleveland will be interested in the developments. J. R. Nutt, in addition to his connection with the Citizens Savings & Trust Company, Cleveland, is a member of the board of directors and treasurer of the Northern Ohio Traction & Light Company, which enters Cleveland from the south. E. W. Moore is president of the Lake Shore Electric Railway, which enters Cleveland from the West, and is also vice-president of the Northern Ohio Traction & Light Company. F. E. Myers, Ashland, Ohio, is president of the Cleveland, Southwestern & Columbus Railway, which enters the city from the southwest. The other directors are O. P. Van Sweringen, M. J. Van Sweringen, Warren S. Hayden, M. B. Johnson and Charles L. Bradley, all of Cleveland; E. R. Tinker, vice-president of the Chase National Bank, New York; G. M-P. Murphy, vice-president of the Guaranty Trust Company, New York; William H. Canniff, president of the company, and Chauncey M. Depew.

As stated previously no announcement has been made by those interested as to whether any part of the Nickel Plate road is to be electrified, but rumors have been plentiful. One of them is that the road will be electrified east of Cleveland as far as Painesville and west as far as Lorain, and that it will ultimately carry the interurban cars from both east and west to the terminal station which the Cleveland & Youngstown Railway, also a Van Sweringen proposition, is to construct on Ontario Street, near the Public Square. The Cleveland & Youngstown Railway has already been built on the hill southeast of the main part of the city and through a growing residence district. The Nickel Plate is so situated that it could be utilized to carry cars of the Cleveland & Youngstown Railway to the downtown terminal without the inconvenience of running on any city streets. While the Cleveland & Youngstown Railway has the right to operate by steam power under its charter it is believed that electricity will be used.

The general opinion is that the Van Sweringen interests purchased control of the Nickel Plate primarily to assist them to complete their plans for a terminal in Cleveland. As has already been stated in the *ELECTRIC RAILWAY JOURNAL*, they have a franchise for a freight yard in the valley south of the location for the passenger terminal and it has been their intention to build a system of rapid transit tracks along Kingsbury run, where they own the land, for the purpose of bringing in both steam and electric roads to the freight and passenger terminals. The Erie, the Wheeling & Lake Erie and the Baltimore & Ohio roads could all use these terminals, but whatever is done it is not expected that this will interfere with plans for a new passenger station on the lake front that will be used by the New York Central, Pennsylvania and Big Four roads.

The original plans of bringing the interurban electric railways into the terminal presented some difficult problems so far as those operating east and west were concerned, but the Nickel Plate is in position to bring them in very conveniently and it is felt that this is a part of the general terminal idea. These roads are the Cleveland, Painesville & Eastern and the Cleveland & Eastern on the east and the Lake Shore Electric and the Cleveland, Southwestern & Columbus on the west. The Northern Ohio Traction & Light Company could come in over the Kingsbury run route

from the south. All the roads would have the advantage of making fast time through the city.

The Van Sweringens are operating extensively in real estate on what is known as the heights to the southeast of the city, through which the original rapid transit line runs, although it has not been completed to any downtown point. It is said that these interests will be extended to the Chagrin Valley, where many of Cleveland's wealthy families now reside. This will necessitate the extension of the road to that section, but whether it is the intention of the owners to extend the Cleveland & Youngstown line to Youngstown or any point east of the Van Sweringen real estate holdings is not yet clear.

Efforts made in New York to secure confirmation of the rumor in regard to the electrification of the road were unavailing. At the office of Mr. Murphy in New York his secretary said that Mr. Murphy's election to the board was so recent that he was not prepared to discuss the future of the road at this time. Mr. Tinker, another director, who is connected with the Chase National Bank, said that there was no present authority for the statement that the road would be electrified. The matter of improvements and the future plans had not been definitely decided and any statement in regard to the company would probably be made public through the headquarters in Cleveland.

The announcement of the sale of the road as made in New York on July 8 was as follows:

"The New York Central Railroad Company on July 7 sold all of the stock owned by it in the New York, Chicago & St. Louis Railroad Company to Cleveland interests represented by O. P. and M. J. Van Sweringen for \$8,500,000, of which \$2,000,000 has been paid in cash and \$6,500,000 in notes secured by pledge of the stock.

"Ten notes of \$650,000 each were given. The first note is payable in five years and the others thereafter at intervals of one year each. The notes bear interest at 4 per cent for the first five years and 5 per cent thereafter.

"The board of directors representing the New York Central interests have resigned and the new owners have elected successors representing their interests.

"The Nickel Plate road was organized in 1881 and operation of the road was begun in October of the following year. It was a period of competitive railroad building and at about the same time that the Nickel Plate was started the West Shore was built to parallel the New York Central lines from New York to Buffalo, where it was to connect with the new road to run from Buffalo to Chicago and St. Louis in competition with both the Lake Shore and the 'Big Four.'"

STRIKE RESULTS IN EFFORT TO REMOVE RECEIVER

Frank Bret Thorn and Louis Wiard of the New York State Industrial Commission at Albany, who have been investigating the strike of platform men on the Buffalo Southern Railway have threatened to conduct an official inquiry into the trouble by a court action unless a settlement is reached between representatives of the strikers and Nathan A. Bundy, receiver and general manager.

An action has been brought against Nathan A. Bundy as receiver of the company by Charles M. Gaffney, attorney for Henry C. Lein, West Seneca, and other stockholders in the line, ordering him to show cause why he should not be removed as receiver of the road. The proceedings are brought as a means of ending the strike. At a preliminary hearing before Justice Marcus in the Supreme Court of Erie County, stockholders said the men were willing to return to work without a wage increase but demanded recognition of the union. The stockholders said they had no objection to this. Mr. Bundy said he thought he was acting for the best interests of the majority of the stockholders by refusing to renew the union agreement. Hearings will be held later on the order to show cause.

NEW WAGES PROPOSED AT INDIANAPOLIS

A new wage scale for increasing the pay of motormen and conductors was announced by the Indianapolis Traction & Terminal Company, Indianapolis, Ind., on June 6. The advance figures approximately 8 per cent, and will increase the payroll for the car service men about \$100,000 the first year. The present rate of wages, as established in 1914 by the Public Service Commission of Indiana, acting as an arbitration board, ranges from 21 cents an hour for the first year of service to 27 cents an hour for trainmen in continuous service five years and over. The new scale proposed for motormen and conductors, in continuous service, is as follows: One year or less, 22 cents an hour; one year and less than two years, 24 cents an hour; two years and less than three years, 25 cents; three years and less than four years, 26 cents; four years and less than five years, 27 cents; five years and less than six years, 28 cents; six years and less than seven years, 29 cents; seven years and over, 30 cents.

These rates of pay are to become effective on Jan. 1, 1917, but all car service men signing the individual working agreement of the company are to receive a bonus of 1 cent an hour from July 1 to Nov. 8 (the date of expiration of the present working agreement) and a bonus of the difference between the old rate and the new wage scale from Nov. 8 to Dec. 31, 1916, is to be given. The bonus agreement attached to the new wage scale agreement presented to the employees reads as follows:

"The Indianapolis Traction & Terminal Company will set aside and on Dec. 31, 1916, pay to each conductor and motorman then in its regular service, a bonus of 1 cent for each hour worked to Nov. 8, 1916, and thereafter to Jan. 1, 1917, the difference between the present rate and the new rate, which begins at said date; such payment to be made only to employees who have complied with the conditions prescribed in Sec: (a) below, and to begin as to each employee who has so complied at the time specified in Sec. (b) below.

"(a) A motorman or conductor, to be entitled to such bonus, shall have signed the working agreement, and shall after this time well and truly have opposed and used his influence to oppose any strike or attempt to strike, and, in the event of a strike, have faithfully reported for duty at his usual time and place each day, and operated his car as his superior officer directed.

"(b) For men signing such agreements on or before July 8, 1916, such bonus shall begin to accrue on July 1, 1916, and for those signing after July 8, 1916, and before Aug. 1, 1916, it shall begin to accrue at the date of signing.

"In the case of new employees, entering the service before Jan. 1, 1917, the bonus shall begin to accrue at the date of signing."

Robert I. Todd, president of the Indianapolis Traction & Terminal Company, made the following statement in connection with the new wage scale:

"For more than three months the company has had under discussion with its representative motormen and conductors the question of a new wage scale. These men were signers of the working agreement with car service men, which has now been signed by all except about 100 of the car service employees, and represented the great majority of the men in this class of service. The new scale was proposed by them and we have every reason to believe that it will be favorably received by all those who are parties to the working agreement, and which cannot help but be acceptable to all. Outside of the increase in wages provided for, there are no changes in the working conditions as provided in the individual working agreement with the car service men, which has proved so acceptable to the great majority of the trainmen. Arbitration is fully provided for."

Within a few hours of the announcement of the new schedule, more than one-half of the car service men had signed the individual working contracts, and before July 8 most of the men had accepted the new scale and a continuance of the working agreement. The contract gives the period of the new wage agreement from Jan. 1, 1917, to Dec. 31, 1921.

In commenting editorially on the new wage scale, the Indianapolis *Star* on July 7 contained the following:

"The startling increase in wages announced by the street railway must be regarded as a very important move for the obtainment of settled labor conditions in Indianapolis and indirectly for a noteworthy addition to the prosperity of the whole city.

"The naked truth appears to be that the company has paid something like \$100,000 as an investment for the sake of insuring against a strike; and it is perfectly clear that a street car strike falls nothing short of a public calamity. We are all interested in its prevention.

"Obviously the ratification or rejection of this proffered contract and bonus must now face the ordeal of acceptance by the employees. They will have to balance the vague benefits or losses of the strike weapon against this handsome concession in the interest of peace and steady employment at higher pay.

"Every good citizen must join in the hope that the contract may be speedily ratified. Its importance goes far beyond the immediate circumstances of the case, for it carries an earnest of what wise employers may do in the way of forestalling strikes through fair and even generous terms of wages and working conditions. Riotous agitators sometimes find in greedy employers their most effective allies."

COMMISSIONER MAKES PLEA FOR PORTLAND COMPANY

The Public Service Commission of Oregon has recently completed an exhaustive investigation into the affairs of the Portland Railway, Light & Power Company. Among its studies was an appraisal of the property of the commission. The conclusions reached on this phase of its study were published recently in the *ELECTRIC RAILWAY JOURNAL*. That the efforts which the company is making to meet the requirements of the territory which it serves and the adverse conditions under which it is working are appreciated by the commission is instanced by remarks made by Thomas K. Campbell not speaking formally as a member of the commission, but telling the results of information gained from a three-year study of the situation. Commissioner Campbell is quoted by the *Portland Journal* as follows:

"The Portland Railway, Light & Power Company, if conditions do not change for the better, will be compelled in a short time to come to the Public Service Commission for relief. I hold no brief for the company. I am simply stating conditions as they exist. The company is giving as good or better, service, than any other similar company in the United States.

"You can ride 18 miles for a nickel and the people of Portland have been getting that service for the last year or more, furnished to them at a loss by the company. Jitney competition is costing the company \$1,500 a day, taken from the cream of the company's business. Light and power competition is taking the cream of that classification of the company's service out of the downtown district. Twenty cents out of every dollar of gross revenue earned by the company is paid to the city and county governments for bridge tolls, street improvement assessments and similar charges.

"The city either cannot or will not, regulate the jitney operation, with the result that the cream of the close-in traffic is handled by the jitney, which pays no tolls for bridge or street use, and gives no revenue to the city.

"The result of this is that the company is, and has been operating at a loss, even figured on the basis of valuations allowed by the commission. The outcome will be, in my opinion, that the company will be forced to come to the commission for relief. I do not know whether that will mean a readjustment of transportation charges by the establishment of zone rates, or some other change. That is a question for the future, and a serious one. It would be a serious step to charge more than 5 cents for street car fare from the suburban districts of the city. It would mean a serious depreciation of property values outside the 5-cent zone and great loss to the people who have purchased property in those districts.

"I do not want to hazard a statement of what may come in the future. I am only stating what appears to me to be the facts, from knowledge gained from the investigations that have just been concluded."

COST OF DUAL SYSTEM IN NEW YORK WILL EXCEED ESTIMATES

The Public Service Commission for the First District of New York has sent to the Mayor and the Board of Estimate of New York City a report prepared by Commissioner Whitney and Chief of Rapid Transit Harkness, which shows that the total cost of city-owned lines in the dual system will exceed by some \$22,000,000 the cost as estimated in March, 1913, when the dual system contracts were signed. The appropriations made in March, 1913, indicated a total cost of municipal lines to be operated by the Interborough at \$101,602,000, to which the company was to contribute \$58,000,000. The estimates as of March 1, 1916, however, put the total cost at \$125,902,000, of which more than \$10,271,000 is estimated. It is pointed out, however, that the actual construction work is \$1,309,000 less than the original estimate and it is expected that the resale of surplus property will show a balance in favor of the city of over \$500,000. The interest charges, however, have run way ahead of the original estimates partly because interest was not estimated for the full period and because work could not be completed in the time anticipated. The excess will amount to some \$6,250,000. The additional amount required for the Interborough Rapid Transit Company municipal lines will be in the neighborhood of \$4,350,000.

In the case of contract No. 4 for the Brooklyn Rapid Transit system, the total cost of municipal lines was put at \$114,002,000, of which the company was to contribute only \$13,500,000. The construction cost for these lines will probably exceed the estimated cost by \$8,298,000 and the item of excess interest will be \$4,109,000 and excess real estate cost \$5,128,000. It is pointed out in the report that the excess cost is due largely to the increased prices of material and labor since the European war.

Including the amount to be expended while third-tracking the Second, Third and Ninth Avenue lines and building certain extensions, the Interborough Rapid Transit Company was to expend some \$47,000,000 and a similar amount was to be supplied by the Brooklyn Rapid Transit Company, making a grand total, as estimated in March, 1913, of some \$330,000,000. It is said now that if the Interborough Rapid Transit Company and Brooklyn Rapid Transit Company have kept within their original estimates for company-owned lines, the grand total of the cost of the dual system will still be in excess \$350,000,000.

HEARINGS ON PROPOSED NORFOLK FRANCHISE

The Councils of Norfolk, Va., met on July 6 as a committee of the whole to consider the proposed franchise to the Virginia Railway & Power Company. Several persons spoke in opposition to the franchises as they now stand. The principal objections were to the abrogation of the 2½-cent labor tickets, the fact that tickets are not to be sold on the cars for three years, the placing of electric lighting rates in the franchise, the clause limiting the operation of another company over the tracks of this company to 500 yards, the clause providing for conditions under which extensions of track into new territory should be made and the provisions allowing the city to receive taxes on total gross earnings, both in the county and the city. It was also urged that a provision be inserted in the franchise to regulate the issuance of securities. The question of a reduction in gas rates is also involved, and the committee appointed some time ago to go into this matter will meet some time next week. The paragraph regarding extensions of track, to which objection is made, is in substance as follows:

"That the parties desiring such extension of lines shall guarantee that the earnings thereof shall be sufficient to pay the operating expenses through the term of the franchise under which it is built and shall agree to pay to the company annually the difference between the revenue and the operating expenses, if said extension does not earn its expenses. It is further provided that in the event it shall be necessary to construct a bridge or viaduct or to make a fill or cut in excess of 3 ft. in depth, the parties desiring the extension shall agree to guarantee the operating expenses and the interest at the rate of 6 per cent on the cost of such bridge, viaduct, fill or cut. The parties desiring

the extension are required to execute a bond to make good their guarantee."

A resolution was finally passed appropriating \$2,500 with which to employ an expert to advise Councils on all matters involved in the franchises.

POWER AND NEW CAR QUESTIONS CONSIDERED AT CLEVELAND

At a meeting of the Council committee on street railways at Cleveland on July 10, Commissioner of Light and Heat Davis urged that the municipal electric plant be extended sufficiently to furnish the additional power needed by the Cleveland Electric Railway. J. J. Stanley, president of the railway, and the engineers of the company expressed the opinion that it would be more economical to spend \$250,000 for enlarging the company's Cedar Avenue power plant. Mr. Davis had estimated that it would require an expenditure of \$1,750,000 to enlarge the municipal plant to take care of this business. He insisted that the city be allowed to quote a rate to the company based upon the switchboard cost. Mr. Stanley said the additional power would be needed within six months and it will be impossible to make the necessary addition to the municipal plant within that time.

The committee authorized the purchase of fifty additional trail cars. Half of them will be made in the railway's own shops and the others are to be made by a private company. They will cost about \$3,000 each. Mayor Harry L. Davis suggested that the company make all of its own cars, but Engineer Joseph Alexander stated that the capacity of the shops was not sufficient to make deliveries in time, as the cars were needed at once.

At a conference on the East Cleveland franchise matter on July 5, A. L. Graham, director of public service of that suburb, demanded three-minute service to Windermere and six-minute service to points beyond on both Euclid and Hayden Avenues. President Stanley agreed with him, but Street Railway Commissioner Sanders said that four- and eight-minute service, the same as at present, would be the best that could be done. It is improbable that East Cleveland will agree to a 5-cent fare without an improvement in the service.

QUEENS LINES TO OPEN IN DECEMBER

Dec. 15 next has been set by the Public Service Commission for the First District of New York as the probable date for the opening of the new Queens rapid transit lines, consisting of two elevated routes to be jointly operated by the Interborough Rapid Transit Company and the New York Municipal Railway Corporation. One line terminates at Ditmars Avenue, Astoria, and the other at Alburts Avenue in Corona. They will furnish rapid transit service to the whole northern section of Queens Borough. The decision to open the Queens lines on Dec. 15 was made at a conference held on July 5 at the offices of the commission, and attended by members of the commission, Mayor Mitchel and members of the transit committee of the Board of Estimate and Apportionment, and officers and other representatives of the Chamber of Commerce of the Borough of Queens. Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, was one of the conferees. It was also agreed at the conference that it may be possible to open the extension of the Queensboro subway from the Hunter's Point Avenue station, its present eastern terminus, through to the Queensboro Bridge Plaza station by Nov. 1 next. It was also stated that the connection between the Queensboro subway and the Grand Central station will be ready for use by the end of August. This latter fact means that the walk of some 900 ft. now necessary between the Grand Central subway station at Forty-second Street and Park Avenue and the present western terminus of the Queensboro subway between Lexington and Third Avenues on Forty-second Street will be obviated. It was pointed out at the conference that it might have been possible to open the Queens lines this fall except for the delays arising through the difficulty of obtaining various materials both for construction and equipment. These delays have largely been due to the freight embargo and shipping difficulties caused by the European war.

Strike Declared in El Paso.—The trainmen in the employ of the El Paso (Tex.) Electric Railway, which operates in El Paso and in Juarez, Tex., went on strike on June 29. The men are demanding higher wages, with shorter hours and other changes in conditions under which they work.

Strike in Portland.—Conductors, motormen and linemen to the number of 350 employed by the Cumberland County Power & Light Company, Portland, Me., went on strike on July 12. The strike was precipitated by the company ignoring a written demand for the reinstatement of men who had been discharged for cause.

Companies Must Pay for Ludlow Viaduct, Cincinnati.—The Court of Appeals at Cincinnati, Ohio, has affirmed the decisions of the lower courts to the effect that the Cincinnati Traction Company and the Cincinnati Street Railway must pay to the city of Cincinnati \$61,220 as their portion of the cost of the Ludlow Avenue viaduct.

United Railroads' Injunction Hearing Postponed.—The hearing on the application of the United Railroads for a permanent injunction to prevent the city of San Francisco from laying car tracks of the municipal line on Market Street at Van Ness Avenue has been postponed, and it is expected that either Aug. 15 or Aug. 22 will be set by Judge Van Fleet as the date of the hearing.

Progress of Trenton Arbitration.—Clifton Reeves, the third arbitrator selected by the Trenton & Mercer County Traction Corporation, Trenton, N. J., and the union of employees, has announced that all cases of the men discharged by the company for alleged sniping of fares will be settled within a few days and that he will publicly announce the decision. On July 12 it was said that nearly all of the testimony was in and that only a few details were to be completed before the result is known.

Electrification of Short Pennsylvania Line Reported Proposed.—The Quakertown & Delaware River Railroad, running from Quakertown to Riegelsville and passing through the towns of Springtown, Richlandtown, Pleasant Valley, Durham, Durham Furnace, Wittee, Passer and Pullen, Pa., for a distance of 15 miles, has been sold at auction to John M. Buckland, Allentown. The railroad has a 60-ft. right-of-way all along its route. Gasoline cars have been in use on the road, but it is reported that the line will now be electrified.

Auto Companies Protest Against Proposed Railways.—Protests were heard on July 11 by the Pennsylvania Public Service Commission against the incorporation of the Womelsdorf, Richland & Myerstown Street Railway and the Newmantown & Sheridan Street Railway, which seek to operate in Berks and Lebanon Counties in territory covered by certain auto bus companies. The auto companies allege that the granting of the franchises will injure their business and fail to improve public service in the territory named.

West Virginia Company to Purchase Power.—The Charleston (W. Va.) Interurban Railroad has closed a contract under which the Virginian Power Company will furnish it power for a period of ten years, amounting to about 15,000 kw.-hr. per day. This will add a load of about 1000 kw. at the Virginian Power Company's central station at Cabin Creek Junction, W. Va. The railway operates 38 miles of line, including interurban lines to St. Albans and Cabin Creek Junction, where the power company's plant is located.

Toledo Franchise Plan Nearly Completed.—Henry L. Doherty was asked the latter part of the week ended July 8 to meet with Mayor Milroy's committee on July 12 and 13 to consider the final details of the community plan. Three plans have been prepared so far by Judge Ralph D. Emery in collaboration with Chairman Johnsson Thurston of the committee, Secretary E. P. Usher and Mr. Doherty. At a meeting on July 7 these plans were discussed by the full committee and it was then believed that matters were in such shape that the final detail could be taken up during the week ended July 15.

40,000 Men in Atlanta Preparedness Parade.—Practically every man that the Georgia Railway & Power Company, Atlanta, Ga., could spare marched in the preparedness parade at Atlanta on July 4. In all about 1000 men from the company participated. Technical societies of Atlanta

composed one section of the parade with more than 200 men participating, including electrical, chemical, civil and architectural engineers. More than 100 employees of electrical dealers and contractors also took part. The number in the Atlanta parade approximated 40,000. It is said to have been the largest preparedness parade in the South.

United Railroads Offers \$5,000 Reward for Dynamiters.—Jesse W. Lilienthal, president of the United Railroads, San Francisco, Cal., has announced that a reward of \$5,000 will be paid for information leading to the arrest and conviction of the person who dynamited two towers on the line which brings power to San Francisco for operating the United Railroads. About two weeks ago two towers on the Sierra & San Francisco transmission line which traverses San Mateo County were dynamited during the night. The damage was promptly discovered and the steam auxiliary stand-by station in San Francisco was started up in time to prevent any interruption to service in San Francisco.

Philadelphia Transit Appropriation Bills Signed.—Mayor Smith of Philadelphia, Pa., has signed the loan appropriation ordinances for the rapid transit subway and elevated roads and also the ordinances for the letting of contracts for building the new transportation facilities. The Mayor said that work on the Broad Street subway and the Frankford elevated will be continued, but that there might be some delay in beginning work on any other section of the system. A conference of the representatives of the city on the board of directors of the Philadelphia Rapid Transit Company and of the officers of the company will be called to discuss further the negotiations for the leasing by that company of the new lines as they are constructed.

Reasons for Non-Construction Discussed in Seattle.—To discuss ways and means of effectively breaking the existing deadlock between the city of Seattle, Wash., and the Puget Sound Traction, Light & Power Company over the issue of construction of new lines in districts where additional trackage is needed, a general city meeting was called for July 17 by all civic improvement clubs of the city. A. W. Leonard, president of the Puget Sound Traction, Light & Power Company, has offered committees from the various civic improvement clubs free access to the corporation's records to prove that the earnings of the company are unremunerative under the unregulated jitney transportation, and that the earnings do not warrant further expenditure of capital. The company has placed before the committees the flat issue of more street car lines under regulation of jitney traffic, or a continuance of the no-building policy of the company under the present unrestricted and unregulated operation of competing jitney lines.

PROGRAMS OF ASSOCIATION MEETINGS

New England Street Railway Club

The outing committee of the New England Street Railway Club decided to hold the annual ladies' day at Lake Pearl, Wrentham, Mass., one of the most beautiful spots in New England, on July 14. The park covers 25 acres of splendid pine groves, hills and valleys and borders a lake 2 miles in length with picturesque bays and inlets, and dotted with wooded islands. Every opportunity was presented for one of the most satisfactory outings in the history of the club.

Railway Signal Association

This year's meeting, the twentieth of the Railway Signal Association and the eleventh of the Signal Appliance Association, will be held at the Grand Hotel, Mackinac Island, Mich., on Sept. 12, 13 and 14. Hotel reservations may be made to C. C. Rosenberg, secretary Railway Signal Association, Bethlehem, Pa. There will be no official exhibit, but if any manufacturer wishes to show some device in his room or other place the committee will aid him as much as possible. The arrangement committee has provided for a special train from New York, over the New York Central and the Michigan Central Railroad, to Mackinaw City, and a special train from Chicago, over the Michigan Central and Grand Rapids & Indiana Railroad, to Mackinaw City.

Financial and Corporate

ANNUAL REPORT

Portland Railway, Light & Power Company

The comparative income statement of the Portland Railway, Light & Power Company, Portland, Ore., for the calendar years 1914 and 1915 follows:

	1915		1914	
	Amount	Per cent	Amount	Per cent
Gross earnings.....	\$5,511,345	100.00	\$6,273,171	100.00
Operating expenses..	2,542,278	46.13	2,695,356	42.97
Net earnings.....	\$2,969,067	53.87	\$3,577,815	57.03
Taxes	\$531,351	9.64	\$568,527	9.07
Bridge rentals.....	47,752	0.87	45,198	0.71
Interest	2,160,603	39.20	2,127,480	33.91
Total fixed charges	\$2,739,706	48.71	\$2,741,205	43.69
Surplus	\$229,361	4.16	\$836,610	13.34

During 1915 the gross earnings of the company showed a decrease of \$761,826 or 12.1 per cent as compared to the 1914 results. The operating expenses, however, dropped off only \$153,078 or 5.7 per cent, so that the net earnings decreased \$608,748 or 17 per cent. The tax payments showed a decrease of \$37,176 or 6.5 per cent, but this was almost offset by increases of \$2,554 or 5.07 per cent in bridge rentals and \$33,123 or 1.5 per cent in interest charges. The net income, therefore, suffered a loss of \$607,249 or 72.6 per cent.

The showing noted above was indicative of the distressing conditions under which the property was operated during the year. These conditions in the order of their importance were as follows: (a) General business depression prevailing in Oregon and Washington, especially acute in the western half of these States, covering the territory in which the company operates. (b) Unlicensed and unregulated jitney competition beginning immediately after Jan. 1, 1915, and continuing throughout the year without restrictions or regulation of any kind. (c) Continued electric light and power competition from the Northwestern Electric Company.

The general depression in business in the Pacific Northwest was more pronounced during almost the entire year than in any other portion of the United States, this condition being strikingly in contrast with the sharp renewal of activity in the Eastern and Middle States. The lumber business suffered not only from lack of business due to small demands of railroads and to decreased building activity, but also from the inability of mills to secure ocean tonnage for coastwise or foreign shipment, owing to the withdrawal of ships from the Pacific to meet more urgent demands elsewhere. Since Jan. 1, however, demands from railroads for ties and car-building lumber have been received freely, and lumber orders and inquiries from the interior and California points have also steadily increased. The improving conditions in lumber will directly benefit the company through increased freight tonnage on its interurban lines and through the general business improvement naturally following a revival of this chief industry.

The effects of the jitney competition are shown by the decrease in gross earnings of the railway department of \$492,000, and the net earnings of \$419,000, a very large part of which was due to the jiteys. The number of passengers carried in 1915 was 78,704,913 as compared with 89,934,644 in 1914. Commencing with Feb. 1, 1916, jiteys were required to secure licenses from the city, but the enforcement of the ordinance up to date has not materially reduced the number of jiteys. There has been, however, a reduction of approximately 25 per cent in their number since November, 1915, which is attributed to lack of patronage, possibility of securing other employment and a gradual realization on the part of the jitney drivers that the business is unprofitable even without effective regulation.

During January and the first week of February, 1916, Portland suffered from a succession of snow and sleet

storms and floods, which seriously affected the earnings of the company, and added greatly to the operating expenses. Since Feb. 8, however, there has been a steady improvement in street railway earnings, averaging about 6 per cent above the previous year, and it is believed that the stockholders may reasonably expect each of the following months of 1916 to show increases of street railway earnings over the corresponding months of 1915.

In the light and power department the competition of the Northwestern Electric Company continued throughout the year at somewhat lower rates. The loss in gross earnings from light and power business was due entirely to this competition, but attention may be called to the fact that the decrease amounted to \$229,500 in the first six months of 1915 as compared to 1914, and to only \$21,500 during the last six months of 1915. In November and December, 1915, there were small increases in gross earnings as compared to 1914.

The capital expenditures for 1915 were the smallest in the history of the company. Aside from the payment of \$8,500 for railway rights-of-way on the river line, settlement for which had been held up for several years, expenditures were confined to construction necessary to serve new customers and to betterment work required by city ordinances. Expenditures chargeable to property accounts during the year totaled \$212,371, divided as follows: Railway extensions and improvements, \$65,046; power plants, substations, etc., \$21,995; customers' installations, \$72,740; gas generating plant, \$6,573; real estate and buildings, \$45,543, and miscellaneous, \$471. There were no additions to rolling stock. Railway trackage was slightly increased, the mileage owned and operated now being 299.2 on a single-track basis. In addition the company operates 11.8 miles of track owned by other interests.

NEW COMPANY INCORPORATED CONSOLIDATING STRICKLAND LINES

The charter of the Texas Electric Railway, with a capital stock of \$10,500,000, has been filed with the Secretary of State of Texas. The Texas Electric Railway consolidates under one head the Texas Traction Company, with an authorized capital stock of \$3,000,000, and the Southern Traction Company, with an authorized capital stock of \$7,500,000. Stock to the amount of \$10,000,000 had previously been issued by the companies.

The Texas Electric Railway takes over the lines of the companies mentioned, from Denison in Ellis County, through Sherman in Grayson County, McKinney in Collin County, Dallas in Dallas County, southeasterly to Ferris in Ellis County, Corsicana in Navarro County, southwesterly to Lancaster in Dallas County, Waxahachie in Ellis County, Hillsboro in Hill County and Waco in McLennan County. It further provides for the construction of such lines as necessary to connect the route from Dallas to Waco with the lines from Dallas to Corsicana. Extensions provided for are from Waco, in McLennan County, to Houston in Harris County, and from Waco to San Antonio in Bexar County through Austin, the State capitol. The company will also operate the local lines in McKinney, Bonham, Paris, Denison, Sherman, Waxahachie, Corsicana and Waco.

The new stock consists of 105,000 shares at \$100 each. Fifteen thousand shares are first preferred, 30,000 are second preferred and 60,000 are common stock. It is stipulated in the charter that first preferred stock shall bear 7 per cent yearly dividends as a maximum allowance. The dividends are cumulative. Similarly, second preferred stock will bear a 7 per cent maximum dividend. First and second preferred stocks are subject to redemption at the option of the company upon any dividend date at 115 per cent of par plus any dividend accruing at that date. In case of dissolution the first preferred is paid par value plus apportionment of dividends, and then second preferred is paid par value plus dividend if any, and the balance is apportioned among the holders of the common stock.

There are twenty-one directors in the company: J. F. Strickland, A. A. Jackson, R. B. Stichter, Osce Goodwin, and H. B. Templeton, Dallas; George W. Bowman, Plano; W. R. Brentz and C. B. Dorchester, Sherman; J. L. Lovejoy, McKinney; S. D. Moore, Van Alstyne; W. B. Munson, Denison; R. L. Waddell, McKinney; W. W. Batchler, Ferris; F. L.

Drane, Corsicana; W. D. Lacy, W. J. Neale and W. W. Sealey, Waco; J. L. Penn, Waxahachie; A. L. Smith, Hillsboro, and S. N. Powell, New York.

A meeting of the directors and stockholders of the Southern Traction Company and the Texas Traction Company has been called for July 18 in Dallas, when the merger will be formally and finally ratified.

REPORT TO MEXICO BONDHOLDERS

Review of Report of Messrs. Phippen and Trowbridge, Who Visited Mexican Properties

Copies of the report of F. H. Phippen, Toronto, Ont., and E. D. Trowbridge, Detroit, Mich., to the National Trust Company, Ltd., London, England, trustee for the holders of the bonds of the Mexico Tramways, Mexican Light & Power Company, Ltd., Mexican Electric Light Company, Ltd., and the Pachuta Light & Power Company have been received in the United States. Messrs. Phippen and Trowbridge visited Mexico recently in the interest of the bondholders of the company at the request of the trust company. On their return they made a report on the properties, with important recommendations. As a result a joint meeting of the holders of the bonds of the companies previously mentioned was called to be held in London on July 14 to consider and decide upon the policy to be adopted for the protection of the interests of the bondholders until conditions in Mexico improve. The enterprises covered by the report are commonly known as the Pearson Mexican electrical enterprises. They are all inter-related, and in a large measure are interdependent.

After a review of early history the report says:

"The business continued in a flourishing state until 1913, when it was somewhat affected by a fall in exchange rates due to the disturbed political conditions of the country. In 1914 there was a further collapse in exchange, which badly affected the company's finances and since then the history of the business has been involved in the general turmoil.

"Following a strike in September, 1914, the tramways were seized by the Mexican Government. Since seizure the tramways system has been operated by the factions from time to time in power. The authorities have had three acting managers of the system. Under the first two much of the rolling stock went out of commission through neglect in making repairs, but of late there has been considerable improvement in this respect, not only in keeping up the rolling stock used but also in repairing stock which had been placed out of condition. Recently, moreover, considerable track repair work has been done.

"In August, 1915, the military authorities operating the tramways made an increase in fares amounting to about 60 per cent of the concession tariffs. This increase afforded some surplus above payrolls and ordinary working expenses (power excluded). The surplus has been largely applied to repairs of cars and tracks. The minimum under the increased tariffs was 10 centavos, which—at the time the tariff was put in effect—was equivalent to 0.6 of 1 cent gold or 0.3 of 1d. Due to the fall in exchange, however, this minimum fare, which covers practically all the purely urban traffic, had fallen, at the time we left Mexico City, to the equivalent of 0.2 of 1 cent gold, or 0.1 of 1d.

"While it would appear ridiculous to attempt the operation of tramways on any such fares, it must be remembered that payrolls are on a correspondingly low scale. The average pay of 3000 employees—motormen, conductors, etc.—is at present 3.30 pesos (6.6 cents gold) a day. Another vital factor in the low relative operating cost is the frightful overcrowding of cars. This is best shown by the fact that the income from passenger service in December, 1913, was 567,000 pesos, with 233 cars operated. Assuming that the average fare had been increased 60 per cent, the revenue would in the same month have been 907,000 pesos. It was in fact 828,000 pesos with 111 cars operated. In other words more than 90 per cent of the normal fares were collected, with less than one-half of the number of cars operated.

"Since September, 1914, nothing has been paid for power. The Mexican Light & Power Company's contract to supply power is on a gold basis. Without doubt, the Mexican Light & Power Company was fully justified in supplying this power without receiving present payment. Insistence on payment would have suspended the tramway service. This

would have meant demoralization of working conditions in Mexico City and might possibly have resulted in the Government taking over and operating the power plant as it did the tramways. Besides there was no other available market for the power."

In regard to general conditions the report says in part:

"When we left Toronto we were of the opinion that great damage had been done to the physical properties of the companies, particularly to those of the tramways. We were pleased to find, however, that these reports were much exaggerated. The most serious part of the situation, so far as the companies are concerned, is the fall which has taken place in the value of the peso. In the normal times a peso was approximately worth an ounce of silver or 50 cents. As a peso was 100 centavos this value was usually spoken of as a 2 to 1 basis. At the time we visited Mexico the value of the peso had depreciated so that \$1 would buy 27 pesos. When we left Mexico three weeks later, it had further depreciated until more than 50 pesos could be obtained in exchange for one American dollar. As the principal part of the companies' supplies must be purchased on a gold basis, the result has been disastrous to their enterprises. Naturally, it has been impossible to advance wages so as to take care of the decreasing value of the currency. The prices of commodities have gone up almost to a gold basis. This has resulted in a disorganized condition of affairs and has been disastrous to net earnings.

"In spite of the conditions which have prevailed, the legal status of the companies has not been affected. The obligations imposed by the concessions have been carried out, all taxes have been duly paid, and as a whole the record in this respect is clear. It appears reasonably certain, however, that the Mexican peso will not for many years go back to anything like its former value. If this assumption be correct, it may become essential to negotiate modifications of the various concessions. At the moment, however, it is obviously unwise to attempt anything of this kind."

As explained before, the lines and other property of the Mexico Tramways were seized in 1914, and have since been operated by the military authorities of the Federal District. On different occasions the Mexican authorities demanded that the company appoint a representative to take back its property. Part of the mission of the representatives of the bondholders was to meet the authorities and ascertain what terms and guarantees could be negotiated, protecting the company, if the property was accepted. On their arrival in Mexico City Messrs. Phippen and Trowbridge notified General Pablo Gonzalez, the Military Governor of the Federal District, that they were prepared to discuss matters with the authorities. In regard to their conference with Messrs. Sarabia and Fuentes, the appointees of the government, Messrs. Phippen and Trowbridge say in part:

"We made it clear that in taking back the property several essential points should be settled. The first and most important was that the return must be made under conditions which would permit the company to operate without any violation of the conditions imposed by its concessions. As the minimum rate of fare in the concessions is 6 centavos, the charging of a 10-centavo fare (established last August by the Government authorities) would be in excess of the legal rate. Moreover, we pointed out, it was quite apparent that even the 10-centavo rate would be insufficient, partly because of the fall in exchange and partly because of the need of some considerable surplus with which to buy necessary materials for repairs. Furthermore, inasmuch as a considerable part of the rolling stock was not serviceable (due to lack of materials for repairs), it was clear that it would be impossible for the company to furnish a full service at once. We urged that it would be necessary:

"1. To raise the fare sufficiently to enable the company to increase the wages of its employees, to pay for necessary equipment and track repairs, to place the property in normal condition, to pay the interest on the underlying securities, and to pay a portion at least of its bill for power.

"2. To accept the property on the condition that the proper Government authorities would give the company a waiver against any violation of the franchise or concession terms as to rates of fare, etc., and a further agreement that the company would not be held responsible for any deficiency or service until normal conditions were restored.

"3. To provide that nothing done under the agreement should in any way affect the company's concession rights.

"4. To provide for the return of all surplus moneys resulting from operation which the Government authorities might have on hand at the time of the return.

"5. To reserve to the company all of its rights for indemnity, whether due to destruction of property or to losses in earnings or otherwise due to faulty administration by the Government or to the forced acceptance of worthless paper currency issued by previous administrations."

The commission seemed disposed to treat the whole question in a fair spirit, and as the result of several conferences the points were agreed to with several exceptions.

In conclusion Messrs. Phippen and Trowbridge say:

"The net result of the negotiations as to the return of the tramway properties is therefore, briefly, that general bases for such return can be continued by the company at any time; that on the whole very friendly relations have been established with the Government authorities, and that for the moment the tramway properties continue to be operated by the military authorities, a condition which, in view of all existing circumstances, we consider at present safer and better for the property."

APRIL EARNINGS KEEP UP

Comparison of Electric Railway Returns Indicates Improvement in Gross and Net Over 1914 Results

A comparison of electric railway statistics for April, 1916, with figures for the corresponding month of 1915, made by the information bureau of the American Electric Railway Association, indicates a considerable improvement in the electric railway business in the United States. Returns for April, representing 5,536.38 miles of line of companies scattered throughout the country, show an increase in operating revenue of 10.36 per cent, in operating expenses of 6.49 per cent, and in net earnings of 17.01 per cent, while returns representing 3,877.07 miles of line indicate an increase in taxes of 6.53 per cent and in operating income of 16.79 per cent.

Of the three groups shown in the accompanying table the Eastern, represented by 2,996.91 miles of line, or about 50 per cent of the total mileage, shows an increase in operating revenue of 14.26 per cent, in operating expenses of 9.98 per cent and in net earnings of 20.62 per cent. Returns representing 58 per cent of the mileage show an increase of 4.42 per cent in the amount of taxes paid and of 21.47 per cent in operating income.

The Southern group, represented by 409.07 miles of line, had an increase in operating revenue of 15.67 per cent, in operating expenses of 4.93 per cent, and in net earnings of 39.54 per cent. Returns for about 60 per cent of this mileage show a very slight decrease in operating expenses, an increase in the amount of taxes paid of 7.07 per cent, and an increase in net income of 49.22 per cent. It must be borne in mind in this connection that the apparent large increase in net earnings and operating income is but a percentage one and does not exceed \$40,000 in the first case and about \$20,000 in the second. This is probably due to the small number of miles represented and is partly borne out by a comparison with similar figures for March.

Data for the Western group, represented by 2,130.40 miles of line, or about 38 per cent of the total mileage, indicate an increase in operating revenue of 4.88 per cent, in operating expenses of 2.68 per cent, and in net earnings of 9.38 per cent. Returns representing 90 per cent of this mileage show an increase in the amount of taxes paid of 8.10 per cent and in operating income of 10.81 per cent. The large percentage increase in the operating income of all three groups is probably not due so much to the improved business conditions of the current year as to the poor conditions of the past year and a comparison with figures for 1914, which are not available, might show poorer results.

All districts had a decrease in the operating ratio, that for the United States as a whole decreasing from 63.22 in 1915 to 61.01 in 1916. Of the three districts the Eastern had the lowest operating ratio and the Western the highest. In general the returns show almost no improvement over the preceding month and but slight improvement over the three months ended March 31, 1916, though, of course, they

are not strictly comparable because of the difference in the miles of line represented.

REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR APRIL, 1916

	Companies Not Reporting Taxes		Companies Reporting Taxes	
	Amount	Per Cent Increase	Amount	Per Cent Increase
<i>United States*</i>				
Operating revenues....	\$10,275,046	10.36	\$7,004,145	8.88
Operating expenses....	6,269,005	6.49	4,399,482	5.75
Net earnings	4,006,041	17.01	2,604,663	14.61
Taxes .....	.....	.....	514,376	16.79
Operating income .....	.....	.....	2,090,287	16.79
Operating ratio, } 1915	63.22	.....	64.67	.....
per cent. } 1916	61.01	.....	62.81	.....
Miles of line represented	5,536.38	.....	3,877.07	.....
<i>Eastern District*</i>				
Operating revenues....	\$5,724,627	14.26	\$3,035,046	14.00
Operating expenses....	3,292,643	9.98	1,802,302	11.29
Net earnings	2,431,984	20.62	1,232,744	18.17
Taxes .....	.....	.....	210,578	4.42
Operating income .....	.....	.....	1,022,166	21.47
Operating ratio, } 1915	59.75	.....	60.82	.....
per cent. } 1916	57.51	.....	59.38	.....
Miles of line represented	2,996.91	.....	1,751.24	.....
<i>Southern District*</i>				
Operating revenues....	\$428,053	15.67	\$208,830	12.06
Operating expenses....	267,854	4.93	124,284	0.71
Net earnings	160,199	39.54	84,546	38.19
Taxes .....	.....	.....	17,145	7.07
Operating income .....	.....	.....	67,401	49.22
Operating ratio, } 1915	68.97	.....	67.16	.....
per cent. } 1916	62.57	.....	59.51	.....
Miles of line represented	409.07	.....	229.94	.....
<i>Western District*</i>				
Operating revenues....	\$4,122,366	4.88	\$3,760,269	4.92
Operating expenses....	2,708,508	2.68	2,472,896	2.36
Net earnings	1,413,858	9.38	1,287,373	10.20
Taxes .....	.....	.....	286,653	8.10
Operating income .....	.....	.....	1,000,720	10.81
Operating ratio, } 1915	67.11	.....	67.40	.....
per cent. } 1916	65.70	.....	65.76	.....
Miles of line represented	2,130.40	.....	1,895.89	.....

NOTE.—Letter *d* denotes a decrease.

*Groupings are as follows: *Eastern District*—East of the Mississippi River and north of the Ohio River, exclusive of Greater New York. *Southern District*—South of the Ohio River and east of the Mississippi River. *Western District*—West of the Mississippi River.

CANADIAN STATISTICS FOR 1915

The annual report of the comptroller of statistics in regard to railway operation in Canada for the year ended June 30, 1915, reveals on the whole a year of growth for electric railways in the dominion, but a decline in gross and net earnings. During the statistical year 50.51 miles were added to the single-track mileage, bringing the total up to 2102.95 miles. The capitalization was increased from \$147,585,342 in 1914 to \$150,344,002 in 1915, an amount of \$2,758,660.

Several electric railways did not send in reports for the year, and it was therefore necessary to use certain figures for the preceding year in order to complete the statistical statement. The following figures in regard to operation must be considered in the light of these omissions. For the last fiscal year the gross operating revenues amounted to \$26,922,899 as compared to \$29,691,007 for the preceding year, a loss of \$2,768,108 or 9.3 per cent. The greatest losses arose in passenger revenue, which fell off \$2,301,639 or 10.9 per cent, and in freight revenue, which decreased \$141,869 or 12.6 per cent. The operating expenses showed a much smaller decrease than did the gross revenues, the decrease being from \$19,107,817 in 1914 to \$18,131,842 in 1915, an amount of \$975,975 or 5.1 per cent. Maintenance of way and buildings decreased \$106,637 or 9.1 per cent, operation of cars \$214,437 or 2.9 per cent and general expenses \$207,132 or 10.1 per cent, but these decreases were partly offset by an increase of \$110,794 or 4.0 per cent in cost of motive power. The operating ratio in 1915 was 67.40 per cent, this comparing with 64.36 per cent in the preceding year. For a number of years, it is said, the ratio of operating expenses to gross revenues has been increasing.

There were 562,302,373 passengers carried by electric railways in Canada in 1915 as compared to 614,709,819 in 1914. The freight traffic reached 1,433,602 tons as compared to 1,845,923 in 1914. The total passenger traffic was the lowest since 1912 while the freight total was the smallest since 1911. During 1915 the companies had 14,795 employees or 1556 less than for the preceding year. The salaries and wages bill for the year amounted to \$10,781,199 as compared to \$11,845,463 for the year preceding, the percentage of operating expenses in the two years being 59.6 per cent and 61.9 per cent respectively.

SEPARATE RECEIVERS PROPOSED FOR SYRACUSE, LAKE SHORE & NORTHERN RAILROAD

Papers have been served by the lawyers representing the Columbia Trust Company, New York, N. Y., in the foreclosure proceedings under the mortgage of the Syracuse, Lake Shore & Northern Railroad, Syracuse, N. Y. An order for permission to foreclose the mortgage was signed by Justice Leonard C. Crouch on June 24 on application of Davies, Auerbach & Cornell, attorneys for the Columbia Trust Company, which is trustee under the mortgage. The application was made by the Trust Company at the request of the bondholders' protective committee, of which James M. Gilbert is chairman.

An application for receivers to be appointed for the Syracuse, Lake Shore & Northern Railroad will be made on July 15. It is understood that the bondholders' protective committee will ask that C. Loomis Allen and Hendricks S. Holden, now co-receivers of the Empire United Railways, Inc., and the Rochester, Syracuse & Eastern Railway, be made receivers. The foreclosure and appointment of receivers will take the Lake Shore out of the Empire United receivership and it will be operated hereafter by the receivers for the benefit of the bondholders. The three properties will then be operated in three receiverships.

Bay State Street Railway, Boston, Mass.—William A. Read & Company, New York, N. Y., are offering for subscription at 81½ and interest \$75,000 of Old Colony Street Railway 4 per cent first mortgage refunding gold bonds and at the same price \$100,000 of Boston & Northern Street Railway 4 per cent first mortgage refunding gold bonds. Both issues are direct obligations of the Bay State Street Railway.

Cincinnati, Dayton & Toledo Traction Company, Hamilton, Ohio.—Former Judge Benton S. Oppenheimer was appointed receiver of the Cincinnati, Dayton & Toledo Traction Company by Judge W. A. Geoghegan of the Common Pleas Court of Hamilton County at Cincinnati on July 6. This action was taken in the suit of the Cleveland Trust Company, Cleveland, Ohio, trustee for the bondholders. The bond was fixed at \$10,000. The receiver is to be in charge as the representative of the court, receive all funds and make an effort to collect the rentals alleged to be due from the Ohio Electric Railway, lessee of the company's property.

Cincinnati & Columbus Traction Company, Cincinnati, Ohio.—Judge W. A. Geoghegan of the Common Pleas Court of Hamilton County, on July 6, appointed Attorney Richard C. Swing as special commissioner to sell the property of the Cincinnati & Columbus Traction Company under foreclosure and entry of sale made on July 5, when an agreement was reached by all parties concerned. The upset price had not been agreed upon at that time, but it will probably be between \$850,000 and \$950,000. The company's property was so badly damaged by the flood of 1913 that it was compelled to go into the hands of the Union Savings Bank & Trust company as receiver. While the road has more than paid operating expenses since then, the receiver found it impossible to pay the interest on the \$750,000 of bonds or the dividends on the \$1,500,000 of stock.

Grand Rapids (Mich.) Railway.—Harris, Forbes & Company, New York, N. Y.; Hodenpyl, Hardy & Company, Inc., New York, N. Y., and E. W. Clark & Company, Philadelphia, Pa., are offering for subscription at 99¼ and accrued interest \$3,500,000 of Grand Rapids Railway first mortgage three-year 5 per cent gold bonds authorized by the Michigan Railroad Commission. The bonds are dated June 1, 1916, and are due June 1, 1919, but are redeemable as a whole at 101½ per cent and interest on Dec. 1, 1916, 101 per cent and interest on June 1 or Dec. 1, 1917, and 100½ per cent and interest on June 1 or Dec. 1, 1918. The bankers offering the bonds say that they are followed by \$2,000,000 of 5 per cent cumulative preferred stock and \$2,000,000 of common stock. Dividends have been paid on the preferred stock since the organization of the company in 1900 and on the common stock since 1906. The company is a constituent of the Commonwealth Power, Railway & Light Company, and is under the direction, supervision and management of Hodenpyl, Hardy & Company, Inc., and E. W. Clark & Company.

Kansas City (Mo.) Railways.—The last steps in closing the receivership of the Metropolitan Street Railway and the turning over of the property to the Kansas City Railways involved paying the receivers, attorneys and others who participated in the proceedings. The amounts of these payments are not to be made public. The city members of the board of directors of the Kansas City Railways were asked to secure the information. They responded that the city's interest began with the new company, and did not extend back to the proceedings under which the receivers and attorneys were paid.

Northern Electric Railway, Chico, Cal.—The California Railroad Commission has authorized the Northern Electric Railway, Marysville and Colusa Branch, to issue its demand notes for \$25,000 at 6 per cent to take up similar notes to the First National Bank, San Francisco.

Shore Line Electric Railway, Norwich, Conn.—On June 29 stockholders' meetings of the various properties owned and operated by the Shore Line Electric Railway were held and in the case of the Shore Line votes were passed authorizing the purchase of the Norwich & Westerly Traction Company, the Groton & Stonington Street Railway and the New London & East Lyme Street Railway, and the stockholders of these companies voted to sell, the Norwich & Westerly Traction Company first having voted to buy the Ashaway & Westerly, which is now operated by the Norwich & Westerly Traction Company under lease. This means that when the transaction is confirmed by the Public Utilities Commission of the State of Connecticut, and the details of the transfer are completed, all the properties now operated from the office of the Shore Line Electric Railway will be owned and operated by the Shore Line Electric Railway.

Union Traction Company of Indiana, Indianapolis, Ind.—The Public Service Commission of Indiana on July 5 handed down a decision approving and authorizing the lease of the Muncie & Portland Traction Company to the Union Traction Company of Indiana. The petition setting forth the terms of the lease was filed about two weeks ago, as noted in the *ELECTRIC RAILWAY JOURNAL* of July 1, page 38. Under the terms of the lease as set out in the order of the commission, the Union Traction Company will pay 4 per cent on \$1,389,500, with a further contingent sum equal to 2 per cent on that amount, such contingent sum to be dependent on the income of the entire system of the Union Traction Company of Indiana. The commission, in its ruling, orders the Muncie & Portland Traction Company to issue \$500,000 par value of its preferred stock, bearing 4 per cent cumulative dividends, and when such stock is issued the company is directed to cancel an equal amount of its common stock. The order of the commission sets out that it finds the construction cost of the Muncie & Portland Traction Company to be \$804,400, and the reproduction cost \$1,000,000. The lessee, the Union Traction Company of Indiana, is directed by the commission to pay the interest on the outstanding indebtedness of the Muncie & Portland Traction Company.

Utah Securities Corporation, New York, N. Y.—The aggregate gross earnings of the operating subsidiaries of the Utah Securities Corporation increased 9 per cent and the net earnings 22 per cent during the year ended March 31, 1916, despite the unfavorable business conditions prevailing during the first three months of the period. Of the year's total gross increase of \$426,160, all but \$81,720 was made in the last six months of the year, and of the year's total net increase of \$482,135 all but \$151,280 was made in the last six months. The gross earnings of the Utah Light & Traction Company, which operates the street railway property in Salt Lake City and vicinity, were \$1,420,887 for the year, with operating expenses and taxes at \$945,163, so that the net earnings amounted to \$475,724. The total income was \$837,541 and deductions were \$812,165, leaving a balance of \$25,376.

Virginia Railway & Power Company, Richmond, Va.—At the annual meeting of the Virginia Railway & Power Company on July 20, the stockholders will be asked to approve an increase in the authorized amount of preferred stock from \$8,000,000 to \$9,000,000, the additional stock to be issued as required for improvements, extensions and betterments. The Virginia Railway & Power Company now has \$7,698,400 of preferred stock outstanding.

DIVIDENDS DECLARED

Chicago (Ill.) Railways, \$8, series No. 1 participating certificates.
 Cumberland County Power & Light Company, Portland, Me., quarterly, 1½ per cent, preferred.
 East St. Louis & Suburban Company, East St. Louis, Ill., quarterly, three-quarters of 1 per cent, preferred.
 Green & Coates Street Passenger Railway, Philadelphia, Pa., quarterly, \$1.50.
 Holyoke (Mass.) Street Railway, 3 per cent.
 Manchester Traction, Light & Power Company, Manchester, N. H., quarterly, 2 per cent.
 Monongahela Valley Traction Company, Fairmont, W. Va., quarterly, 1¼ per cent, preferred; quarterly, 1 per cent, common.
 Ottumwa Railway & Light Company, Ottumwa, Iowa, quarterly, 1¾ per cent, preferred.
 Public Service Investment Company, Boston, Mass., quarterly, 1½ per cent, preferred.
 Puget Sound Traction, Light & Power Company, Seattle, Wash., quarterly, 75 cents, preferred.
 Railway & Light Securities Corporation, Boston, Mass., 3 per cent, preferred; 3 per cent, common.

ELECTRIC RAILWAY MONTHLY EARNINGS

BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$84,466	*\$68,658	\$15,808	\$27,850	†\$11,809	
1 " " '15	77,502	*64,276	13,226	17,123	†\$3,763	
11 " " '16	874,055	*736,374	137,681	229,695	†\$89,963	
11 " " '15	872,665	*779,974	92,691	189,461	†\$95,235	

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$277,688	*\$164,737	\$112,951	\$42,875	\$70,076	
1 " " '15	245,947	*151,170	94,777	37,821	56,956	
12 " " '16	3,270,766	*1,923,814	1,346,952	498,200	848,752	
12 " " '15	3,065,554	*1,846,344	1,219,210	467,975	751,235	

CONNECTICUT COMPANY, NEW HAVEN, CONN.						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$800,058	*\$528,341	\$271,717	\$98,009	†\$196,284	
1 " " '15	687,527	*455,724	231,803	104,963	†163,237	
11 " " '16	8,131,033	*5,552,890	2,578,143	1,082,657	†1,748,165	
11 " " '15	7,274,970	*5,265,413	2,009,557	1,087,674	†1,174,493	

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$130,172	*\$85,774	\$44,398	\$36,197	\$8,201	
1 " " '15	114,031	*74,255	39,776	36,055	3,721	
5 " " '16	583,317	*397,598	185,719	181,576	4,143	
5 " " '15	505,338	*356,429	148,909	179,918	†\$31,009	

NEW YORK (N. Y.) RAILWAYS						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$1,192,035	\$718,402	\$473,633	\$384,095	†\$134,426	
1 " " '15	1,138,652	713,876	424,776	359,843	†\$107,747	
11 " " '16	12,543,455	7,658,356	4,885,099	4,094,829	†1,304,603	
11 " " '15	12,265,626	7,837,292	4,428,334	4,106,707	†\$801,917	

NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$33,099	*\$25,542	\$7,557	\$7,979	†\$376	
1 " " '15	32,228	*25,953	6,275	7,991	†\$1,676	
11 " " '16	341,964	*277,338	64,626	87,919	†\$22,738	
11 " " '15	340,795	*281,902	58,893	87,051	†\$27,746	

NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$48,450	*\$43,845	\$4,605	\$5,589	†\$348	
1 " " '15	43,000	*41,199	1,801	\$5,976	†\$2,641	
11 " " '16	468,438	*515,318	44,880	\$68,520	†\$96,012	
11 " " '15	409,508	*476,640	†67,132	\$69,584	†\$118,885	

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$422,045	*\$256,154	\$165,891	\$49,690	\$116,201	
1 " " '15	323,323	*191,317	132,006	51,524	80,482	
5 " " '16	1,940,627	*1,164,526	776,101	257,022	519,079	
5 " " '15	1,424,674	*900,767	523,907	255,962	267,945	

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$445,223	*\$256,694	\$188,529	\$181,925	\$6,604	
1 " " '15	446,149	*253,728	192,421	188,440	3,981	
12 " " '16	5,457,872	*3,068,941	2,388,931	2,196,617	192,314	
12 " " '15	5,794,271	*3,149,446	2,644,825	2,207,287	437,538	

RHODE ISLAND COMPANY, PROVIDENCE, R. I.						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$493,296	*\$354,687	\$138,609	\$118,579	†\$21,120	
1 " " '15	404,576	*321,294	83,282	117,558	†\$33,435	
11 " " '16	4,984,767	*3,755,615	1,229,152	1,279,909	†\$41,624	
11 " " '15	4,668,385	*3,629,383	1,039,002	1,296,807	†\$163,107	

WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., May, '16	\$22,964	*\$22,413	\$551	\$1,798	†\$1,219	
1 " " '15	22,644	*22,036	608	1,464	†\$836	
11 " " '16	229,396	*234,514	†5,118	18,590	†\$23,399	
11 " " '15	235,700	*246,828	†11,128	14,632	†\$25,635	

Traffic and Transportation

PRESIDENT SULLIVAN TESTIFIES

Bay State Fare Hearing Concluded—Fifty-six Days Presenting Testimony—Briefs to Go in Soon

Serious problems which the street railway industry is facing were clearly set forth by P. F. Sullivan, president of the Bay State Street Railway, at a hearing on July 5 on its petition to the Massachusetts Public Service Commission for approval of general fare increases. The competition of the private automobile, as well as the jitney, the growth of moving-picture shows, which draw their patronage mainly from local sources, and the greatly increased expenditures for taxes and for all materials, were described as hindering materially a return on investment.

Mr. Sullivan was under direct examination by James F. Jackson, senior counsel for the petitioners. After describing the advantage gained by the consolidation of the various roads which constitute the Bay State system, among which were the reduction of friction in communities where more than one company operated under the same stock control, with no transfer interchange, and the saving in accounting where formerly thirty sets of accounts were kept, Mr. Sullivan pointed out the competitive factors that have lately entered the field, notably the automobile and the "movies."

The company last fall made a census of its territory and found 26,054 automobiles registered therein, outside of Boston. Estimating the revenue diverted to privately owned automobiles at 10 cents a day, about \$1,000,000 is accounted for per annum. This new element was first noted in 1906 or 1907. The company had been reckoning on a normal yearly increase of revenue of 5 or 6 per cent. It was found that 4 per cent was nearer the fact.

Jitneys came into the territory about April, 1915, and spread rapidly. Competition from this source amounts to \$300,000 to \$350,000 a year, ranging from about \$500 a day in winter to \$1,000 a day in summer. Regarding the future of the jitney, Mr. Sullivan said: "It is problematical. I feel that jitneys in some form or other will stay. All such matters are naturally progressive, and they will fluctuate from place to place. We now have more in the territory than we formerly had, whereas on the other hand, Fall River has fewer than it had a year ago. It looks as if any change would be from a small car operating in a 5-cent territory to a bus, which is a more serious competitor." Mr. Sullivan expressed the opinion that private automobile competition would increase.

In turning to the subject of the "movies," the witness pointed out that in suburban towns people who formerly patronized theaters now go to local picture shows. Much of the money formerly expended for park riding is thus diverted. People walk to the picture shows.

Taxation is a heavy burden on the street railways in the State. During Mr. Sullivan's service with the Bay State this item has increased from 2.5 per cent gross revenue to 7 per cent, the difference amounting to \$400,000. Mr. Sullivan said:

"The cost of substantially every item that enters into the construction, maintenance and operation of the railway has increased."

On the subject of one-man operation, Mr. Sullivan pointed out that if the plan was adopted of operating one-man cars during the dull periods of the day and two-men cars in rush hours, little platform expense would be saved, as the company would have to have almost as large a list in reserve, and is now obliged to guarantee six hours' pay.

Mr. Sullivan considered the Arnold proposal to eliminate local carhouses and store the cars at a few centers to be impracticable, owing to the large amount of dead mileage which this would necessitate.

In referring to a proposed reduction in general expenses, Mr. Sullivan said three of the company's most valuable general officers had refused higher salaries from other corporations. The total amount of salaries of general officers, eliminating that of the president, is \$74,600.

*Includes taxes. †Deficit. ‡Includes non-operating income. §Excludes interest on bonds, charged income and paid by the New York, New Haven & Hartford Railroad under guarantee, also interest on notes held by the New York, New Haven & Hartford Railroad, not credited to income of that company.

The presentation of testimony was closed on July 7. The members of the board and opposing counsel were to confer on July 10 for the purpose of deciding when the arguments will be made and the order of the presentation.

Just before the hearing closed, Robert M. Feustel, expert for the company, submitted a number of new exhibits, bringing the total up to 102. The hearings have consumed fifty-six days, six of these being taken up by the company and the remainder by the remonstrants.

CHICAGO ELEVATED PROUD OF SAFETY RECORD

In the current issue of *The Elevated News* the Chicago Elevated Railroads calls the attention of the public to its unparalleled record of operation. This road has handled 1,200,000,000 passengers during the past eight years without a single fatal accident to a passenger on a train. Every week-day the elevated system handles upward of 500,000 passengers, and this record of safe operation is a source of gratification to the management and to the employees, and furnishes an incentive to try, with the co-operation of the public, to eliminate all minor accidents. Regarding this remarkable record, the *Chicago Herald* recently published the following editorial under the title "A Remarkable Achievement":

"The managers and employees of the Chicago Elevated Railroads are certainly entitled not only to feel some pride, but also to advertise the pride they feel, in the results of their efforts to carry safely all who use these transportation facilities. What these results are cannot be told better than in the words used in the advertisement:

"Eight years without one fatal accident! One billion two hundred millions of passengers—equivalent nearly to the entire population of the world—have been carried by the Chicago Elevated Railroads during the past eight years without a single fatal accident while on their trains.

"Such an achievement not only justifies pride, and the recognition it has received from safety organizations, but also should strongly impress upon the public mind the accompanying appeal for co-operation in the prevention and elimination of even minor accidents.

"Here is something which every user of the elevated trains can help to do for his own and his family's welfare, and for his fellow citizens' welfare, and for humanity, by just using reasonable caution and constant care. With the help of the public Chicago should win this year the Brady medal for electric railroad safety. But the managers and employees cannot do it without that help."

GEORGIA COURT REFUSES TO PREVENT RAILROAD COMMISSION FROM PROMULGATING JITNEY RULES

In its decision under the injunction proceedings brought by O. C. Long and others before Judge Ellis in the Superior Court at Atlanta, Ga., against the Railroad Commission to restrain that body from regulating the operation of jitneys the Superior Court of Georgia has refused to grant the injunction sought, and has affirmed the judgment. All judges concurred. The opinion was by Justice Beck. In the pleadings it was alleged by the plaintiffs that the Georgia Railway, Light & Power Company had filed a petition with the commission seeking to have it regulate the jitneys. In the answer of the commission it was set out that it had not prescribed rules and regulations, but was preparing a set of rules. Justice Beck says:

"We are of the opinion the court properly refused to grant an injunction in this case. No evidence was submitted at the hearing, but the sworn answer of the defendants showed that no rules or regulations affecting the business of petitioners had been passed or promulgated or were about to be enforced.

"The court properly refused to enjoin the commission from considering the rules and regulations set out in the exhibit to the petition. A court will not undertake in advance to enjoin one from considering whether or not he will perform a certain act.

"Should the Railroad Commission actually promulgate the rules which it proposes to consider and thereafter to enforce them or put them in form to be enforced, the question

as to the power of the commission under the laws and the constitution to do this may be raised and revised."

The Railroad Commission has been awaiting the decision of the Supreme Court before proceeding further with the work of passing rules and regulations.

EXTRAORDINARY TRAFFIC INCREASES IN NEW YORK

The subway and elevated lines of the Interborough Rapid Transit Company and the surface lines of the New York Railways carried in June a total of 79,931,794 passengers—more than 2,664,393 a day. This represented an increase of 5,259,645 passengers for the month over June, 1915. The subway alone in June carried 30,202,401 passengers, receipts from whom were \$1,508,130, an increase of 2,753,940 in passengers and \$137,520 in revenue over June, 1915. The elevated lines carried 26,241,280 passengers with receipts of \$1,310,973, an increase of 1,729,330 passengers and \$86,290 in revenue. The increase in receipts from passengers for the elevated and subway combined was \$223,810, or 9 per cent. These lines altogether carried 56,473,681 passengers, nearly 2,000,000 a day. To carry these 56,473,681 passengers in June the Interborough Rapid Transit Company operated on its different lines a total of 180,000 trains, or 6000 every day. Of the number of passengers carried, 1,250,000, approximately two-thirds, traveled between 7 a. m. and 10 a. m., and 4 p. m. and 7 p. m. During those periods trains were often run forty seconds apart. The New York Railways surface lines carried 23,488,113 passengers in June, an increase of 776,375. Receipts from passengers were \$1,143,083, as compared with \$1,106,615 for June, 1915. The subway and elevated lines in June used 2919 cars, and to man the trains, platforms, ticket agencies and switches, utilized the service of 4000 men. The surface lines had in service 1308 cars handled by 3200 motormen and conductors. Together all these transportation facilities gave employment in June to 7200 men. The total of wages for the 7200 men amounted to \$680,000.

A MISDEMEANOR TO GIVE OR ACCEPT FREE TRANSPORTATION IN COLORADO

On July 3 the Public Utilities Commission of Colorado issued the following general order:

"Any person, public utility or corporation, or person acting as an officer, agent or employee of a corporation or utility, who furnishes or accepts free or reduced-rate transportation over or upon any line of railway of any public utility operating within the State of Colorado, in violation of subdivision A of Sec. 17 of the public utilities law of the State of Colorado, shall be deemed guilty of a misdemeanor and shall be punishable by a fine not exceeding \$1,000 or by imprisonment in a county jail not exceeding one year, or by both such fine and imprisonment, in accordance with the provisions of Secs. 62, 63, 64 and 65 of the public utilities act of the State of Colorado.

"It is further ordered, that every person, public utility or corporation, or any person acting as an officer, agent or employee of a corporation or utility, who shall violate this order, shall be deemed to be in contempt of the commission, according to Sec. 66 of the public utilities act of the State of Colorado, and shall be punishable by the commission in the same manner and to the same extent as contempt is punished by courts of record."

Jitney Bus Increase in Los Angeles.—For the quarter ended June 30, 1916, the report of the license clerk shows a total of 517 jitney buses operating in Los Angeles, Cal. The total on April 1 was 489.

B. T. R. Aids War on Paralysis.—Through Miss Hester Jenkins of the department of social betterment of the Brooklyn Bureau of Charities arrangements were made for the distribution of more than 100,000 leaflets on infantile paralysis through the services of the Brooklyn Rapid Transit Company. The leaflets are printed in Yiddish, Italian and English.

Safety Committees in Norfolk and Richmond.—The Virginia Railway & Power Company, operating in Norfolk and

Richmond, Va., has organized a general safety committee to investigate and make recommendations on all matters pertaining to the safety of the public and the employees of the company. The first meeting of the committee was held at Richmond on June 28.

Jersey City Jitney Bill Passed.—The City Commissioners of Jersey City, N. J., have passed an ordinance, based on the Kates law, requiring jitney men to file a \$5,000 indemnity bond and pay a tax of 5 per cent of their gross earnings. It is said that certiorari proceedings to test the validity of the law will be commenced by George L. Record, counsel for the jitney men.

Head-on Collision at Youngstown.—An interurban car on the Youngstown & Sharon Street Railway, Youngstown, Ohio, carrying approximately forty passengers, and a work train bearing a dozen men met in a head-on collision on the afternoon of July 8 in a cut on the eastern outskirts of Youngstown. Thirteen persons, including three women, were injured; five seriously.

Safety Posters Carried on St. Louis Cars.—In connection with the safety campaign now being conducted by the United Railways, St. Louis, Mo., large posters, printed in white lettering on a green background, are carried on the dashboards of all cars. These posters are prepared and furnished to the railway by the safety committee of the St. Louis Business Men's League and they read as follows: "Make St. Louis the safest city. Safety first is thinking first."

More One-Man Car Permits.—The Puget Sound Traction, Light & Power Company, Seattle, Wash., has received permission from the City Council to operate one-man cars on the Summit and Twelfth Avenue lines. The Council has also granted the petition of the Western Washington Power Company to operate one-man cars on condition that two men be employed on the cars during rush hours, and the headway increased during other hours of the day. The Western Washington Power Company operates cars in Ballard.

San Diego Suburban Service Discontinued Owing to Jitneys.—The San Diego (Cal.) Electric Railway discontinued the operation of its cars over the San Diego & Southeastern Railway on June 26 between San Diego and National City, owing to a lack of jitney regulation by the board of trustees of National City. The San Diego & Southeastern Railway will operate the line on a reduced schedule. Construction work on the San Diego & Southeastern Railway across Sweetwater Valley to Chula Vista has also been suspended for the same reason, it is reported.

Right to Operate One-Man Cars Sustained.—The East St. Louis & Suburban Railroad, East St. Louis, Ill., has won its suit in the higher court for the right to operate one-man cars through the streets of Belleville, Ill. Circuit Judge Crow upheld the decision of L. E. Wangelin, a justice of the peace, and ruled that a recent ordinance could not supersede a franchise in which the one-man system was stipulated. Judge Crow ruled also that the power of legislating against corporations is now restricted by the public utilities act and is not vested in local authorities in a case of this kind.

Railway Folder of St. Louis.—The United Railways, St. Louis, Mo., has recently issued an attractive descriptive folder entitled "Trolley Trips In and Out of St. Louis," printed in black, green and orange. The folder opens so that at the center there is available for ready reference a tourists' trolley map of the city and its environs. This map is 16 in. wide by 13 in. high. At the time of the Democratic national convention in St. Louis the company inserted in the folder a map of the downtown section showing the relative locations of the convention hall and the leading downtown hotels.

Jitneys to Go on Franchise Basis.—Commissioner of Police Daly of Portland, Ore., has received from City Attorney LaRoche the first draft of a proposed ordinance to force all jitneys to operate on a franchise basis, doing away with the present system of independent operation on licenses. The measure as it stands sets forth that it is impracticable and impossible to regulate the jitneys under the present system so that they will give reliable or reasonable service

and that for that reason they shall after a date to be fixed obtain franchises conditioned on assurances of a schedule of service to be kept up over routes to be specified by the City Council.

Working on Rearrangement of Spokane Owl Service.—H. L. Bleecker, vice-president of the Washington Water Power Company, Spokane, Wash., reports that R. A. Willson, general superintendent of the railway lines of the company, and E. E. Lillie, superintendent of the Spokane Traction Company, controlled by the Spokane & Inland Empire Railroad, have been assigned the work of rearranging owl car schedules on the parallel lines of the companies. Mr. Bleecker stated that nothing along the line of merging or eliminating parallel lines of the two companies was being considered at this time. The matter of joint action has gone no further than the consideration of owl car service.

Ruling on Muskogee Jitney Ordinance.—Operators of jitney busses in Muskogee won in part and lost in part in their contest of the ordinance recently passed by the City Council fixing a tax of \$25 a month on each jitney in operation on the streets of Muskogee, limiting operation to certain prescribed streets and requiring a bond of \$2,500 for each jitney operated. Suit for injunction against the city was filed by the jitney drivers, and Judge C. G. Watts of the District Court granted a permanent injunction against the city, restraining its officers from collecting the monthly tax of \$25 on the ground that it was confiscatory, but upheld other features of the ordinance. Pending the time when they could make the required bond of \$2,500 for each jitney operated, the drivers placed signs "Jitney Service Free," and operated on the donation plan.

Seattle Company Publication Quotes "Electric Railway Journal" Editorial.—Several company publications were quick to realize the availability and timeliness of the editorial which was published in the ELECTRIC RAILWAY JOURNAL of May 13 entitled "Strap Hangers Do Not Pay Dividends." One of the papers which made use of the information contained in the editorial was the Puget Sound Traction, Light & Power Company, Seattle, Wash. As *Electrogram*, the company publication, points out, one of the most common and reckless statements about the street railway business is that "dividends are in the straps." *Electrogram* tabulated in an effective way the cost of operating one extra car for one extra trip during the rush hour and the revenue from that extra trip on a route 7 miles long as given in the ELECTRIC RAILWAY JOURNAL.

Seattle Cars Must Be Heated.—The Public Service Commission of the State of Washington has entered an order stating that after Dec. 1 the thirty-eight cars of the Puget Sound Traction, Light & Power Company, operated on the Alki, Ballard Beach and Fauntleroy Park lines in Seattle, must be heated. On other cars of the system open places are to be provided with sash and glass, so that they can be closed. The commission has also directed that heating apparatus now installed in forty-seven cars operated by the company be removed and relocated so as to provide proper distribution of heat throughout the conveyance. Included among the orders of the commission are the following provisions: Not less than six heaters be installed in single-truck cars; not less than ten heaters in double-truck cars; glass windows to inclose open ends of cars during winter months; cars on long-haul lines, which include Alki Point, Ballard Beach and Fauntleroy, to maintain a temperature not lower than 40 deg. Fahr.

Skip-Stop Trial in Detroit.—The Council of Detroit, Mich., has consented to a trial of the skip-stop plan of operating cars of the Detroit United Railway on Woodward and Jefferson Avenues under the direction of the police authorities. The company has issued a statement in which it said: "At the outset we urge that the test be thorough and convincing. This means that it should be fair and without prejudice. We announce now, with all the positiveness at our command, that if it does not work out to the benefit of the public we do not want the plan continued. There has been no ulterior motive back of our long and urgent advocacy of the plan. We do know that the skip-stop plan is a time saver for the public where used in other cities; we do know that during the very brief trial of some months ago on Woodward

Avenue, done at the request of the police department, it was a time saver in Detroit. If a more extensive trial does not make clear that the benefits greatly outweigh the objections we will be the first to throw up our hands and state that this, as one plan for alleviating transportation troubles in Detroit, is a failure. We have faith in it; but we may be wrong."

Louisville Traffic Rule Upheld.—In his instructions to the jury in a case against the Louisville (Ky.) Railway, Judge Thomas R. Gordon in the Jefferson Circuit Court, at Louisville, upheld the validity of a city ordinance which gives right of way at street intersections to vehicles crossing east and west. The case had to do with an accident at Third and Walnut Streets, and the court ruled that it was the duty of the man driving the automobile with which the street car collided "to give timely warning of the approach of his automobile by sounding his horn and to exercise ordinary care to permit the street car to pass across the intersection in front of him if he saw, or by the exercise of ordinary care could have seen, the approach of the car in time to have given it such opportunity" and that his failure to do so favored the defendant. The judge said that the time was fast approaching when the courts must act in an endeavor to require vehicle traffic to observe traffic regulations for the benefit not only of those who operate vehicles, but for the great mass of people who travel on foot. For that reason he felt it was his duty to do everything in his power to assist the city authorities in enforcing the ordinance.

Writ of Supersedeas in New Orleans Jitney Case.—The United States Circuit Court of Appeals has granted to the jitney men of New Orleans, La., a writ of supersedeas, which carries practical restraining force against the immediate enforcement by the city of the ordinance under which the jitneys went out of operation several weeks ago. Following this formality, the jitneys will operate until the three judges of the United States Circuit Court of Appeals for the New Orleans district meet and render a decision on the legality of the ordinance passed by the city. During the interim the jitneys will have the right of operation. The writ of supersedeas was issued by the judge whose residence is Huntsville, Ala. The procedure upon which the writ was based was somewhat similar in character to that upon which appeal was made to Judge Foster of the United States District Court at New Orleans. It was recited that the rights of one F. Lutze, a jitney operator, had been infringed upon, since he is a native of Germany and a subject of the Kaiser. The attorneys claimed in behalf of Lutze violation of treaty rights between the United States and Germany, said rights supposedly guaranteeing to every German subject resident in the United States the free and unhampered use of his property. The writ of supersedeas is only applicable to Lutze and several co-appellants.

Service Reduced in Seattle.—On June 26 the Puget Sound Traction, Light & Power Company, Seattle, Wash., adopted a new schedule involving material reductions in service on the Capitol Hill line. *Electrogram*, published by the company, in commenting on the change in schedule said: "For two years past the receipts on the Capitol Hill line have been declining. During that time the service has been increased. It finally became evident that the service was much greater than the patronage of the line warranted. The necessary reduction of service was therefore effected. The following figures speak for themselves. The receipts of the Capitol Hill line in May, 1914, were \$11,384; in May, 1915, \$7,747, and in May, 1916, \$7,411. The receipts of May, 1916, were 35 per cent less than for the same month two years ago. At the same time the service had been increased 11.7 per cent. The company could not continue operating under those conditions, hence the reduction of service. The reduced receipts are apparently the result of a preference by many persons living along that line for the service furnished by the jitneys. There has of course been a loss of revenue on other street railway lines, but that on Capitol Hill is the only instance where the loss has been so great as absolutely to necessitate a reduction of street railway service. The reduction which has been made in the service on that line is proportionate to the reduction of receipts."

Personal Mention

Charles Barrington, Jr., auditor of the Los Angeles (Cal.) Railway Corporation, has been transferred to the post of purchasing agent of the company and will have full charge of all materials and supplies.

Thomas Bulpin, assistant chief engineer of the Los Angeles (Cal.) Railway Corporation, has been appointed chief engineer of the company to succeed George Kuhrts, who has become assistant general manager.

George Kuhrts, chief engineer of the Los Angeles (Cal.) Railway Corporation, has been appointed assistant general manager of the company to succeed C. A. Henderson, who will hereafter devote all his time to the financial operations of the company.

J. W. Tipton, former superintendent of the interurban line between Dallas, Tex., and Waxahachie, operated by the Strickland interests, has been appointed superintendent of the Oklahoma, New Mexico & Pacific Railroad, succeeding R. W. Patterson, resigned.

Henry G. Stott, superintendent of motive power, Interborough Rapid Transit Company, New York, underwent a serious operation on July 7. According to the latest reports he is rapidly recovering from its effects, although at first grave doubts as to his recovery were entertained.

Charles F. Smollin, who has been correspondence clerk of the Public Service Commission of the First District of New York for most of the time since 1910 when he joined the commission's staff, has been promoted to the position of chief clerk to succeed George F. Daggett.

C. A. Henderson, director, secretary, treasurer, assistant general manager and purchasing agent of the Los Angeles (Cal.) Railway Corporation, has relinquished the position of purchasing agent and assistant general manager so that he may assume entire charge of the finances of the corporation.

E. J. Burdick has been appointed assistant general manager of the Detroit (Mich.) United Railway and not general manager, as was announced in the *ELECTRIC RAILWAY JOURNAL* of July 8. The mistake in the announcement as printed was made by the compositor in putting the item into type and it was not discovered until most of the edition for July 8 had been printed.

R. G. Carroll, who has been assistant treasurer of the Northern Texas Traction Company, Fort Worth, Tex., for a number of years, will be transferred to Beaumont, Tex., where he will become acting manager of the Beaumont Street Railway, the Beaumont Lighting Company, the Beaumont-Port Arthur Interurban Railway and the Port Arthur Lighting Company.

George F. Daggett, who has been connected with the Public Service Commission for First District of New York practically since its creation in 1907, and most of the time as its chief clerk, has been promoted from that position to become an assistant secretary. Mr. Daggett has entire charge of the work of handling informal complaints against transportation companies filed with the commission.

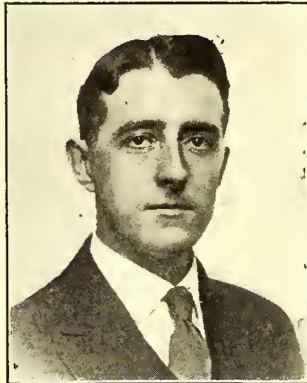
M. F. M. Werth has been appointed assistant superintendent of power of the Detroit United Lines with headquarters in Detroit, Mich. Mr. Werth is a native of Richmond, Va., and was graduated from the Virginia Military Institute, electrical engineering course, at Lexington, Va. He was later employed in Schenectady, Baltimore and New York. He entered the electric railway field with the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, and was later associated with the British Columbia Electric Railway, Ltd., Vancouver, B. C.

W. L. Davis has been appointed traveling auditor for the American Power & Light Company, New York, N. Y. Mr. Davis has for the past year been connected with the firm of Ernst & Ernst, certified public accountants, Cincinnati, Ohio. Mr. Davis began his work in the railway field in 1906 with the Ohio Electric Railway and was appointed statistician of the company in 1909, serving in this work

until 1912, when he joined the organization of the Texas Power & Light Company, Dallas, Tex., first as traveling auditor and later as assistant secretary-treasurer. From 1914 to 1915 Mr. Davis was auditor for the Southern Traction Company and the Texas Traction Company, both of Dallas.

W. D. Seeley has been appointed master mechanic of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., to succeed J. M. Pneuman, resigned. In 1905 Mr. Seeley entered the service of the New York Central Railroad at its East Buffalo shops as an air-brake inspector's helper and gradually advanced in this class of work until 1909, when he was appointed airbrake instructor on the New York Central Lines, east of Buffalo. During his occupancy of the latter position he had charge of experimental work in connection with the use of airbrakes in handling mountain trains on the Montpelier & Wells River Railroad. Later Mr. Seeley entered Syracuse University, from which he was graduated in 1915 with the degree of mechanical engineer. During his college course he was connected with considerable of the experimental work in the airbrake department of the Westinghouse Traction Brake Company. Since his graduation he has been engaged in miscellaneous engineering work on the Syracuse & Suburban Railroad, and just previous to becoming connected with the Buffalo, Lockport & Rochester Railway was in charge of the installation of signals on the Syracuse & Suburban Railroad. His experience of more than ten years with different steam roads in the section of the country near Buffalo and his thorough study of the question of airbrakes, particularly adapt him for the position to which he has just been appointed on the Buffalo, Lockport & Rochester Railway.

F. I. Hardy, the newly appointed general manager of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., has been actively engaged in steam and electric railway operation for the last nineteen years. During that time he served the Southern Pacific Railroad, the New York Central & Hudson River Railroad, the Indiana Union Traction and the Fort Wayne & Northern Indiana Traction in various capacities. Mr. Hardy became connected with the Fort Wayne & Northern Indiana Traction Company in 1905 and resigned in 1911. During this connection with the company he served as division superintendent and superintendent of transportation. In July, 1911, he was made superintendent of transportation of the Chicago, South Bend & Northern Indiana Railway, where he had full charge of operation and traffic matters up to the time of his recent appointment as general manager of the company to succeed C. D. Emmons, who has become second vice-president and general manager of the Boston & Worcester Street Railway.



F. I. HARDY

OBITUARY

Raymond H. Harrison, executive clerk to H. A. Benedict, mechanical engineer of the Public Service Railway, Newark, N. J., died on July 11 from typhoid fever. Mr. Harrison was born in August, 1889, and was graduated from Cornell in 1910. On April 17, 1911, he entered the employ of the Public Service Railway as a cadet engineer. He is survived by his father, mother and two sisters.

M. W. Savage, president and treasurer of the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn., died in that city on July 12 after a brief illness. Mr. Savage was fifty-five years old and had lived in Minneapolis since 1886. He was the owner of several of the most celebrated racing and trotting horses in the country, one of them, Dan Patch, by which name the Minneapolis, St. Paul, Rochester & Dubuque Traction Company was generally known locally in Minneapolis and throughout Minnesota.

Construction News

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

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

RECENT INCORPORATIONS

*Thomasville (N. C.) Terminal Company.—Incorporated to construct and operate an electric railway in Thomasville and maintain interurban lines to neighboring points. Capital stock, \$125,000 authorized and \$5,000 subscribed. Among those interested are T. J. Finch, J. W. Lambeth, E. V. Crutchfield, Frank S. Lambeth and R. L. Lambeth.

Tulsa (Okla.) Interurban Railroad.—Incorporated to build a combination electric and steam railroad from Tulsa to Wagoner, 37 miles, in order to permit an entrance into Tulsa of the Missouri, Oklahoma & Gulf and the Iron Mountain railroads. The interurban will parallel the Missouri, Kansas & Texas Railroad from Tulsa to Broken Arrow, and from Broken Arrow will run due east to Wagoner. Estimates of construction and equipment place the cost at \$480,000.

Texas Electric Railway, Dallas, Tex.—Incorporated to take over the Texas Traction Company, which operates an interurban line from Denison to Dallas, and the Southern Traction Company, which operates from Dallas to Waco, also from Dallas to Corsicana. The company also acquires and takes over the street car systems of Denison, Sherman, McKinney, Waxahachie, Corsicana and Waco. The new corporation is also authorized to extend southwest from Waco to San Antonio via Austin, also south to Houston. Capital stock, \$10,500,000. This is the consolidation of the so-called Strickland lines mentioned previously in this paper and referred to at length on page 117 of this issue. Incorporators: M. J. Templeton, J. F. Strickland and Osce Goodwin, all of Dallas, and others.

FRANCHISES

Whittier, Cal.—The Pacific Electric Railway has asked the Council for a franchise in Whittier. Bids for the franchise will be received at the office of the City Clerk until July 31.

Cleveland, Ohio.—The Cleveland Railway has asked the County Commissioners for a franchise to construct an extension on Pearl Road from the southerly limits of Cleveland to Ridge Road in Parma Township.

Elyria, Ohio.—The Cleveland, Southwestern & Columbus Railway has received a new twenty-five-year franchise from the City Council of Elyria. The company agreed to sell six tickets for 25 cents, put on half-hour cars in addition to the hourly interurban cars and extend the track east to the manufacturing district.

Portland, Ore.—The Council has acted favorably on the request of the Portland & Oregon City Railway for an extension of three years' time in which to extend its proposed interurban line to Portland's west side business district. According to present plans, the company purposes making its terminal at East Third and Morrison Streets, carrying passengers from the west side to the terminal by means of a free bus service.

*San Angelo, Tex.—The Interstate Electric Corporation of New York has been granted a franchise from the City Commissioners to construct and operate a street railway system in San Angelo. It is agreed by the company that improvements representing an outlay of \$108,000 will be made immediately. Officials of the Interstate Electric Corporation are now negotiating with the County Commissioners of Tom Green County for trackage rights across the county viaduct that spans the Concho River. If trackage rights are not granted over the viaduct, the company will build its own bridge over the river.

Tumwater, Wash.—The Olympia, Tumwater & Brighton Park Railway has received a franchise from the Council to construct a street railway from the corner of Reserve and Des Chutes Streets to the Olympia city limits.

TRACK AND ROADWAY

Arkansas Northwestern Railroad, Bentonville, Ark.—It is announced that service will soon be resumed on the Bentonville-Rogers interurban line. Service on this line was discontinued several weeks ago when the St. Louis & San Francisco Railway Company increased the rental on a portion of its track which was used by the interurban company. It is announced that the company will build its own track, thus eliminating the necessity of renting or leasing trackage rights from any other railway company.

Visalia Electric Railway, Exeter, Cal.—It is reported that an extension of this company's line will be built from Exeter southerly along the foothills to the Lindsey and El Mirador country.

Pacific Electric Railway, Los Angeles, Cal.—This company will lower its grade through the Garden Grove section for about 2800 ft. The track will be lowered 3 ft. 4 in., and culverts will be placed where needed to carry flood waters.

Florida East Coast Railway, Jacksonville, Fla.—Announcement has been made that the electric train heretofore operated on the Mayport branch of the Florida East Coast Railway will be placed in service between West Palm Beach and Miami.

Atlanta & Anderson Electric Railway, Atlanta, Ga.—It is reported that this company, which proposes to begin construction of an electric railway from Atlanta to Anderson about Sept. 1, will connect with the Piedmont & Northern Railway at Anderson. J. L. Murphy, Atlanta, is interested. [June 17, '16.]

Georgia Railway & Power Company, Atlanta, Ga.—It is reported that the Georgia Railway & Power Company will purchase the Gainesville Midland Railroad, equip it for electrical operation and extend the line into Athens. A further extension will be the construction of a line connecting Atlanta and Macon, and later a link between Macon and Athens.

Honolulu Rapid Transit & Land Company, Honolulu, Hawaii.—Work will soon be begun by this company on the extension of its King Street line to Moanalua Hill Boundary, past Fort Shafter military reservation.

Pocatello Traction & Interurban Company, Pocatello, Idaho.—This company announces that work will be begun about Oct. 1 on the construction of an extension from Preston, Idaho, or Petersburg, Utah, to Ashton, Idaho. [May 6, '16.]

Aurora, Mendota & Western Railroad, Aurora, Ill.—Preliminary surveys have been begun at Aurora for the Aurora, Mendota & Western Railroad. After the survey has been completed an outline of the route will be presented to the Public Utilities Commission.

Rock Island Southern Railway, Rock Island, Ill.—About \$25,000 will be spent by this company on improvements to its system and its rolling stock. The roadbed will be improved from Rock Island to Galesburg.

Tri-City Railway Company of Illinois, Rock Island, Ill.—This company plans to double-track its line from Sears to Center Station.

Southern Iowa Railway, Light & Power Company, Albia, Iowa.—Improvements are being planned by this company in Albia amounting to about \$50,000.

Iowa Railway & Light Company, Cedar Rapids, Iowa.—The Town Council of Earlville has entered into a contract with the Iowa Railway & Light Company to supply electricity to operate the municipal electric light system.

Kansas City, Kaw Valley & Western, Bonner Springs, Kan.—It is reported that construction will be begun this summer on this company's proposed extension to Topeka, and it is expected that the line will be in operation about June 1, 1917.

***Transcona, Man.**—Negotiations are now under way for the construction of an electric railway between Transcona and Winnipeg, and it is expected that the line will be completed this summer. J. W. Hull, Winnipeg, may give further information.

***Boston & Western Street Railway, Marlboro, Mass.**—A

committee of the Marlboro Board of Trade is co-operating with a committee of Waltham citizens to secure the construction of an electric railway between Marlboro and Waltham, about 15 miles, making a direct route from Boston.

Kansas City (Mo.) Railways.—Within the next month work on the extension of three car lines will be begun by the Kansas City Railways. These include the Paseo extension on the old Marlborough line, from Forty-eighth Street to Seventy-first Street; the Brooklyn Avenue extension, from Thirty-ninth Street to Forty-fourth Street, and the Troost Avenue line, from Forty-eighth Street to Fifty-third Street.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—Among the improvements included in the application for \$12,000,000 bonds by this company is the construction of an extension of its Prospect Avenue line.

Omaha & Council Bluffs Street Railway, Omaha, Neb.—This company is building a half mile of double track and overhead lines as an extension to existing lines, and it now has under way the rehabilitation of 25,550 ft. of single track. This latter work includes all new rail, ties and re-paving.

Reno (Nev.) Traction Company.—This company plans to relocate its line in Sparks from B Street to D Street from Miller's Curve to Thirteenth Street.

Public Service Railway, Newark, N. J.—The work of laying tracks on this company's Central Avenue line through Orange has been completed to Scotland Street and it is expected that operation will soon be begun. For the present the line west of Scotland Street cannot be completed, as the tracks would have to cross the Lackawanna Railroad at grade. Until the railroad's elevation work is completed and the tracks are carried over Central Avenue on a bridge, the extension will end at Scotland Street.

Rahway Valley Railroad, Summit, N. J.—It is reported that this company, which operates a railroad from Summit to Aldene, plans to equip its line for electrical operation. J. S. Caldwell, Kenilworth, N. J., general manager.

Interborough Rapid Transit Company, New York, N. Y.—Bids were received by the Public Service Commission for the First District of New York on July 6 for the supply of eighteen portions of special work to be used in the Seventh Avenue subway. The only bids received were Pennsylvania Steel Company, New York, at \$65,316 and Ramapo Iron Works, New York, at \$66,740. The commission has announced that the extension of the Queensboro Subway—the Steinway Tunnel—will be open for operation to the Queensboro Bridge Plaza station by Nov. 1, and that by Dec. 15 the service will have been extended to the new lines extending to Astoria and Corona. In making this announcement the Public Service Commission asserted that the new connecting link between the Queensboro subway and the Grand Central Station would be ready for use by the end of August. Elevators are now being built at the eastern end of the Grand Central Station platform to extend down to the level of the Queensboro line. When these elevators are in operation it will be possible to run Queensboro subway trains west to a new station on the lower level at Park Avenue and Forty-second Street.

New York & Queens County Railway, New York, N. Y.—Application has been made by this company to the Public Service Commission for the First District of New York for one year's extension of time to discontinue the operation of cars across the meadows between Corona and Flushing.

Dayton, Xenia & Southern Railway, Dayton, Ohio.—This company plans to construct an extension of its lines in Dayton.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—R. P. Stevens, president of the Mahoning & Shenango Railway & Light Company, a subsidiary of the Republic Railway & Light Company, has announced that the company will build an extension of its lines in Sharon covering the eastern section of the city and to Buhl Farm. The best delivery for rails which it has been possible to secure is in the first quarter of 1917. It is expected that the line to Buhl Farm may be in operation by July 4, 1917.

Toronto (Ont.) Civic Railway.—New track is being built by the Toronto Civic Railway from Bathurst and Front Streets to Exhibition Park. The total length of the line is approximately 10,900 ft. of single track, and it is for the most part double-track construction with 60-lb. A.S.C.E. rails on cedar ties and gravel ballast. The overhead construction is span work and No. 00 round trolley wire will be used. Orders have been placed for material for track and overhead work.

Willamette Valley Southern Railway, Oregon City, Ore.—It is reported that this company will construct an extension to Silverton this fall.

***Silverton, Ore.**—It is reported that the Silver Falls Timber Company will electrify its railroad from Silverton to its logging camps.

Memphis (Tenn.) Street Railway.—This company will reconstruct its tracks on Main Street from Linden to Calhoun Streets, preparatory to improving that section of the street.

***San Angelo, Tex.**—The A. Fitkin Company of New York City, through C. W. Hobbs of San Angelo, has agreed to build and equip a modern street car line in San Angelo and to build 1¼ miles of track south of the North Concho River, if given a franchise for eighty years. The proposed line will cost \$180,000, according to the estimate furnished by Engineer Clifford of the Stone & Webster interests, and the city has accepted the proposition. The county commissioners' court, however, is holding the matter up by demanding that the company pay \$200 per annum for the privilege of crossing the viaduct over the North Concho River. The city commissioners and Mr. Hobbs went before the county commissioners but could not induce them to recede from the stand.

Virginia Railway & Power Company, Richmond, Va.—At the annual meeting of the Virginia Railway & Power Company, to be held on July 20, the stockholders will be asked to approve an increase in capital stock from \$8,000,000 to \$9,000,000, the proceeds to be used for improvements and extensions to the system.

Monongahela Valley Traction Company, Fairmont, W. Va.—This company has asked the Public Service Commission of West Virginia for permission to construct an extension from Morgantown to Adamson. Work has been begun by the company on the construction of an extension from O'Neil to Wolf Summit.

SHOPS AND BUILDINGS

Southern Pacific Company, San Francisco, Cal.—Plans have been completed by the Southern Pacific Company for the construction of an office building at Market, Steuart and Spear Streets. The structure will be 275 ft. x 210 ft., ten stories. The steel has already been ordered and it is expected that construction will soon be under way.

Worcester (Mass.) Consolidated Street Railway.—A contract has been awarded to James Miles & Son Company, Worcester, by the Worcester Consolidated Street Railway, for the construction of an addition to its express station at Green Street to be used for the storage of freight. The extension will be 97 ft. x 35 ft., one story high, of brick with a tar and gravel roof.

Salem & Penns Grove Traction Company, Salem, N. J.—This company has awarded a contract to Charles D. Burns, Philadelphia, for the construction of car shops and offices. The structure will be one story, of brick and concrete.

POWER HOUSES AND SUBSTATIONS

Columbus Railway, Power & Light Company, Columbus, Ohio.—This company will construct a new transmission line about 6 miles long in order to supply additional power to the southeast section of the city. The line will extend on Front Street to Ambos, thence along the old canal bed to Frank Road and from there to Smoky Road. The line will be of both underground and overhead construction. It is estimated that the cost will be about \$80,000.

Portland Railway, Light & Power Company, Portland, Ore.—It is reported that this company plans to construct a large transformer station near the interstate bridge, across the Columbia River, between Vancouver, Wash., and Portland, Ore.

Manufactures and Supplies

COPPER AND STEEL PRICES STILL HIGH

The Copper Market Has Resolved Itself Into a Waiting Proposition and Steel Business Continues to Be Brisk

Conditions in the copper market have changed considerably in the last three months. At the beginning of April total transactions were on an unusually large scale, large orders coming from both domestic and foreign sources, and sales being made to the end of the year. During the first three weeks of April over 400,000,000 lb. of copper were sold to England and France. At the present time business is on a much more moderate scale, all quotations are nominal and the enthusiasm which attended the buying movement of a few months ago has evaporated, although England and France are reported to be making inquiries on a large scale for delivery in 1917.

Prices increased from 26 cents in the latter part of March to 31 cents during the first week in May. Since that time the price of copper has decreased to the present nominal quotation of 25¾ cents.

Total sales of copper since the beginning of the year far outstrip all previous records in the history of the industry. With considerable uncertainty existing as to the question of values likely to prevail within the next two or three months, market operations have dropped to a restricted scale. The leading producers and dealers, being well sold, are not quoting for immediate delivery, and it is understood that, in anticipation of an increase in market price, no large orders for future delivery have been taken. Consumers, as a rule, have provided for several months. In influential circles, the impression is that the price advance has been overdone and that a more normal market is necessary to impart confidence.

During the year 1915 a total of 1,624,204,448 lb. of refined copper were produced by the regular refining plants, according to estimates made by government authorities. If business resumes its activity of the first part of April it will be necessary to carry out plans that will place the annual output on a 50 per cent higher basis.

Looking into the situation of the steel market, we find a recent statement by E. H. Gary, chairman of the United States Steel Corporation, which says: "The steel business in the United States for domestic use and for export is better than ever before. The production is larger, the profits greater and the workmen are receiving higher wages. The unfilled orders for the various products of the subsidiary companies of the corporation aggregate nearly 10,000,000 tons, and about 6,000,000 tons of this total have already been specified for actual deliveries. Besides the present daily bookings are about 80 per cent of full producing capacity. We are producing at the rate of 51,000 to 52,000 tons per day."

With this condition general in the trade, there is no strong expectation of any material change in prices. The stability of the present high price is causing little or no concern. The consensus of opinion in the steel market is that the outcome of the Mexican crisis will help rather than hurt the market.

At the present time there are very few domestic orders being placed, and although orders for export have slackened somewhat, new export business is sustaining the market.

ROLLING STOCK

Macon Railway & Light Company, Macon, Ga., is reported to be building new cars in its own shops and beginning with the last week in July expects to place one new car in operation weekly.

Pittsburgh (Pa.) Railways has received the first delivery on its order for 240 all-steel cars which were ordered during the latter part of 1915. The remainder of the deliveries will be made during the summer.

Cleveland (Ohio) Railway has been authorized by the Council Committee to add fifty trail cars to its equipment. Twenty-five of these will be purchased and the remainder will be built in the company shops.

Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., noted in the *ELECTRIC RAILWAY JOURNAL* of July 8 as considering the purchase of two single-truck, all-steel cars, 33 ft. 4 in. overall, has ordered this equipment from the Niles Car & Manufacturing Company.

Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, has ordered from the Cincinnati Car Company six 50-ft. trailer freight cars, of 50,000 lb. capacity, to be equipped at each end with Tomlinson M. C. B. couplers. Wide doors are arranged at each side and at one end to facilitate readily loading the freight to be carried. These are the six interurban cars referred to in the *ELECTRIC RAILWAY JOURNAL* of June 17.

Boston (Mass.) Elevated Railway, noted in the *ELECTRIC RAILWAY JOURNAL* of June 10 as making informal inquiries regarding 100 center-entrance motor cars and forty-two elevated cars, has placed the following orders: Forty-two center-entrance elevated cars, 46 ft. 7¼ in. over platforms with Brill trucks from the Pressed Steel Car Company. The center door is to be 45 in. wide and the end doors are to be 43 in. wide, instead of 40 in. and 33 in., the widths of the doors on the present cars. Fifty center-entrance surface cars have also been ordered from The J. G. Brill Company and fifty from the Laconia Car Company. No motors have been purchased as yet, nor trucks for the surface cars. A contract for fifty articulated center-sections will be awarded soon.

TRADE NOTES

R. L. Brown has been appointed a special representative of the Curtain Supply Company, Chicago, Ill.

General Electric Company, Schenectady, N. Y., has received an order from the International Railway, Buffalo, N. Y., for sixteen four-motor equipments, GE 203 type, with PC control.

Railway Improvement Company, New York, N. Y., has received an order for 6400 straps for the 200 cars recently ordered from the Laconia Car Company by the Bay State Street Railway, Boston, Mass.

Curtain Supply Company, Chicago, Ill., has received an order to equip with ring 88 fixtures and Rex rollers, the twelve cars recently ordered from the Osgood-Bradley Car Company by the Union Street Railway of New Bedford, Mass.

Lord Manufacturing Company, New York, N. Y., reports the receipt of an order for air cleaners for the cars of the Conestoga Traction Company, being built by The J. G. Brill Company, and an order for 100 hydrogrounds from the Union Railway, New York, N. Y.

Tool Steel Gear & Pinion Company, Cincinnati, Ohio, reports that on July 1 the factory employees requested the privilege of a mass meeting with the officials of the company. At this meeting, one of their number delivered a carefully prepared speech, at the end of which a signal was given and a large American flag came gracefully down from its hiding place behind one of the beams. This was voluntarily presented to the company as a sign of good-will. This is particularly significant at this time, since for the past six months this has been one of the very few machine shops in Cincinnati that has not been affected by the machinists' strike. The men also asked the privilege of erecting a steel flag-pole in the front yard.

Sturtevant Engineering Company, London, has been issuing from time to time since the beginning of the war a series of "War Letters" or copies of letters received at the offices of the company and of its associated companies from members of their staffs now serving under the colors. These "letters" are issued partly to enable those at the front to hear the experiences of their comrades and partly to create interest in a fund from subscriptions to assist the families of the men in the service. The twelfth number in this series has just been issued, and contains, besides several letters, a number of illustrations relating particularly to the work of the American Ambulance Organization at Neuilly-Paris. The letters are largely personal in character, and for this reason give a very good insight into the life in the trenches and in the hospitals.

Drew Electric & Manufacturing Company, Indianapolis, Ind., reports recent additional orders for Drew motorman's

safety mirrors from the following companies: Public Service Company, Newark, N. J.; Lake Shore Electric Railway, Sandusky, Ohio; San Francisco-Oakland Terminal Railway, Oakland, Cal.; Indianapolis & Cincinnati Traction, Rushville, Ind.; Toledo Railways & Light, Toledo, Ohio; Empire United Railways, Syracuse, N. Y.; Union Traction Company of Indiana, Anderson, Ind.; Butte (Mont.) Electric Railway; Terre Haute, Indianapolis & Eastern Traction, Indianapolis and Terre Haute, Ind.; Southwest Missouri Railroad, Webb City, Mo.; Muskegon Traction & Lighting Company, Muskegon, Mich.; Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.; Boston (Mass.) Elevated Railway; New York State Railways, Syracuse, N. Y.; Youngstown & Ohio Railway, Youngstown, Ohio; Augusta-Aiken Railway, Augusta, Ga.; Kentucky Traction & Terminal Company, Lexington, Ky.; Easton Transit Company, Allentown, Pa.; Norfolk & Southern Railway, Norfolk, Va., and the Quebec Railway, Light, Heat & Power Company, Quebec.

ADVERTISING LITERATURE

Stone & Webster Engineering Corporation, Boston, Mass., has issued two illustrated folders, one on an installation at the power plant of the Remington Arms-Union Metallic Cartridge Company at Bridgeport and the other featuring the construction of the Midland Warehouse at Chicago.

Vulcan Soot Cleaner Company, Du Bois, Pa., has issued an illustrated catalog which describes the Vulcan soot cleaner, its application to various types of boilers and economizers, and tells what soot really is. A frontispiece reproduces in actual colors nine specimens of soot formed with hard and soft coal.

Day & Zimmerman, Inc., Philadelphia, Pa., are circulating the first issue of "Development," a booklet which they describe as "a journal to disperse ideas, advice and information for use in the proper development of industries and public utilities." This issue contains several illustrations showing some of the work done by this firm.

Gold Car Heating & Lighting Company, New York, N. Y., has issued their 1916 catalog on heating and ventilating apparatus for railway cars. The numerous illustrations, many of which are in two colors, show the various parts of the apparatus made by this company. This catalog also contains a number of inserts printed in three colors.

J. G. White Companies, New York, N. Y., and London, Eng., have issued a booklet entitled "Engineering in Foreign Fields," which gives a list of some of the more important work carried out abroad by them. A large number of excellent illustrations shows the diversity of experience of these companies. A short description of the various departments of these companies is also given.

Pratt & Lambert, Inc., Buffalo, N. Y., have issued a booklet describing their Vitralite railway enamel system for cars whereby labor and material are appreciably decreased over the old paint and varnish system. It is said that the time of stopping cars is reduced, the durability of the finish increased 50 per cent, cleaning made easier, the original color retained and refinishing simplified. Equipment men will appreciate the revolutionary character of the Vitralite system when it is stated that only four coats are required for the exterior finish of new steel cars. New work on steel cars is handled in eight days from the metal primer to the striping. Similar specifications, except for the use of surfacing compounds instead of Vitralite coatings, apply to wooden cars.

HEATER ORDERS IN BROOKLYN

Owing to the fact that several articles have appeared in this paper on the orders for car heaters in the New York Municipal Railway cars, and to remove any possible misunderstanding, the following résumé will be made:

The order for panel heaters for the first 100 cars was given to the Gold Car Heating & Lighting Company in the spring of 1914. The second and third orders were for 100 cars each, and were placed during the summers of 1914 and 1915 with the Consolidated Car Heating Company. The fourth and latest order, placed early in 1916, for 200 cars, was given to the Peter Smith Heater Company, and was for its new panel gravity type of electric heater.