

Electric Railway Journal

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INTELLIGIBLE ANNUAL REPORTS

Completeness and simplicity are two highly-important attributes of an annual report of a corporation—these covering, on the one hand, a full publication of all relevant data and, on the other, a straightforward and plain presentation of the salient facts and conclusions to be drawn from the data. Different reports possess these attributes in varying degrees. For example, steam railroad reports with their maze of figures and long explanations are generally complete but too complex for the average stockholder, while many electric railway reports are so simple as to offer enlightenment to all along general lines, but so restricted in data as to make detailed analyses difficult, if not impossible. Each industry can well emulate the other to a greater extent. The Rock Island Railroad, in a desire for greater simplicity, has included in its latest annual report a "summary for ready reference" of the main points in the report, and other steam railroads should adopt the practice. Such a device is not new to electric railways—one company, the United Railways & Electric Company, Baltimore, Md., even has a certified public accountant insert a special analysis of the features of the financial statements. Most electric railways, however, ought to make their reports more nearly complete, and the fundamental outline of the ordinary steam railroad report would serve as a good basis for a careful investigation into this subject. It seems to us that there is an excellent opportunity for the Accountants' Association to do some more constructive work through formulating a model annual report.

COMMITTEE WORK OF THE ASSOCIATION

On another page of this week's issue is printed a list of committee subject assignments for the Engineering and Transportation & Traffic Associations, including those with which these associations and others are jointly concerned. This list is ready a month earlier than last year, and the committees have, therefore, a flying start for the year's work. As an association we were not altogether proud of our committee work, as a whole, during the past year, although some reports were conspicuously good. The dissatisfaction with some of the work was publicly expressed at the convention, particularly at the meetings of the Transportation & Traffic Association. The situation was partly the result of the conditions outlined more than two years ago in an editorial in the ELECTRIC RAILWAY JOURNAL under the heading "Can Committee Work Be Overdone?" The point made therein was that if a committee has accomplished its purpose it should be honorably discharged,

or if it has failed to appreciate the opportunity before it, it should be revamped. Probably all will agree that there were too many so-called progress reports presented at the Atlantic City convention. The general plan of committee work of the association is excellent, and much that is of very great value is being accomplished. The result is, however, not what it might be in view of the expenditure of funds and time involved. The amount of money invested by the association each year in financing committee meetings and the much greater money value of the time of high-salaried men spent in committee work should result in reports which will represent substantial progress in our knowledge of the art. The progress of our industry and the standing of the industry and the association in the country depend to a large extent upon the results of committee work. Outside critics judge the association by it, and perfunctory reports reflect upon all concerned.

GETTING THE WORK STARTED WELL AND EARLY

The importance of early planning and starting of committee work is evident when we consider that under present conditions but about one-half of the year is available for planning, for accumulating data and for analysis and deductions. Reports should be completed about four months before the convention, and the acceleration period requires about two months at the beginning of the year. The present plan of operation insures a certain amount of continuity, but each year the committee machinery must be lubricated, brought up to speed and supplied with continuous power. The Transportation & Traffic Association took a commendable step in changing its method of organization this year to insure early beginning of the year's activities, and the Engineering Association also made a good start by appointing its committee chairmen at the convention. The digest of work of previous committees which formed a part of many reports last year should help this year's committees in getting down to business. Above all, however, it is essential that committee members and their employers take this work seriously. Committee appointments are not simply an honor. They mean hard work, and if one is not willing and able to shoulder his part of the task he should not accept the appointment. Most important of all, when a company permits an employee to accept a committee appointment it should be with the determination to see to it that he has time and opportunity to do his share of real work. Never has there been a year when the importance of this was so clearly realized by the members of the association.

PROTECTIVE DEVICES AT DRAWBRIDGES

The recent accident in Boston when a loaded street car went off a drawbridge into deep water, drowning most of the passengers, should convey a lesson as to safety precautions necessary in so dangerous a place as an open draw. Just how and why the accident occurred has not yet been fully disclosed. But a fact which stands out conspicuously is the altogether insufficient protection afforded by the usual safety precautions at drawbridges of the swinging sort. Two light gates carrying small red lamps are hardly worth considering as efficient guardians of the public safety at a bridge over which hurrying crowds are swarming through the rush hours, utilizing every possible sort of transportation. Safety devices reasonably adequate in the day of the horse car and the wagon cease to be so when the automobile and long electric cars are the chief vehicles concerned. Neither chauffeur nor motorman may be disposed to take chances, but under modern traffic conditions either may see the danger signals too late to prevent a catastrophe.

Year by year the practicable braking distance of street cars has increased, owing to the normally higher speed and heavier cars demanded by the conditions of traffic, and it is difficult to see why safety devices have not met the new conditions. A crowded thoroughfare, with automobile headlights and tail-lights streaming in every direction, and electric arcs flaring overhead, the traffic teams cutting off the view, and the perpetual distraction of the crowd of foot passengers, is not an easy place in which to catch quickly anything except the most conspicuous signals. And when it comes to the matter of drawbridges there is a real necessity for something more efficient than the light guards usually provided, really less effective than would be the presence of a well-trained traffic officer.

Naturally, the first suggestion which comes to mind in this connection is that final dependence should be placed upon automatic mechanical and electrical devices rather than upon human beings, so liable to "man failure." Derailing switches interlocked with the draw, automatic bumpers, automatic stops, etc., would seem to provide the necessary insurance against running into an open draw. It is quite probable that this accident will serve as a forceful further stimulant to invention along these lines.

Automatic devices would no doubt have been adopted more generally long ago on electric roads but for the fact that they in themselves introduce new elements of danger. A derail, for example, set at the wrong time, might do more harm than it could ever prevent; a section of trolley wire might be dead when power was most needed; the presence of an automatic stop might tend to remove a sense of responsibility from the motorman, etc. But we cannot get away from the fact that accidents like that of last week should not happen. An advantage of the increasingly popular bascule bridge, especially the double-leaf variety, is that it places an impassable barrier across the roadway. The Boston accident will undoubtedly impress this fact upon the minds of those responsible for safety at river cross-

ings. It will also exert an influence in forcing the development of other safety devices. Theoretically, the problem is simple, as the mechanical opening of the draw furnishes the opportunity to operate any kind of a safety device.

THE WAGES QUESTION

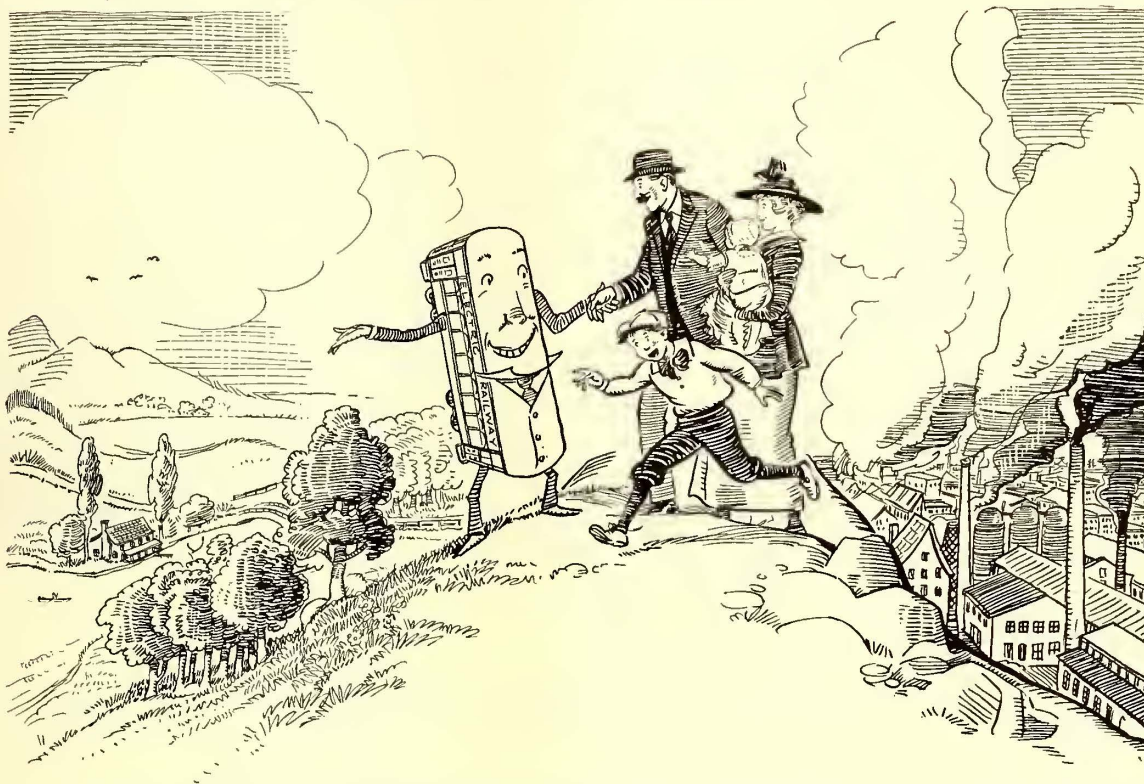
One of the most important problems which electric railway companies are facing in common with other employers of labor on a large scale is the wage schedule. During the past two years we have witnessed a constantly rising rate, and while this has had many ramifying effects, it has been especially hard on those employers, like railroads, which cannot materially increase the rate at which they sell their product to the public.

The problem has both an economic and a political aspect. The former is represented by the rising and risen cost of living as well as by the tremendous present demand of labor from industrial plants engaged in munitions and other manufacture, brought about at least in part by the war. This condition furnishes a legitimate reason for higher compensation for labor, although we believe that workmen should take into consideration not only the present wages but the chances of the permanency of employment after the present artificial activity is over. Coupled with this economic reason for higher wages, however, is also the recent performances of labor in a political way, illustrated especially by the Adamson law.

Each of these situations calls for the most serious consideration on the part of both the political economist and employer. Hence we are glad to note that the steam railroads have decided to test in court the constitutionality of the Adamson law, that the Academy of Political Science is planning to give all of the time during its meeting in New York next week to a study of the present labor situation, and that the National Civic Federation is planning to take up immediately through a committee meeting at Washington the first week in December the question of how best to improve the state and federal mediation and other labor laws. We hope also that the National Industrial Conference Board, which was organized this week in New York primarily as a clearing house on industrial problems for its members and for the public, will be able to do something toward a study of this subject which is of so much importance to the national prosperity.

The crux of the question lies in the fact that so long as wages are based purely upon the day or the hour spent in work there is constant pressure by the employee toward raising the rate and an equally strong desire on the part of the employer to lower it, regardless of the effect upon the other. This condition introduces the fundamentally wrong concept that their interests are diametrically opposed. Actually what the employer wants to buy is not a day's work or an hour's work but efficient production, and the more of this he receives in a day or an hour the more he can pay. Hence there is really a unity of interest between employer and employee. It is because they have not recognized this fact that the labor unions have made their principal mistake.

What Are You Doing For the Public— and Do They Know It?



W. J. ENRIGHT

The Railway Allows the Workman with His Family to Live in the Country

THE public mind lays a lot of stress at times upon what electric railways do TO the people.

But do people know and think about what electric railways have done FOR them?

One has only to look over the daily reports of murder, scandal and of men and things gone wrong to realize that there is not much truly GOOD news.

That is to say, the purveyors of news do not regard it as their vocation to go around digging out and reporting things that are going aright.

Nevertheless there is a market and an audience for news and knowledge of such things.

For example, how much has the electric railway of a given community increased property values in districts from which perhaps it is not yet deriving an adequate return on its investment?

How has the electric railway contributed to the health and general welfare by making it possible for people to live away from congested districts?

What is the biggest 5 cents' worth of anything that a man can buy? Unquestionably it is electric transportation.

Have accidents been cut down? How much and how?

How much more service is now being given for less revenue per passenger than was given ten years ago?

How much better are cars, roadway and service, and how much more do they cost now, than when the 5-cent fare was established?

What does the electric railway contribute in wages, taxes and otherwise to the community?

The answer to every one of these questions is an interesting story.

But no one is going out of his way to dig out the material for these stories; the railway must do it.

It is its business to do it because a knowledge of the answers to these and related questions are essential to the establishment of a fair attitude toward the railways.

Think it over. Don't you want the public to know what you have done, are doing and will do FOR your town if you are given a chance?

The telling of these things—with others—is publicity work.

It takes a publicity man—with no other duties on his hands—to do this work the way it should be done.

The main thing, however, is for electric railway managements to decide that from now on there is going to be available at least as much information as there is misinformation about them.

What's the use of living, if the bad we do is bulletined daily, while the good is saved to be buried with our bones?



NORTHERN OHIO TRACTION'S STEEL CAR—EXTERIOR VIEW OF COMPLETELY EQUIPPED MOTOR CAR

Car Weight Reduced by Steel Construction

A Description of the New Steel Interurban Passenger Cars Recently Received by the Northern Ohio Traction & Light Company, Akron, Ohio—These Cars Combine Reasonable Weight with Substantial Construction and Weigh 12,000 Lb. Less Than Steel-Underframe Cars of the Same Type

ALTHOUGH the steel interurban cars recently purchased by the Northern Ohio Traction & Light Company, Akron, Ohio, are not radical in any particular, they represent the product of a very careful study of the service requirements. They are 12,000 lb. lighter than this company's steel-underframe cars of exactly the same type, and they have 120 hp. more motor capacity. The new cars were designed primarily for operation in the three-car trains between Akron and Cleveland, Ohio, and the order included thirteen motor cars and two trail cars. This company had forty steel underframe interurban passenger cars in operation which, in so far as dimensions and arrangement were concerned, were satisfactory from an operating standpoint. In preparing the design of the new cars, therefore, it was deemed advisable to adhere to this standard type, but to change the construction from the steel underframe to the steel side-girder type. In making this change, however, the general features of the old cars was preserved so that the new cars could be operated in trains with the old equipment without marring their appearance. It was also considered that better construction could be had if the Gothic transom sashes of the old cars were omitted.

The total weight of the new steel motor passenger car, completely equipped, is 70,000 lb. Of this, 35,000

lb. is in the body and its equipment, including air brakes, heaters and other fittings. The motor equipment weighs 15,000 lb. and the trucks weigh 10,000 lb. each. The old steel-underframe cars weigh 82,000 lb., and they are equipped with GE 204, 75-hp. motors. The new cars are equipped with GE 240-B, 105-hp. motors, and both cars have type MK control. Steel girder construction was adopted for these new cars because it was believed that they would give a longer life in service at a lower maintenance cost, and in case of an accident they were much safer than a wooden or a semi-steel car body.

The general dimensions of these steel interurban motor and trail cars are as follows:

Length over body corner posts.....	42 ft. 1 3/4 in.
Length over front platform.....	4 ft. 9 in.
Length over rear platform.....	4 ft. 9 in.
Length over vestibule sheathing.....	51 ft. 7 3/4 in.
Length over crown pieces.....	52 ft. 10 3/4 in.
Width over sills, including sheathing.....	8 ft. 6 in.
Width over posts at belt rail.....	8 ft. 6 in.
Width at widest part of car body.....	8 ft. 8 in.
Center to center of window posts.....	2 ft. 10 1/4 in.
Height, top rail to underside of side sills.....	41 1/2 in.
Length of smoking compartment.....	11 ft. 9 1/8 in.
Length of main passenger compartment.....	29 ft. 3 1/8 in.

STEEL FRAMING DETAILS

Commercial sections and pressings were used in the framing of these cars. There are two 8-in. 18-lb.

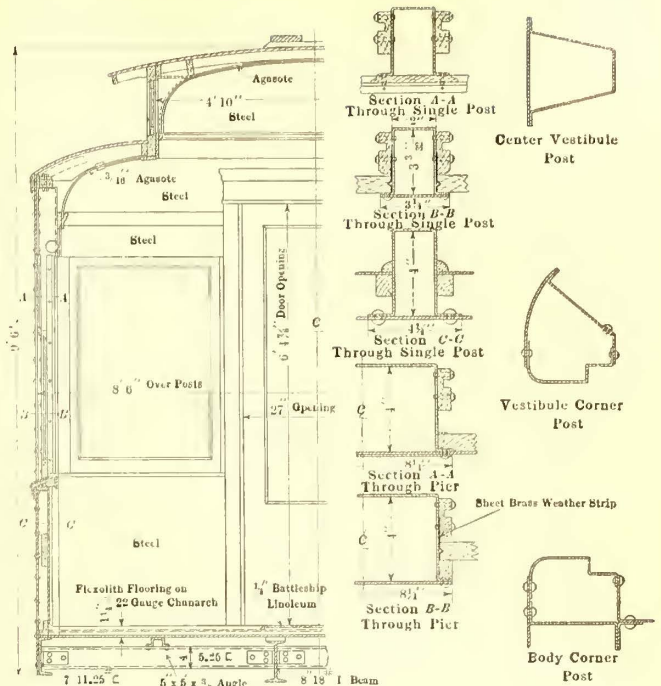
I-beam center sills at 16-in. centers extending from the front buffer to the rear body corner post; 7-in. 12¼-lb. side sills, and a ⅛-in. x 34-in. side plate reinforced at the belt rail with a ⅜-in. x 2½-in. bar. All cross-sills, excepting those at the rear body bolster, are 4-in. 5¼-lb. channels riveted to the webs of the center and side sills. The cross-members at the rear bolsters of the car body are formed of 6-in. 10½-lb. channels. The end sills are 7-in. 12¼-lb. channels, and the needle beams are formed of 6-in. 12¼-lb. I-beams.

A drop platform 7⅛ in. below the main car floor level is provided at the rear end of the car body. The center and outside supports of this consist of 6-in. 10½-lb. channels arranged to clear the motors and trucks, and they extend to the rear body bolster. The front buffer is depressed below the body framing, and it is built of two 4-in. 8½-lb. I-beams riveted to the bottom framing between the side and center sills. The top of this buffer framing is 8 in. below the main car floor level, and it is reinforced by ⅛-in. top plates riveted to the four buffer framing members. The buffer end is formed of a 7-in. 9.8-lb. anti-climber riveted to a 7-in. 12¼-lb. channel. The rear buffer is constructed in a similar manner, except that the longitudinal members are the extensions of those supporting the platform. A pressed U-section longitudinal support is also provided between the center and side sills. The body bolsters are of the built-up type, the top and bottom plates being 1 in. x 10 in. in size, and separated by gray iron castings. The bottom member of the bolster is arranged so that it can be removed without disturbing any part of the underframing.

OTHER STEEL DETAILS

All body posts, including side, corner, vestibule and door posts are made of pressed No. 14 gage sheet steel. These were substituted for commercial shapes because they were considered a more economical section, both as regards weight and strength. The bases of these posts are securely riveted to the underframing and the tops are riveted to the side plates, to the vestibule plates and to the end plates. The belt rail proper is formed of a 3/32-in. pressed brass section extending the full length of the car body. The several post sections and the belt-rail section are shown in one of the accompanying illustrations. The brass belt rail or sash rail is brazed to each post along all lines of contact. The letterboard is formed of ¼-in. steel and is continuous for the full length of the car body. It is riveted to the side and corner posts as well as to the body side plate, which is formed by a ¼-in. x 2-in. x 3-in. angle. The letterboard is further reinforced between the side posts by ⅛-in. x 7/8-in. x 1 in. angles, which also serve as a fastening for the Gothic sashes.

The sash rest in the vestibules is of pressed steel and the dash is formed of No. 14 gage steel. It is also of interest to note that the pressed steel posts which are exposed on the interior of the car body are grained like mahogany to harmonize with the rest of the in-

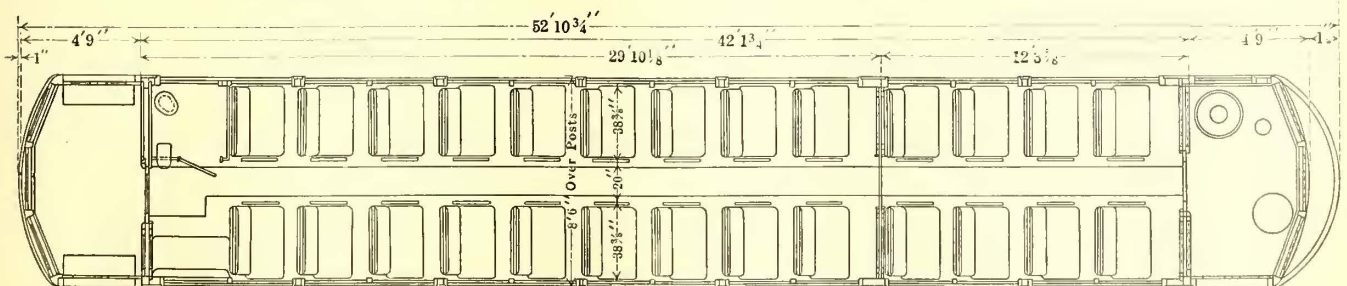


NORTHERN OHIO TRACTION'S STEEL CAR—CROSS-SECTION OF CAR AND POST SECTIONS

terior finish. This is also true of the wainscoting, which is formed of No. 16 sheet steel. As a weatherproofing and vibration deadener, all the outside sheathing of the car is covered with ¼-in. cemented felt. The framing of all sashes, doors, molding and the toilet and smoking-room partitions is of mahogany. The flooring is a No. 22 gage Chanarch, covered with 1 in. of Flexolith. The Chanarch is riveted to all longitudinal members in the underframing and thus serves as a diagonal bracing. In the aisle the top surface of the Flexolith flooring is depressed ¼-in. below the surface of the floor beneath the seats. This depression is covered with ¼-in. battleship linoleum thoroughly cemented to the floor. The roof is reinforced with steel carlines forged from ½-in. x 1¼-in. bars and concealed between the wooden carlines. The lower ends of these carlines were forged so that they could be riveted to the body side-plate angle.

INTERIOR EQUIPMENT

A feature of these cars appears in an interior lighting system similar to the Cleveland Railway's standard, which consists of six 94-watt lamps on a single circuit installed along the center line of the car body, with an extra lamp arranged in the circuit so that it may be cut in through a selector switch in case one of the six lamps in the car lighting system burns out. In addition to these there is a 23-watt side lamp on the deck rail at each panel post. This arrangement of the lighting system required three circuits, whereas the system employed on the old-type steel underframe cars required



NORTHERN OHIO TRACTION'S STEEL CAR—FLOOR PLAN OF CAR

five circuits. An Ohio Brass Company's signal system, including storage battery emergency lamps in the markers and tail lights, was also installed. A pilot lamp in the car advises the conductor of the condition of these lamps.

Other specialties in these cars include a Westinghouse straight and automatic air-brake system with D2-E 25-ft. air compressors, Brill 27-MCB-2 trucks, Tomlinson automatic couplers, Hale & Kilburn seats, Acme Supply Company's curtain fixtures, Edwards automatic closing trapdoors equipped with a self-folding device, Peter Smith OC-2 hot-water heaters of the double-circulating system type, the Cleveland Trolley Supply Company's ticket holders, Electric Service Supply Company's signal gongs, Nichols-Lintern air sand boxes, sand valves and sand traps, Crouse-Hinds arc and incandescent head lamps, Knutson trolley retrievers, Peacock hand brakes, a 15-ton Barrett jack in the emergency tool box and a Pyrene fire extinguisher.

As shown in one of the accompanying illustrations, the bus line receptacles providing for train operation are all installed on a wooden block mounted on the vesti-



NORTHERN OHIO TRACTION'S STEEL CAR—INTERIOR VIEW OF CAR

bule dash. The back of this block is cut to fit the dash, and it is fastened to it with a rubber gasket for weatherproofing purposes. This block serves as an insulator, and the dash is cut away from behind the block to permit the bus lines to connect with the receptacles. A plug for the headlight was also provided in this block so as to shorten the leads. These cars were designed and built under the supervision of J. G. Swain, general superintendent of power and shops, and P. J. Wood, superintendent of shops, under the direction of Charles Currie, the vice-president and general manager of the Northern Ohio Traction & Light Company. The cars were built in the shops of the Jewett Car Company, Newark, Ohio.

The Fort Smith (Ark.) Traction Company in its application before the State Tax Commission has secured a reduction in assessment from \$1,016,260 in 1915 to \$800,000 for 1916. This was the greatest reduction of any public utility company in Arkansas.

Recent Decisions and Inventories*

Inventories Should Be Classified as to Age, Condition, Use and Extent of Use of Each Class of Service

BY PHILANDER BETTS

Chief Engineer Board of Public Utility Commissioners of New Jersey

THE result of recent decisions is that inventories and the resulting appraisals must be classified. As far as the engineer is primarily concerned with cost, the inventory and appraisal will arrive at the same aggregate in any case, but the engineer is further concerned with the use and operation of the property, and it is his duty to determine to what extent each class of property is required in the service of the public and to what extent it is required for the furnishing of the various classes of service. In preparing the inventory, therefore, such classifications must be made as will readily show the use to which the property is devoted.

As to calculations for depreciation, while the so-called Idaho decision is to the general effect that full or theoretical depreciation should not be deducted in obtaining the fair value of the property, it cannot be said that this principle is at all well established, and it becomes necessary, in the inventory, to determine the accrued depreciation of each item, taking into account not only ordinary wear and tear, but obsolescence and inadequacy (which some authorities call functional depreciation). The writer has long been of the opinion that in order to square valuations with the court decisions, engineers must (1) obtain definite appraisals of the existing physical property, (2) ascertain the full theoretical depreciation, and (3) make such deductions as are necessary because of property built unwisely or for anticipated increases in population which have not materialized or for classes of service which have not been taken on.

In making the appraisal of the physical property, due allowance must be made for overhead charges. In addition there are allowances for various intangibles not properly included under the head of overhead charges. They are (1) cost of organization and obtaining the necessary charters and franchises, (2) deficits in operation in the early history of the project, (3) lack of profits in the later years, and (4) the unearned depreciation which has accrued. It is the province of the engineer to investigate and determine the various items referred to with the exception, perhaps, of items concerning the cost of organization and obtaining the necessary charters and franchises.

The foregoing items should be considered as making up the cost of establishing the business. There has been much contention with reference to the necessity of including going value, but here one is confusing cases involving justice to the investor with purchase and sale cases. Going value is an element to be considered in purchase and sale cases and has no pertinency whatever in rate cases. The United States Supreme Court, in its recent decision regarding the Des Moines gas rates, decided that going value was to be considered in these cases, but based its estimates of going value on those elements which go to make up the cost of establishing the business. In the determination of reasonable or fair rates, full consideration must be given to the sacrifice made by the investor. This will include, in addition to the investment in the physical property, early losses, lack of profits and unearned depreciation, the aggregate of which should be classified as the cost of establishing the business.

*Abstract of paper presented before meeting of American Institute of Electrical Engineers in New York City on Nov. 10.

In conclusion, it may be said that:

1. Property must be inventoried in such detail as will lead to a determination of its value or cost within a very small percentage of absolute accuracy.
2. It must be classified as to its use and as to the degree of its use in the various classes of service.
3. The inventory must include full information as to age and present condition, this information leading to accurate estimates of accrued depreciation.

Continuous Inventories—Their Value and Preparation*

Four General Groups of Property Suggested, with Forms and Methods of Collecting and Recording Data

BY HARRY E. CARVER

Assistant Engineer Board of Public Utility Commissioners of New Jersey.

A PERPETUAL inventory of property would be useful to any company in the following ways:

1. Data are made available for answering promptly any complaints as to discrimination or overcharges in existing rates.
2. The increased cost of labor and material renders it probable that many rate cases in the future will involve increases, and the company will need to be fortified with all necessary facts as to the cost of service rendered.

*Abstract of paper presented before meeting of American Institute of Electrical Engineers in New York City on Nov. 10.

3. One of the most urgent reasons for making an inventory and keeping it up to date will probably be the necessity of having some means for judging whether or not a company is making reasonable preparation for renewing its property.

4. The labor and time involved in securing commission approval of security issues on the part of the company and of the commission would be materially reduced by a continuous inventory. There would be less interruption of company work by governmental inspectors in checking up construction expenditures or making a complete appraisal.

5. The market for a company's securities would, doubtless, be increased by a general knowledge that a running inventory of all the company's property was maintained and consequently that some check was available upon property.

6. A continuous inventory would probably make available data for securing franchise extensions from various municipalities under more equitable terms than appears to be possible at present.

7. Data would be available for making investigations to satisfy the demands of labor.

8. A continuous inventory would be conducive to much more accurate distribution of charges between fixed capital and operating expenses as well as of general overhead charges.

9. Insurance adjustment for fire and other losses could be more readily and equitably obtained.

10. Tax commission reports and yearly reports to regulating bodies could be more readily compiled.

Form 1 AMERICAN ELECTRIC CO.—Subsidiary Co. File No. 5
DIVISION—Northern LOCATION—14th St. Belleville Act. No. 8
Computer Checked App'd by Date Act. No. 116
SUBJECT Substation Buildings Reference Sheet No. 1
(or other similar items in Group A)

Auth. No. and page	Date acquired	Description—As originally acquired or withdrawn	Area—Sq. ft. or No. of units	Original cost		Total cost corrected to date for additions, etc.	Est. remaining life
				Per unit	Total		
643-10	1911	1-Substation Building Brick on concrete foundation. 40' x 30' One Story & Basement.	1200 sq. ft. 2000 cu. ft.	\$2 00	\$2400	\$2400	50
1583-4	1916	Brick wall removed 30'x18" High			200	2200	45
1688-4	1916	Addition 10'x40'	400 sq. ft. 6667 cu. ft.	2.50	1000	3200	66.6

Form 2 AMERICAN ELECTRIC CO.—Subsidiary Co. File No. 5
DIVISION—Northern LOCATION—All Act. No. 124
Computer Checked App'd by Date Act. No. 124
SUBJECT 5 kv Transformers Type X Reference Sheet No. 1
(or similar items in Group B or C)

Date	Ref. sheet	Added	Number of units		Cost per unit	Total cost	Corrected total cost to date	Av. Life	Av. age	
			Withdrawn	Net total						
Brought Forw.			Inventory	Jan. 1, 1916	250	\$62	\$15,500	\$15,500	5	1
1916			40		290	61*	2,400	17,940		
1916			2		288	65*	1501	17,810		
1916			3		1991	641	192	17,618	16	
1916			Inventory	Dec. 31,	285	61.82			15	5.08

Form 3 AMERICAN ELECTRIC CO.—Subsidiary Co. File No. 3
DIVISION—Northern LOCATION—Belleville Office Act. No. 3
Computer Checked App'd by Date Act. No. 107
SUBJECT General Equipment, Dec. 31, 1916 Ref. Sheet No. 101
(or similar items in Group D)

Quantity	Unit	Item	Year acquired	Original cost			Present value		
				Ref.	Unit	Am't.	%	Am't.	
2		Typewriters	1914	52	\$79	\$158	75	\$118	
2		Typewriter desks	1912	35	20	40	80	32	
6		Best wood chairs	1916	3	18	180	18		
Totals, Dec. 31, 1916						\$216	77.7	168	
Totals 1916						18			
Total of items Jan. 1, 1916						\$198		210	
Totals per inventory 12-31-15				61					
Withdrawals 1916						\$12			

Transferred to sheet No. 1-10.

Form 2 AMERICAN ELECTRIC CO.—Subsidiary Co. File No. 8
DIVISION—Northern LOCATION—All Act. No. 118
Computer Checked App'd by Date Act. No. 118
SUBJECT Summary of Substation Buildings, 1916 Sheet No. 101
(or similar items in Group A)

Ref. Sheet	Item	Location	Date originally acquired	Cost to date	With- drawn	Cost to Dec. 31	Present value Dec. 31	
							%	Am't.
1	SS Building	14th St. Belleville	1911	\$2400	\$200	\$3200	93.2	\$2982
2	ditto	First St. Nutley	1908	etc.				

Transferred to sheet No. 1-10.

Form 4 AMERICAN ELECTRIC CO.—Subsidiary Co. File No. 4
DIVISION—Northern LOCATION—All Act. No. 124
Computer Checked App'd by Date Act. No. 124
SUBJECT Summary of Transformers—1916 Sheet No. 101
(or similar items in Group B or C)

Size	Number of units			Cost of units			Av. cost per unit	Present value Dec. 31		
	Jan. 1st	With- added	Dec. 31	Jan. 1st	Added	With- drawn		Dec. 31	%	Am't.
5 kv	250	40	5	285	\$15,500	\$2,400	\$322	\$17,618	\$61.82	4.6
10 kv	100	20	2	118 etc.						

Transferred to sheet No. 1-10.

Form 6 AMERICAN ELECTRIC CO.—Subsidiary Co. File No. 5
DIVISION—Northern LOCATION Act. No. 5
Computer Checked App'd by Date Act. No. 1
SUBJECT Grand Summary, 1916 Sheet No. 10

Acct. No.	Ref. Sheet	Item	Total cost			Present value		
			Jan. 1	With- added	Dec. 31	%	Am't.	
101	5	Land, etc.						
107	101	General Equipment	\$210	\$18	\$12	\$216	77.7	\$168
118	101	Substation Bldgs	2400	1500	200	3,200	93.2	2,982
124	101	Transformers	15,000	2,400	322	17,618	74.6	13,143
Totals Northern Div. 1916			18,110	\$3,458	\$534	21,034	77.5	16,293

CONTINUOUS INVENTORY—SPECIMEN FORMS FOR ORIGINAL ENTRIES AND SUMMARIES OF VARIOUS PROPERTY GROUPS

Notes on Form 1:

(a) If any item of property subject to depreciation is acquired subsequent to date of first use, this fact should be indicated together with other information available as to original construction, date, cost, etc.

(b) Remaining life of 45 years is obtained by subtracting 5 years elapsed between 1911 and 1916 from 50 year life first estimated.

Remaining life of 46.6 years is obtained by computing a weighted average of \$2,200 at 45 years and \$1,000 at 50 years.

(c) Present value on a basis of straight line depreciation may be readily obtained by multiplying \$3,200 by ratio of 46.6 years to 50 years, giving 93.2 per cent and \$2,982.

Notes on Form 3:

*Average costs for all units of this size for any given period—say one year.

†Prices might be averaged and one figure shown or, if not much variation in price, they might be withdrawn at the average cost of the 250 shown at the beginning of the year.

Notes on Form 4:

(a) Columns on left of form for "Reference Sheet" and "Type" have been omitted in reproduction.

(b) The sign "%" under "Present Value" for straight line depreciation would usually be obtained by comparing average age

of units installed with average life of units withdrawn. In this case it is estimated that a 15 or 16 year life is not long enough and life base is arbitrarily taken as 20 years. In some cases it might be desirable to consider salvage in arriving at present value but it is disregarded above for sake of brevity.

Notes on all forms:

(a) Loose leaf sheet (8 3/4 in. x 11 in.) is recommended for all forms.

(b) For all withdrawals use red ink.

(c) Forms 1 and 3 constitute the continuous record. All other forms are made up when it is desired to arrive at totals and are correct for one date only. If periods used are different than calendar year, forms would be slightly modified.

(d) Provision for identifying computers, etc., on Forms 1 and 3 after first entries could be made by having initials inserted in date column or by providing separate column.

(e) Figures carried to grand summary, Form 6, are merely illustrative and not the totals which would be obtained if more entries were made on Forms 2, 4 and 5.

(f) From totals on Form 6, the amount of additions for which new securities may be issued may be readily determined.

(g) By comparing Form 6 as filled out for 1915 with year 1916, the credit which must be made to reserve account from earnings to provide for the year's depreciation may be determined.

11. A continuous inventory would necessitate the keeping of records which would prevent the lack of correct information regarding the location of property, such as underground conduits, etc.

12. Detailed costs would readily be available from which the costs of rendering any particular service or of making any particular extension or betterment could be accurately determined.

PREPARATION OF THE INVENTORY

As most companies have not a complete inventory and appraisal of their property, however, it seems advisable to state that a company can readily start an inventory of all new property acquired from the present time forward and all old property withdrawn from service and either replaced or abandoned, without detailing a special force of engineers to make a complete inventory of all property. The record of old property can be obtained when the company's engineers and accountants may be available for this work.

The fundamental requirement is an efficient "work order" system. Such a system is in force in practically every company of appreciable size to-day, and with more or less modification can be adapted to give the records required. In order to obtain the necessary records for writing off the original cost of the property when it is retired, however, it is absolutely necessary that one additional step be added to this system as it is generally in force in most companies, *viz.*, an allocation of the cost of each piece of construction or property acquired must be made in detail when the work is completed, and preferably just before the work order is finally closed, as such an analysis will frequently disclose inaccuracies in either debits or credits. This practice is followed by many companies to a certain extent at the present time, but must be applied to all work orders, and the final cost must be reduced to the same units that are likely to be needed in making estimates for withdrawals or additions.

DIVISIONS OF PROPERTY ITEMS

The items of property for the purposes of inventory may be divided into four general groups as follows: (a) Those items which are large enough to be recorded individually or in small groups with one entry, but which are likely to be altered or changed in part; *e.g.*, buildings. (b) Items which may be recorded individually and which are withdrawn from service as a unit; *e.g.*, meters. (c) Items which must be recorded in units of length, pounds, or some similar units and miscellaneous items; *e.g.*, wires and cables, insulators, arresters, etc. (d) Those items of property which are usually carried in inventories at the present time and which are usually checked up by field inventory at regular intervals; *e.g.*, materials and supplies, portable tools, office furniture, etc.

There may be considerable difference of opinion as to just what method should be followed in collecting the data required, but a general scheme could be followed for a gas, electric railway or railroad, telephone or telegraph, water or sewer utility or a private industrial plant by classifying the property in the general groups indicated above about as follows:

(a) 1. Land and right-of-way. 2. Building and structures. 3. Equipment of stations, buildings, etc.

(b) Poles, transformers, meters and services for an electric company; meters, services, fire hydrants, lamps, etc., for a water or gas company, and similar items for these or other companies.

(c) Wires, cables, conduits, crossarms, insulators, for an electric company; feeder cable, trolley wire, straight

track, etc., for railways; transmission and distribution mains for water, gas and sewer companies.

(d) Office equipment, shop equipment, stable equipment, etc.

FORMS TO BE USED

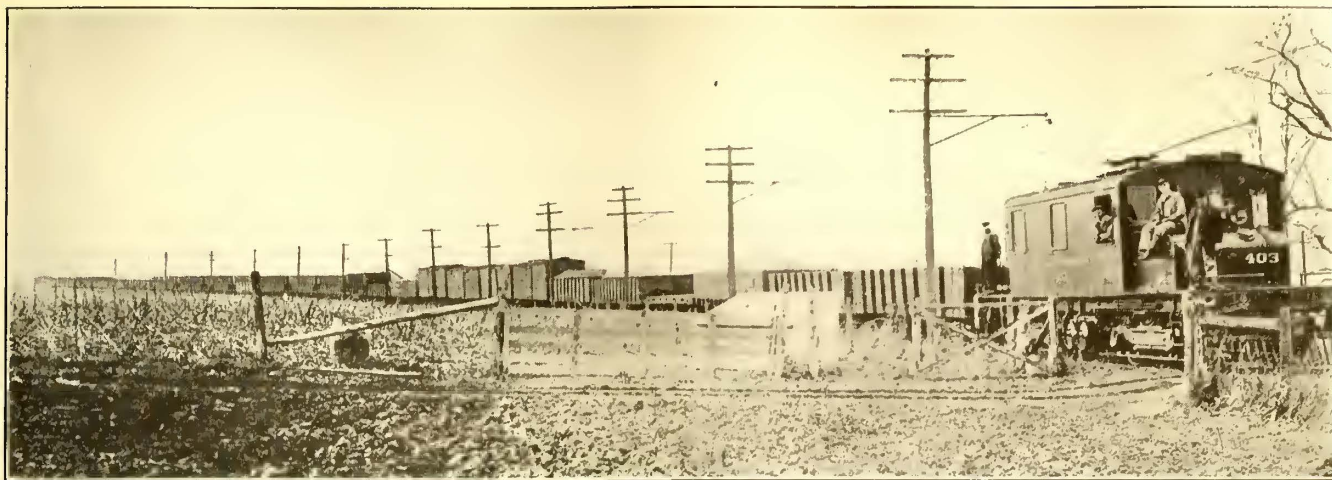
The general form of recording data for items in group (a) in detail is given on Form 1. These data should be obtained from the completion report of the work order, an extra copy of which it might be advisable to file with other inventory data. The basis for estimating the unit prices for the cost of brick wall removed (mentioned on Form 1) should be found in this completion report. A list of the quantities involved should be available from the information and plans in the hands of the engineer responsible for the new addition. The summary of all such property classified under any particular account for any particular division or subdivision could be recorded on Form 2.

The same forms (3 and 4) are recommended for both groups (b) and (c), but the methods of collecting the data required are different. For both groups it is thought best to use unit costs averaged for the district into which the company chooses to subdivide its territory, say a tax district, and for a certain period of time, monthly, quarterly or yearly. The average for labor, storeroom charges, miscellaneous material items, overhead charges, etc., would necessarily need to be computed after the close of the current period or the average taken from the preceding period and final adjustments made for variation. The total quantities for all items in group (b), for which a card record is assumed to be made, can be computed more readily from the cards or from the completion reports of the work orders. For all items in group (c), the totals of both quantities and prices would probably best be obtained and reconciled with the amounts given in the completion reports of all work orders involved, although they might be obtained from field books, street maps, or pole record and manhole record cards. Form 3 shows method of recording a group of similar units, *viz.*, 5-kw. transformers, and Form 4 shows method of summarizing units of various sizes.

Form 5 is recommended for summarizing items in group (d). The first entry for each of these items is naturally the cost new, and it is recommended that this cost new be carried in the inventory in a parallel column with the depreciated value until such time as the item is retired; that the total cost new of all items be carried in the property account; and that the estimated accrued depreciation of all such items be carried in the depreciation reserve account instead of being charged directly to operation each year and lost sight of thereafter as is the practice with many companies to-day. A comparison of such an inventory at the end of any year with the preceding one will indicate the total value of all withdrawals and additions, and a proper adjustment can then be made in one lump sum between the capital account and the depreciation reserve.

Form 6 is to be used as a summary of all property, and probably needs no explanation in addition to notes given.

To carry out the above, it would seem advisable to create a separate department under the joint supervision of the chief engineer, general auditor or controller, and the official in charge of the public relations committee of the utility if such a committee exists. The man in charge of this department should understand engineering, accounting and statistical work, and be capable of co-operating with all other departments of the company to secure the full benefits possible to be derived as outlined in the first section of this paper.



TYPICAL FREIGHT TRAIN ON TOLEDO & WESTERN RAILROAD

An Electric Railway Operating Under Steam Road Conditions

The Author's Statements Show That the Toledo & Western Railroad Has Been a Potent Factor in the Prosperity of the Territory Which it Serves

By A. SWARTZ

Vice-President Toledo & Western Railroad, Toledo, Ohio

THE Toledo & Western Railroad is an electrically operated line handling steam railroad business on its main line between Toledo and Pioneer, Ohio, a distance of 59 miles, and between Allen Junction, a point 16 miles west of Toledo on the main line, and Adrian, Mich., a distance of 21 miles. The road parallels the Lake Shore & Michigan Southern Railroad over the entire length of the Adrian branch. Steam railroad connections are provided through the Toledo Terminal Railroad, a belt line connecting with all steam roads entering Toledo. There are four other steam road connections along the line, and the Toledo & Western has many through rates with the steam roads. The main line is not paralleled by any steam road. This line passes through Sylvania, Metamora, Lyons, Ohio, and Morenci, Mich., and Fayette, Ohio, into Pioneer, Ohio. The Adrian branch passes through Blissfield, Mich., to Adrian, a city of 11,000 inhabitants.

STEAM RAILROAD CONNECTIONS

The Toledo & Western Railroad is organized on the same lines as a steam road and, in fact, is accepted as such by a number of steam roads that interchange business and co-operate by granting divisions of freight rates. Physical track connections are in use at Fitch, Ohio, with the Toledo Terminal Railroad; at Franklin, Ohio, and Adrian, Mich., with the Wabash Railroad, and at Dennison, Ohio, with the D., T. & I. R. R. It is a member of the American Railway Association and the Central Freight Association, representative steam road organizations.

The railroad was built about fourteen years ago to tap territory along the main line, which was very much in need of railroad facilities. At that time the average farm land along the route was worth in the neighborhood of \$75 per acre, whereas now it ranges from \$125 to \$200 per acre. The road traverses a very rich farming country, consisting at present of a large acreage

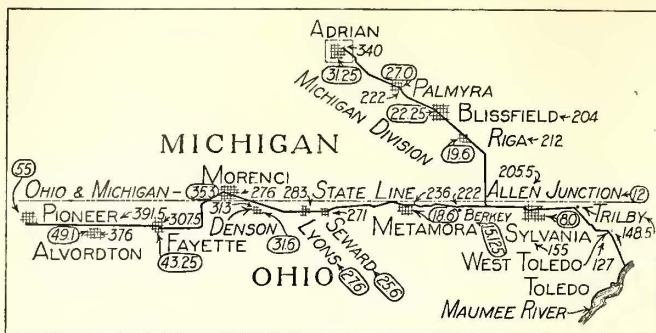
of sugar beets. The annual yield of 2500 acres of sugar beets, at least 25,000 tons, is hauled to Blissfield, Mich., to a large sugar factory having a capacity of 1000 tons of beets per day, the equivalent of 125 tons of refined sugar. Besides this, the yield of 7500 acres is hauled to this factory from other sources, and the beets from an acreage of 1200 are taken to Toledo.

CLASSES OF TRAFFIC HANDLED

The passenger traffic on this road is approximately 70,000 passengers per month. Passenger trains are operated at a schedule speed of 20 m.p.h. The low average schedule speed is due to the time required in incorporated towns. Outside of these the schedule speed approximates 30 to 35 m.p.h. From West Toledo to Sylvania, Ohio, a distance of 8 miles from the Toledo interurban station, the contiguous property is being rapidly developed as suburban homes, and affords quite a suburban traffic, although at the present time this traffic is somewhat erratic and barely pays for the service given.

The regular freight schedule comprises one local and four package freights each way per day. One of the package freights is used on a milk route, and hauls, in addition to its load, two cars of bottled milk daily from Morenci to Toledo. These cars are refrigerated with cold air, and reach their destination in the hottest weather with a temperature not exceeding 42 deg. Fahr. The milk express revenue has increased during the last four years from \$5,000 to \$35,000, and it is expected that it will reach \$100,000 in the next two years. A large sugar beet business is also handled. Approximately 60,000 tons of sugar beets are handled in thirty days during the sugar beet season, practically all in the month of October. For this business about 1800 cars are required, each of these cars having an average haul of 20 miles.

The necessity for package freight cars will be read-



OUTLINE MAP OF TOLEDO & WESTERN RAILROAD

Elevations shown by figures not encircled. Datum is that used by city of Toledo; 91.7 on this datum being mean lake level at Toledo, which is 573 ft. above mean sea level. Figures encircled represent miles from West Toledo.

ily understood when it is stated that during 1914 about 15,000 tons were handled in this manner. The carload business amounts to about 8000 cars per year, and in addition to sugar beets consists principally of crushed stone for road purposes, coal, live stock, hay, grain, logs, sugar and lumber. The total tonnage handled during the two years past shows the following increases for the year 1915 over 1914: 17 per cent for loaded cars, 14 per cent for ton-miles of loaded cars, 12 per cent for car-miles of loaded cars, 14 per cent for empty cars, 32 per cent for ton-miles of empty cars, and 16 per cent for car-miles of empty cars.

The United States government has authorized a regular mail-car service on this road. The car which is used carries a mail clerk and makes trips daily except Sunday from Toledo to Pioneer and return. The Wells Fargo Express Company maintains express service on all freight and on some passenger trains. While at present this is not a source of great revenue, it is expected that the business will grow materially.

TRACK, POWER SUPPLY AND SHOPS

In railroad parlance this road was "built on the ground," and there are some very short heavy grades and sharp curves. The grades, however, do not exceed 75 ft. per mile, with one exception at Adrian, Mich.,

where one of 100 ft. per mile is encountered. Fortunately, practically no freight has to be handled over this grade. The curvature in most cases does not exceed 10 deg. The track is laid with 60-lb. rails, on cedar ties on tangent track and on oak ties on curves. It is well ballasted with cinders, gravel and crushed stone.

Power to operate the line is purchased from the Toledo Railway & Light Company. The sale of current for lighting to villages, private business concerns, and residences forms a fairly lucrative business, and it is hoped that it may soon grow to produce about \$100,000 yearly revenue.

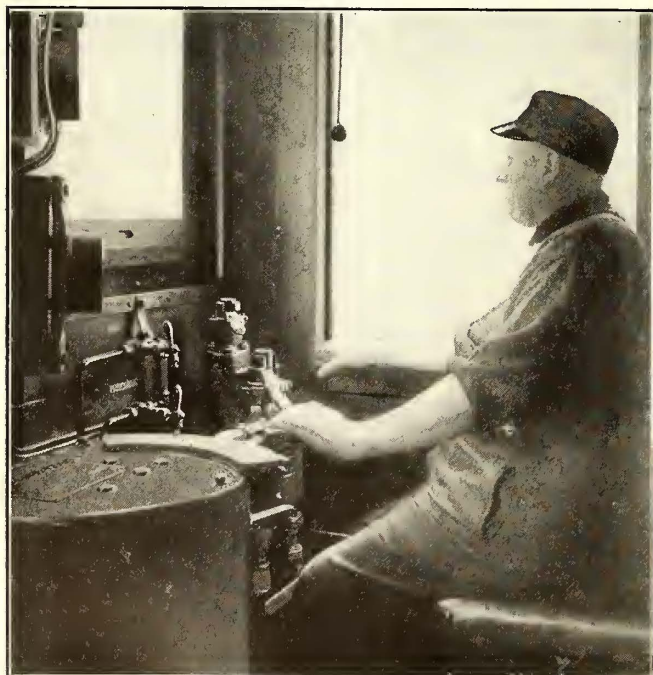
The line is operated at a trolley voltage of 550, direct-current, the power being transmitted over a high-tension line at 13,000 volts. There are nine rotary converter substations. The transmission line will probably be rebuilt in the near future for operation at 33,000 volts to provide for an expected increase in the business of the company.

At Toledo joint freight house and passenger depot facilities, provided by the Toledo Railway & Light Company, are used in common with eight other interurban systems. The shops are located at Sylvania, Ohio, where running repairs to freight equipment are made. The heavy repairs to passenger cars and electric motive equipment are made at the Central Avenue shops of the Toledo Railway & Light Company in Toledo.

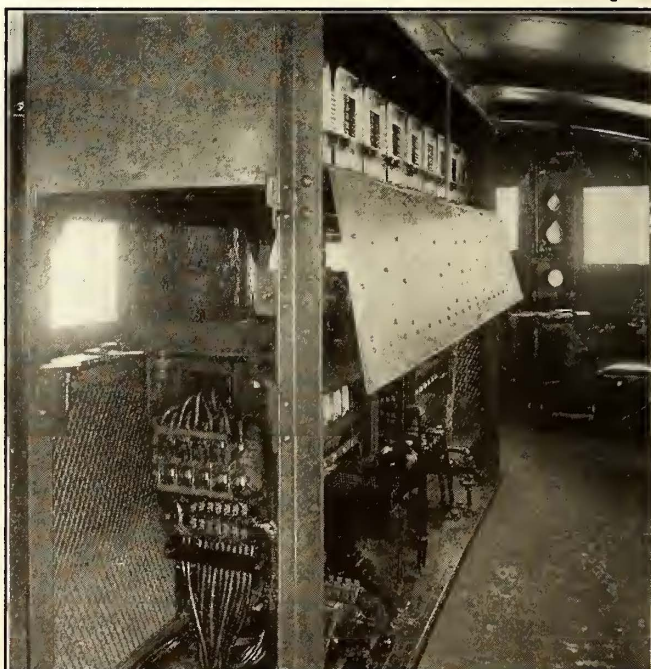
ROLLING STOCK AND ITS EQUIPMENT

The company owns and operates fourteen passenger coaches, two of which are of the latest type of construction, five package freight cars for small-lot freight, five electric locomotives for carload freight, and 115 freight cars of the same types as those used on steam roads. The two new passenger coaches and five package freight cars are equipped with Westinghouse motors and control.

In order to handle the increased traffic the company has recently placed in operation a 60-ton Baldwin-Westinghouse electric locomotive. The locomotive hauls a trailing load of 2400 tons, although this is in excess of the manufacturers' rating. It has actually pulled the equivalent of 3500 tons on level track. It is of the



CONTROL APPARATUS ON NEW T. & W. R. R. ELECTRIC LOCOMOTIVE



CLOSER VIEW OF OPERATOR'S CORNER OF T. & W. R. R. LOCOMOTIVE

eight-wheel, swivel-truck type, with double-end control, and is adapted to freight and switching service.

The equipment comprises four commutating-pole motors of the field-control type and HLF control. Field control was selected because the trolley voltage is sometimes quite low and the substation capacity is limited. While the full field is designed primarily for acceleration it may also be used to some extent in slow-speed running. The control equipment is mounted in a grounded expanded-metal cage.

With forced ventilation the main traction motors have sufficient capacity to exert continuously a tractive effort of 9400 lb. at 600 volts. The locomotive can exert a tractive effort of 20,000 lb. at 9.75 m.p.h. The maximum safe speed is 40 m.p.h.

Growth and Depreciation*

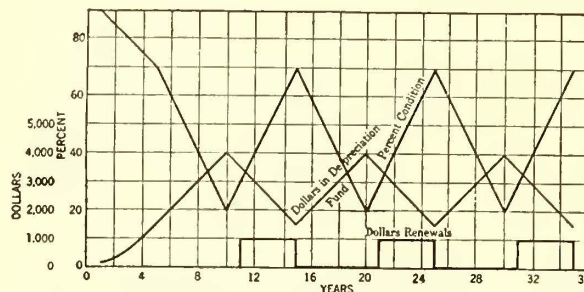
Manner of Company's Growth Affects Per Cent Condition—Property Does Not Settle Down to Fixed Per Cent Condition

BY JULIAN LOEBENSTEIN

Junior Electrical Engineer, Public Service Commission of New York, First District

THE following definitions and assumptions are used. By liquid depreciation reserve fund is meant a reserve either as cash in a bank, invested in bonds or employed in any other way so as to be readily convertible into cash for immediate use. This is to distinguish it from depreciation reserve which is invested in extensions and betterments and which cannot be readily

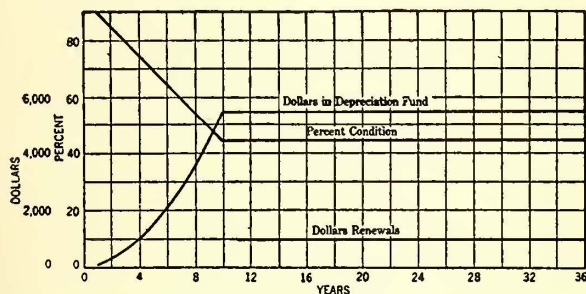
45 during that term, and then stays at 45 when the property stops growing. In Curve II, where there is a uniform investment over a term of years not corresponding to the life of the property, the per cent condition varies from 90 to 70 while the property is growing. After that it varies in repeating cycles from 70 to 20 and back to 70 again. This, of course, is an extreme case, but it shows the possibilities of variation.



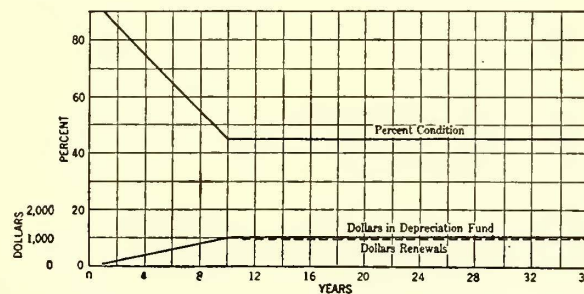
Growth and Depreciation—Curve II—Uniform Yearly Investment for Five Years; End of Growth, Fifth Year; Life, Ten Years. Depreciation Reserve Not Invested in Extensions.

Curve III shows the same characteristics as Curve I, although there was no reinvestment of reserve in the latter. Curve IV shows a more complicated property than the others. Here the variation during the ten years the property is expanding is from about 92 to about 67. It then goes through a cycle the period of which is twenty years, varying from 67 to 35 per cent and back again.

Curve VI is for an actual electric property. The com-



Growth and Depreciation—Curve I—Uniform Investment for Ten Years; End of Growth, Tenth Year; Life, Ten Years. Depreciation Reserve Not Invested in Extensions.



Growth and Depreciation—Curve III—Uniform Yearly Investment for Ten Years; End of Growth, Tenth Year; Life, Ten Years. Depreciation Reserve Invested in Extensions.

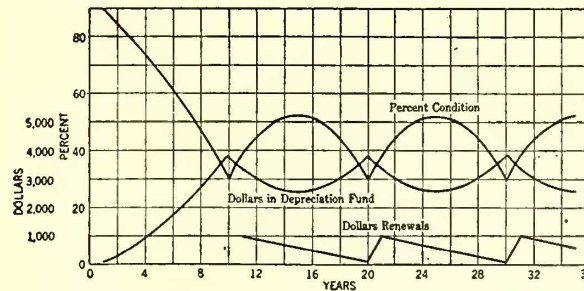
turned into available cash. No consideration is taken of scrap value or of a reserve for emergencies or catastrophies, as the calculations are not in any way affected thereby, the effect being simply to refer them to a different ordinate. All calculations are on the straight line basis, and all property is assumed to be kept in the best state of repair.

PER CENT CONDITION AFFECTED BY MANNER OF GROWTH

It is generally considered that a property maintained in good operating condition will be between 70 and 85 per cent new. In fact, Whitten, in his "Valuation of Public Service Corporations," says: "It has been stated that a street railway maintained in good operating condition will necessarily show cost less depreciation of from 70 to 85 per cent of the cost new." It is now an easy matter to prove that Mr. Whitten's assumption is wrong, and that the per cent condition of any property is dependent not only on the maintenance, but upon the past and present growth.

In Curve I, where there has been a uniform investment over a term of years corresponding to the life of the property, the per cent condition varies from 90 to

pany was assumed to have reached its final growth on Dec. 31, 1913, after which date only renewals were made. The total service value of all the property was approximately \$16,500,000, yet it may be seen from the curve that the actual service value varies from \$6,200,000 to \$11,000,000, or from 37.5 per cent to 69 per cent. Even if some assumptions as to probable life

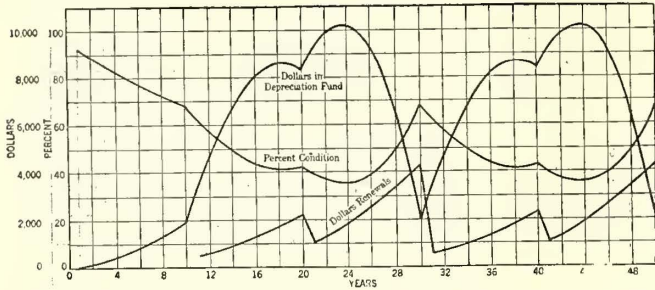


Growth and Depreciation—Curve IV—Decreasing Yearly Investment for Ten Years; End of Growth, Tenth Year; Life, Ten Years. Depreciation Reserve Not Invested in Extensions.

are incorrect, the property will still vary over a wide range and not be in any popularly supposed fixed condition somewhere between 70 and 85 per cent. Curve VIII is for another actual property, but a much smaller

*Abstract of paper presented before meeting of American Institute of Electrical Engineers in New York City on Nov. 10.

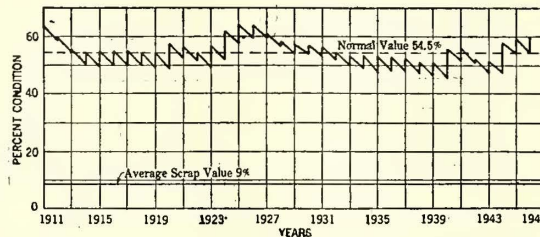
one than that considered in Curve VI. The property is assumed to reach its full growth in 1912, and the remaining service value is shown for the next fifty-three years. The service value varies from \$810,000 to \$370,000, or a corresponding per cent variation from 77 to 35. James E. Allison, in a report on the United Railways



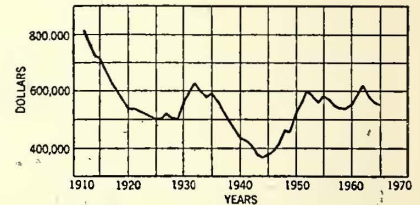
Growth and Depreciation—Curve V—Increasing Yearly Investment for Ten Years; Life, One Group, Ten Years—One Group, Twenty Years; End of Growth, Tenth Year. Depreciation Reserve Invested in Extensions.

of St. Louis, presented Curve VII. He said: "It has been the purpose of the writer to show by diagrams that piecemeal built properties of any complexity will eventually assume a theoretical value curve, closely conforming to the straight normal value line, halfway between 100 per cent and the composite scrap value of the property." It cannot be denied that the curve which he gives most certainly is a uniform curve and tends to support his theory. It should be noted, however, that even his curve varies over a range of 15 per cent during the comparatively short time of thirteen years. When compared to Curves VI and VIII, it shows the danger of drawing a general conclusion from any one curve. Every complex property undoubtedly displays the tendency which Mr. Allison points out, but each property should be investigated separately to determine its characteristics in this respect.

Only when there has been a uniform growth over a term of years corresponding to the life of the property (Curve I) will a property reach a fixed condition and remain there after it has stopped growing. As long



Growth and Depreciation—Curve VII—Total Composite Theoretical Value Curve Depreciable Property of the United Railways of St. Louis.



Growth and Depreciation—Curve VIII—Depreciated Service Values of an Actual Property; End of Growth Assumed Dec. 31, 1912; Original Service Value, \$1,056,917; Maximum Per Cent Condition, 77; Minimum Per Cent Condition, 35.

amounts of property in different years in the future, and any calculation of reserves based on an assumption that because of perpetual life the company will reach a stable condition either during or after its growth is entirely incorrect.

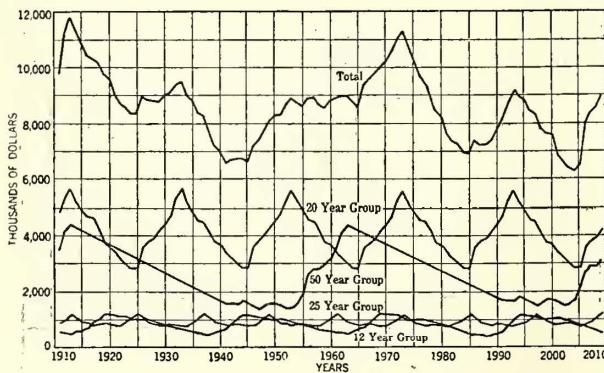
While the property is growing the per cent condition is decreasing, the rate of decrease varying inversely with the rate of growth. When the property stops growing it has reached a certain per cent condition, and thereafter it varies between that condition and some other, dependent upon the manner of growth. When the growth stops, the property may be at a minimum per cent condition, as in Curve IV, where there has been a decreasing rate of growth; or at a maximum, as in Curve V, where there has been an increasing rate of growth. Each property, should it stop growing, will go through a cycle in which it reaches a certain maximum condition being entirely dependent on the manner of the property's growth.

HOW TO HANDLE DEPRECIATION RESERVE

Since it will never be necessary to renew the entire property, some of the reserve necessary to return it to the 100 per cent condition may be dispensed with. It is not correct, however, to say that since the reserve will never be needed it should not be obtained. The stockholder has a right to expect that his capital shall be kept intact at 100 per cent.

When a company is growing at a rate to permit the investment of all the reserve in extensions, as in other cases, the annual charge for depreciation will in some years be less and in some years more than the cost of renewals. In those years when the cost of renewals is less than the charge for depreciation, the difference may be invested in extensions, and in those years when the cost of renewals is greater than the depreciation charge, it will be necessary to issue securities with the extensions made from reserve as a basis, the money from the securities being used for the renewals. The securities, however, should not be issued to an amount greater than the depreciated value of the extensions. Separate accounts should be kept for capital investment and reserve investment.

For a company which has stopped growing or for one which is growing at a rate not large enough to use all of the depreciation reserve for reinvestment in extensions, it will be necessary to have a continually varying amount in a liquid depreciation reserve fund, and this amount will fluctuate in a manner depending upon the company's growth. Curve V shows the condition for a property which has ceased to grow after ten years. At the end of the tenth year there is \$1,953 in the reserve. Since the \$1,953 will never be used as far as renewal purposes go, and the company has stopped growing, it may as well be returned to the stockholders. It should be clearly understood by the stockholders that



Growth and Depreciation—Curve VI—Depreciated Service Values of an Actual Property; End of Growth Assumed Dec. 31, 1913; Original Service Value \$16,500,000; Maximum Per Cent Condition, 69; Minimum Per Cent Condition, 37.5.

as a property is growing, whether uniformly or otherwise, there will be a variation in its per cent condition. In other words, there is an obligation to renew varying

this is a return on capital invested and not a dividend payment.

RETURNS SHOULD BE ALLOWED ON DEPRECIATION FUND

The same return should be allowed on a depreciation fund as on any other capital invested in the property, and such a return should be available for dividends, provided cost new, less depreciation, is to be used as a basis for rate making. The capital which is wasting away is certainly the capital of the stockholder. He uses up his capital in the service of the consumer, and the consumer replaces the capital so used. The replaced capital in a depreciation reserve fund should be treated the same as any other capital. It should be allowed the same return and for the same purposes.

Suppose that an appraisal were made in the twenty-first year (Curve V), when the property was in a 39 per cent condition. Under this scheme the rates would depend entirely upon the condition of the property in the year it was appraised, and there can be no question as to the unfairness of such a proceeding. The rates should be based on the depreciated value of the property in any year plus the amount in the depreciation reserve, provided only that the sum is not greater than the original capital investment.

Old and New Doherty Cadets at Banquet

NEARLY fifty Doherty cadets, graduates and undergraduates participated in a "get-together" banquet on Oct. 31 at Fraunce's Tavern, New York City. The purpose was to acquaint the large number of young cadets in the New York office with the executives, almost all of whom are graduates of the Denver school. The series of addresses not only told of the past in the Doherty organization, but forecast the future. Frank W. Frueauff, of the firm of Henry L. Doherty & Company, acted as toastmaster.

Holton H. Scott, general manager of the operating department, announced his claim to be the dean of the Doherty college men now in the organization, and rehearsed the connection of Henry L. Doherty with the Madison Gas & Electric Company. Mr. Scott said that the cadet school idea proved so successful in Denver that another has been started in Toledo and a third in Bartlesville for the study of the natural gas and oil problems, and the plans for a fourth, largely dealing with the oil-refining problems, are now being developed. Milan R. Bump, chief engineer, stated that never was the difficulty of finding men qualified to carry on the work of the company more acute than at present. In this connection it will be of interest to note that the systematic cadet work of this company has now been carried on for about ten years with eminently satisfactory results.

According to R. C. Griswold, chief technologist, who himself took the cadet course, the scheme has been considerably extended this year, this expansion being justified by the record of the Denver school graduates. In selecting cadets for the schools of practice, the company has confined itself almost entirely to graduates of electrical engineering courses. The principal value of this selection lies in the fact that young men who take engineering courses probably like engineering as a work, and have an especial aptitude in that line.

These men, as a class, do not like bookkeeping for the very simple reason that if they did like bookkeeping they would have taken a bookkeeping course and not an

engineering course. Such success as these engineers make in bookkeeping, in spite of their dislike for that work, is due to their ability to attack these problems on a fundamental basis; and while a report from one of these men may be refreshingly unconventional as to form and treatment, they may always be depended upon to give correct answer.

Bureau of Standards Issues National Electrical Safety Code*

A Limited Edition of Bureau of Standard Circular No. 54 Is Published Under Date of Nov. 15, 1916

AFTER considerable preliminary circulation among affected interests the proposed National Electrical Safety Code is now available in complete form and under one cover. It forms a book of 323 pages. A few copies of the circular will be sent out at once to some special conferees and the general distribution will be made about Dec. 1. Copies can be procured from the superintendent of documents, Government Printing Office, Washington, D. C., at 40 cents per copy. The number of copies in this, the second edition, is limited, but it is probable that, if the demand warrants, an edition in handbook size will be issued immediately after the initial distribution and will contain the same text.

The ELECTRIC RAILWAY JOURNAL has kept its readers informed in detail as to the progress of the code during its development stage, which progress can be reviewed by consulting the references listed in the footnote appended to this column. These show that many conferences were held in the effort to meet the requirements of the industries and utilities concerned, and after a great many suggestions had been incorporated the code was to be issued for a year's trial in tentative form. The title page of the present edition states that the code is issued "for examination, trial and constructive criticism."

The code comprises four parts as follows: (1) A proposed national standard for safe construction and installation of electrical supply equipment in stations; (2) the same for electrical transmission, distribution and signal lines; (3) the same for the electrical utilization equipment of factories, offices and homes; and (4) a set of safety rules to be observed in work upon electrical equipment and lines.

In connection with the publication of this second edition of the code, the director of the Bureau of Standards states as follows: "After a trial period a modification of some of the rules will, of course, be found desirable. A revised edition will, therefore, be prepared as soon as necessary. Subsequent revisions should, however, be made at somewhat infrequent intervals in order to assure a reasonable degree of stability for electrical practice throughout the country. The advantages in this respect of a national code over various local codes are readily appreciated. The bureau desires to secure the experience of all the interests concerned with the code and hopes through the assistance of users and administrators of the code to make it as useful as possible in promoting safety and economy of electrical service."

*For recent references to the National Electrical Safety Code, see the following issues of the ELECTRIC RAILWAY JOURNAL: April 3, 1915, page 673; April 17, pages 741, 750, 758; May 1, pages 825, 845; May 15, pages 939, 941; May 29, page 1036; June 19, page 1162; June 26, page 1189; Oct. 9, pages 697, 776; Oct. 16, pages 791, 839; Nov. 6, page 953; Nov. 13, pages 977, 996; June 3, 1916, page 1048.

Giving Local 100 Per Cent Service

Actual Performance of Such Service Considered as a Basis for Rate Valuation—Interest on Cost of Achieving Such Service Plus Cost of Maintaining It Should Equal Rates

By H. S. COOPER

Secretary Southwestern Electrical & Gas Association, Dallas, Tex.

A PUBLIC utility privately owned and operated is, primarily, an ordinary manufacturing concern, a distributing concern or, more commonly, a combination of both. Considered only to this point, it is in no way different from any other private enterprise, and, were there no other differences analogy as to valuations of the utility and as to the prices of goods handled, product manufactured and distributed or service performed might continue to the end with great simplification of some of the accounting, statistical and financial problems of the present-day utility. There are, however, further differences of vital import, some of which do not seem to be clearly recognized or at least fully appreciated.

UTILITY CANNOT OPERATE AS IT WILLS

One of the most important differences between the utility and the private enterprise is that the conduct of the business of the latter, as long as it infracts no law or ordinance relating to that business, is a matter that affects only the owners thereof, whereas the conduct of the affairs of the utility is one in which the public is directly and strongly interested. If the owners of the private business choose to let their property or goods or service "depreciate," if their product or service deteriorates in quality or supply, if their delivery of it is irregular, uncertain or otherwise unsatisfactory to their customers, that state of affairs concerns only themselves. The attitude of the public can be only a passive one. The customers, actual or prospective, can refuse to patronize the business; they can buy of a competing concern; they can use a substitute or they can go without the product or service—but they have no legal recourse.

Such a course cannot be pursued by the public utility, and the reasons for this are three. In the first place, in almost all cases, the utility has been allowed by the public to have a monopoly of the manufacture or supply, or both, of its particular product or service. Secondly, the utility is allowed certain powers not legally permitted to the private concern, and it is also permitted to use in its business certain public facilities and property which are not open to the use of the private business. Thirdly, as a compensation to the community for such public privileges, the utility agrees, either directly or by implication, or both, to give the community a "100 per cent service," local conditions or limitations fixing the "par value" of this service.

KEEPING LOCAL SERVICE AT PAR

While comparison between the minor details of the service given in separate communities would be inequitable and nearly useless in the fixation of a 100 per cent local service in any one community, there have been developed in the past certain broad standards of service which can be applied in any community and to every public utility. There is, of course, a theoretically perfect service, but this is an ideal toward which all public utilities may strive but few attain. The agreement, however, between the utility and its public always

implies in each local case that the public is to have 100 per cent value for the prices, or "rates," which it pays, and it equally implies that, when the public demands a higher standard of service, and this compels more investment of capital or increased operating expenses, the "reasonable return" of the owners of the utility shall not be diminished thereby. In other words, if the public demands "extras," outside of the original contract, it must pay the cost of those extras.

To have a continuity of such "par" service the utility must keep its whole property at the point where it is continuously capable of giving that standard of service—in other words, the utility must "maintain" its property at the local 100 per cent service point. In doing this, it will be compelled, in the course of time, to "use up" certain parts of the property. If these used-up portions are not replaced in proper time, form or quality, the ability of the property as a whole to give a par service is affected and the utility is not fulfilling its contract. It does not make any difference as to whether the using up of the various portions of the property is every minute, every hour, every day, or at much longer periods. Because a ton of coal is used up every fifteen minutes while the boiler into which it is fed lasts fifteen years makes no difference. That the physical properties of the coal compel it to be "replaced" or "renewed" every fifteen minutes, while those of the boiler necessitate only one half-millionth as early replacement or renewal, in nowise requires these two component portions of the property to be treated in a radically different manner in the accounting, financing or statistics of the utility.

"DEPRECIATION" LEADS TO HAIR-SPLITTING

It is customary to speak of certain portions of a public utility as "supplies," to divide its daily operating expenses into "labor and materials," to call the using up of certain portions of the property "repairs and renewals," and to call a similar using up of certain other portions of the property "depreciation." These are necessary nomenclature in the operation of the property and are designed for the information of the owners or operators, for comparisons as to economy and efficiency, for ease or simplicity of record, etc., but they must not be construed into definite classifications to be used for other and improper purposes. It is eminently proper and useful to differentiate between those portions of the property which are used up almost instantly, those which are used up within longer and arbitrarily fixed periods, and those which are used up in a virtually unknown and unfixable period, but such differentiation must be limited to the needs of operation and not made factors in financial, statistical or commercial relations between the utility and its public.

This diversion of arbitrary factors of operation into public matters in which they have no bearing has caused most of the disputes and hair-splitting on the subjects of valuation, rates and reasonable return, and the most aberrant factor of these disputes has been depreciation. It is conceivable that, in the valuation of a utility

property for sale or lease to private parties, for sale to the community, or for purposes of taxation or condemnation, the item of depreciation might have a place and, under certain conditions, a very important place. In the valuation of such property, however, to determine the rates or the reasonable return, the farther any mention of depreciation can be kept from the subject the easier and simpler it will be to adjust, and the more correct and equitable will be the adjustment. In the valuation of a public utility property for any purpose other than for rate-making, the property is considered as in "a state of being." It is only when such valuation is for the purpose of rate-making (which includes that of profit-making) that the property is considered as in "a state of action." This is a vital distinction, for there cannot be such a thing as depreciation in an active body compelled to have and maintain a 100 per cent efficiency and service.

HANDLING ABNORMAL MAINTENANCE CHARGES

As it is at the demand of the public that the original contract for its par service was made, as it is the public only which demands the continuity of that service, and as it is the public demand which increases the standard of the local par service, it is the public which must pay all legitimate costs of maintaining that service at par. In equity, the public should pay no more than this, plus, of course, the reasonable return to the owners of the property for the use of the capital legitimately invested in it for the purposes stated. At this point, however, an accounting difficulty arises which has been largely—and in the main unnecessarily—the cause of the hair-splitting that has given to depreciation a place where it does not belong and an importance of which it is not worthy. This difficulty is caused by the fact that the replacements or renewals of the various portions of the property as they are used up come at very irregular intervals and in very irregular amounts of costs, often such as show "red ink" in the periodical statements. The rates cannot, in a public utility, be varied so as instantly to liquidate these abnormal amounts. It is publicly felt and practiced that—outside of a reduction of rates—the public should have, for as long a time in the future as is commercially possible, the assurance of stable rates, and that any rearrangement of them should come at long and, if possible, prearranged periods.

There comes, therefore, a financial inequity between the operating accounting and the selling accounting which should be adjusted in some manner that would be just to both utility and public. It is not just that the utility should be compelled to make large expenditures for the maintenance of the service at par or at a raised standard and not be immediately compensated for the abnormal, as it is for the normal, maintenance expense. Nor would it be just if the public were compelled to prepay such expense and not be compensated for that prepayment. The truly equitable method would be for the utility to pro-rate these abnormal maintenance costs among the customers each time it renders them their bills, but public policy is opposed to this method of procedure. Under these conditions the only other legitimate methods are for the utility to let these abnormal items, with interest, accrue in a memorandum account until there is an opportunity presented to render their total in the form of advanced rates as a bill to the public, or to absorb them by maintenance costs below the normal or by new economies and efficiencies.

ABUSE OF DEPRECIATION FUNDS

It is to be regretted that in the endeavor to solve this problem there has been injected many extraneous and

unnecessary matters. Outside of the unnecessary use of subtle distinctions of no possible aid in its solution lies the fact that the very intricacy of the problem has led many utility owners further to cloud the matter for their own benefit—after the habit of the cuttlefish. In nothing has this been shown more plainly than in the use and abuse of the term "depreciation." In many cases the endeavor of the utility owner has been to make of this item an appreciation of the securities of the utility, an insurance that the value of the property should remain at par under all conditions of future operation. Granted that it is proper accounting to keep a fund to take care of the compelled deferred maintenance, erroneously termed "depreciation," that fund is a trust fund for a single specific purpose—the preservation and conservation of a 100 per cent service, the carrying out of the contractual obligations, both specific and implied. Any such fund actually paid in as it accrues has been collected from the public through the rates, and any diversion or attempt at diversion of such a fund from its legitimate use, especially a diversion of it for the purpose of protecting the utility owners from ultimate diminution of the value of the securities behind the property, is a palpable breach of trust. The public is coming, in a hazy way, to understand this point and to resent a misuse of depreciation funds.

PUBLIC SHOULD PAY FOR RAISING SERVICE STANDARD

Depreciation in an active organization is compelled deferred maintenance due to the varying life and characteristics of the multifarious parts that constitute the complex organization, and the necessity and amount of that maintenance is gaged in every community by its standard of 100 per cent service. It matters not to the public as to the operative means by which that standard must be obtained and retained, for that is a portion of the duties and risks which the owners assumed in their contract. The only interest of the public is that the contractual obligations of the utility be carried out to their legal termination as originally set or as extended. If the public, however, raises its standard of 100 per cent service, it alone must foot the bill for so doing. This is a point that has not been urged on the public until recently, and one which will take a large quantity of honest and straightforward logic and a long period of time to convince it. The fault of this lack of present conviction is largely that of the utility owner and operator, who have been so intent on the idea of making depreciation appreciate the securities underlying the properties that the public has come to the conclusion that a public utility property privately owned and operated is less an operative venture than a speculative one. This opinion of the public has been strengthened by the disagreement of the "doctors" called into dispute, no two of which seem to agree in even the nomenclature coined along with the arguments. And a further stiffening of this opinion has been caused by the fact that every endeavor of many utility owners has so often been directed more towards their financial obligations to themselves than to their contractual obligations to the public.

A SIMPLE METHOD OF RATE-MAKING

The proper and legitimate treatment of depreciation leads naturally to an equally legitimate, simple and equitable method of valuation for rate-making purposes—or what is the same thing in effect, valuation for profit-limiting purposes. No "expert" is needed in this matter to show his dexterity in hair-splitting, for the capital legitimately invested in the inception and the

continued actual performance of the contractual obligation are matters of exact determination. To sum up, therefore:

A community desires a certain standard of utility service for which it agrees to pay. That is its 100 per cent service.

To achieve that standard from the inception of the enterprise, the utility has legitimately had to invest so much capital. That is the value on which its reasonable return will be computed.

To maintain that standard the utility will have to expend a certain amount per period (month, year or term of years). That, plus the reasonable return on the investment, constitutes the rates, which are the reimbursement by the public of the expense of its demand, plus a bonus, reward or return for the use of the private capital and the superintendence.

Or, expressed as an equation, the relationship may be shown thus: Interest on cost of achievement of 100 per cent service + cost of maintenance of same = rates.

American Association News

Committee Subject Assignments for the Engineering and Transportation & Traffic Associations Are Announced This Week—Mid-Year Dinner and Conference Will Be Held in Boston on Feb. 16—Ex-Senator Wakelee Gave Forceful Address on Public Relations in Newark, N. J., on Nov. 16

Midwinter Conference and Dinner Postponed to Feb. 16

On account of a conflict of dates between the Boston American Association dinner, announced for Feb. 2, and a meeting of the Chamber of Commerce of the United States, the midwinter conference and dinner will be held on Friday, Feb. 16. The names of the members of the committees in charge of this meeting were announced in last week's issue of the *ELECTRIC RAILWAY JOURNAL*, page 1023.

Public Service Section Discusses Public Relations and High Prices

The regular meeting of company section No. 2 was held in the beautiful auditorium of the new terminal in Newark, N. J., on Thursday, Nov. 16.

Aside from the usual business and entertainment features the program was in two parts, one devoted to public relations and the other to high prices of materials and labor. The speaker on the first topic was ex-Senator Edmund W. Wakelee, associate general solicitor of the company, and J. A. Pearson, purchasing agent of the company with headquarters in Philadelphia, Pa., led a discussion on "Effect of the European War on Market Prices and Deliveries of Railway Materials." Mr. Pearson was followed by George J. Newton, local purchasing agent, and General Manager R. E. Danforth, who discussed the general subject, and by F. L. Foulks, H. H. George, P. F. Maguire and A. Scheer, Jr., who presented the viewpoints of the distribution, engineering, maintenance of way and mechanical departments respectively.

Mr. Wakelee's address was a masterly discussion of the fundamentals of the subject and it will be abstracted in a later issue of the *ELECTRIC RAILWAY JOURNAL*. Mr. Pearson gave an intimate picture of the trying conditions in his department and explained why prices were high and deliveries slow. He urged the early placing of requisitions for next year's supplies and stated that orders involving special designs and specifications are not relished by manufacturers. Standard parts are comparatively easy to procure. He traced briefly the history of the rise in prices which lagged a year behind the beginning of the war. Quoting many price increases he testified that never in his career as purchasing agent had he seen anything like the present condition. He predicted an improvement following the close of the war due to the expected foreign competition and to the low tariff.

Each of the departmental speakers showed how the special supplies of his department have appreciated in price, the statements of all agreeing as to embarrassment due to slow deliveries. Incidents were quoted to illustrate this condition, which was seen to ramify into all phases of railway work even to lead pencils, paper clips and stationery. Mr. Danforth impressed upon the audience the urgency of using the smallest possible quantities of supplies consistent with first-class maintenance, showing how every man, including the platform man, can assist both to save supplies and increase traffic.

Secretary F. J. Davis read a list of thirty-nine applications principally from men in the transportation department, in large part the result of the campaign for new members which closes Dec. 15. A prize of \$20 will be awarded to the most successful contestant, the award to be announced at the annual smoker on Dec. 21. President A. T. Warner announced that \$50 will be awarded by the company to the member of the section who will win the medal to be awarded by the American Association for the best paper delivered before a company section this year. The monthly awards of \$5 each in the suggestion contest for the September and October suggestions were also made. The entertainment of the evening consisted of musical selections played upon a Victrola demonstrated by a representative of a local music house.

Meeting of the Washington R. & E. Company Section

A meeting of company section No. 4 was held on Nov. 13 with President J. T. Moffett in the chair. Prof. C. J. Blanchard of the government service delivered an illustrated lecture on the most recent activities of the Reclamation Service. His talk was confined to electric power development of this important branch of the government, and was illustrated by moving pictures that had not previously been publicly displayed. Vocal and instrumental selections and a buffet luncheon were also features of the program.

A resolution was passed indorsing the local celebration of America's Electrical Week, Dec. 2 to 9, and a committee consisting of William L. Clarke, W. F. Dement, L. B. Schloss, G. S. Kimball and R. A. Vetter was appointed to co-operate with the general committee having the celebration in charge. It was agreed that the company section should enter a motor-driven electrically decorated vehicle in the automobile parade which will be a part of the celebration.

Committee Subject Assignments for 1916-1917

ENGINEERING ASSOCIATION

Buildings and Structures

1. Review of existing standards and recommendations with a view to the refinement of detail and the elimination of extraneous matter.
2. Further study of the subject of fences, with particular reference to concrete posts and method of casting the same.
3. Design of carhouse inspection pits.
4. Advise committee on way matters of the approval or rejection of all or any portion of the conventional symbols for recording surveys.
5. Advise committee on way matters of the approval or rejection of all or any portion of its study on wood preservation.

Equipment

1. (As above.)
2. Development of check gages and templates, such as:
 - (a) Gaging points and terms for wheel and track.
 - (b) Wheel mounting and check gage.
 - (c) Brake-beam gage, covering spacing of brakeheads.
 - (d) Wheel flange and tread contour gage for new wheels.
 - (e) Standard wheel tape.
 - (f) Plane gage for solid steel wheels.
 - (g) Rotundity gage for solid steel wheels.
 - (h) Journal bearing and wedge gages.
3. Compilation of data bearing on development of standards for railway motor parts:
 - (a) Carbon brushes.
 - (b) Bearings.
 - (c) Gear cases.
 - (d) Bolts.
 - (e) Pinions.
 - (f) Gears.
 - (g) Motor wires.
 - (h) Commutators.
4. Advise committee on way matters of the approval or rejection of all or any portion of its study on wood preservation.
5. Consider jointly with the committee on way matters the "use of a curved head for girder rails and specific reference to wheel and track wear."
6. Consider wheel and railhead contours jointly with committee on way matters.

Heavy Electric Traction

1. (As above.)
2. Revision of diagram of location and clearance of overhead conductors, with the suggestion that the height of the hand-brake staff be indicated; and that the height of the car running board be dimensioned on the diagram in cases Nos. 4 and 5 (Engineering Manual, Ds 6a). This subject before final reporting to have the approval of the committee on power distribution.
3. Advise committee on way matters of the approval or rejection of all or any portion of the conventional symbols for recording surveys.
4. Revise dimensions on standard diagram of location and clearance of overhead conductors and include provisions for pantograph clearance.
5. Advise committee on power distribution of approval or rejection of specification for catenary overhead trolley construction to cover high voltage as well as 600-volt d.c. service.

Power Distribution

1. (As above.)
2. Advise committee on heavy electric traction of approval or rejection of the revision of the diagram of location and clearance of overhead conductors, to show the height of the hand-brake staff as well as the height of the car running board in cases Nos. 4 and 5 (Engineering Manual, Ds 6a).

3. Further study of specification for overhead line materials.

4. Specification for metal crossarms and fittings.

5. Development of a specification for catenary overhead trolley construction to cover high voltage as well as 600-volt d.c. service; any specification prepared to have the approval of the committee on heavy electric traction.

6. Advise the committee on way matters of approval or rejection of all or any portion of the conventional symbols for recording surveys.

7. Advise the committee on way matters of approval or rejection of all or any portion of its study on wood preservation.

Power Generation

1. (As above.)
2. Further consideration of operating performances of railway power stations.
3. Report on the development of automatic substations.
4. Historical review of the development of large turbine units.

Way Matters

1. (As above.)
2. Specification for special work with particular reference to steam railroad crossings.
3. Development of a spiral for use in the design of switches, mates and frogs.
4. Development of conventional symbols for recording surveys. Such symbols as the committee may recommend shall be submitted to the committee on buildings and structures, the committee on power distribution, the committee on heavy electric traction and the committee on block signals for their approval before presentation.
5. Further study of the subject of wood preservation, including specifications for preservative. This subject to bear the approval of the committee on power distribution, the committee on buildings and structures and the committee on equipment.
6. Report on the development of hand and power tools for track construction.
7. Complete the design for "drilling of joint plates and their application."
8. Report on the "use of a curved head for girder rails" with specific reference to wheel and track wear. This to be considered jointly with the committee on equipment.
9. Consider wheel and railhead contours jointly with the committee on equipment.

Special Committee to Consider Revision of Standard Stranding Table

1. Make a final report as to when the table for stranding of apparatus cables is to be adopted.

TRANSPORTATION AND TRAFFIC ASSOCIATION

Fares and Transfers

1. Co-ordinate work of previous committees, according to topics the dates being essential but secondary to the main division, which should be by subjects. Attention is called to the method employed by the 1916 committee on construction of schedules and time-tables.
2. Further study of the use of ordinary type cars as prepayment cars without fare boxes.
3. Study of the use of prepayment cars on routes having more than one fare zone.

Passenger Traffic

1. (As above.)
2. Investigation of established traffic departments for promotion of new business, together with results and opinions.

3. Study of plan whereby charges can be made for carrying baggage. This to be worked out jointly with a committee representing steam railroads.

Rules

1. Necessary revision of city and interurban codes.
2. Block signal rules to be studied jointly with the joint committee on block signal rules of the American Railway Association and the Railway Signal Association.

Schedules and Time-tables

1. Dispatching on urban lines, latest practices and recommendations.
2. Statement of the factors essential in the making of all time-tables and establishment of uniform basis for determining and stating schedule speed.
3. Further investigation of "skip-stop" operation, with recommendations as to proper method. (To be handled as a paper.)
4. Street railway transportation in congested districts. (To be handled as a paper.)

Training of Transportation Employees

1. (See No. 1, committee on fares and transfers.)
2. Consideration of methods that have been employed by various companies in teaching employees the rules of proper service.
3. Employment specifications.

JOINT COMMITTEES

Block Signals

ENGINEERING ASSOCIATION SUBJECTS

1. Review of existing standards and recommendations with a view to refinement of detail and elimination of extraneous matter, with particular reference to:
 - (a) Requisites of installations for automatic block signal systems on high-speed interurban railways.
 - (b) Use of continuous track circuits for the control of automatic signals for high-speed interurban service (Engineering Manual, Ss 7b).
2. Block signal rules, to be studied jointly with the Transportation & Traffic Association committee on rules, the Railway Signal Association and the American Railway Association.
3. Further study of block signal operations on roads signalled from end to end, covering maintenance cost, efficiency of operation and effect on traffic.
4. Advise committee on way matters of approval or rejection of all or any portion of the conventional symbols for recording surveys.

TRANSPORTATION & TRAFFIC ASSOCIATION SUBJECTS

1. (See No. 1, committee on fares and transfers.)
2. (See No. 2 above.)
3. (See No. 3 above.)

On Claims-Transportation

TRANSPORTATION & TRAFFIC ASSOCIATION SUBJECTS

1. Results obtained by co-operation of transportation and claim departments in a general reduction of all classes of accidents, together with form of reports made and submitted by one department to the other.
2. Investigation of methods used, if any, by both claims and transportation departments in safety campaigns wherein the public is concerned.
3. Safety advertising on cars.

CLAIMS ASSOCIATION SUBJECTS

Not yet assigned.

Engineering-Accounting

ENGINEERING ASSOCIATION SUBJECTS

1. Interdepartmental charges. (See recommendations of 1914 committee for work to be assigned to ensuing committee, 1914 Engineering Proceedings, page 378.)
2. Further study of the development of a property ledger (as started by the 1916 committee) looking toward the

maintenance of a continuous inventory. This subject to be considered as applying to the entire physical property.

ACCOUNTANTS' ASSOCIATION SUBJECTS

Not yet assigned.

Transportation-Accounting

TRANSPORTATION & TRAFFIC ASSOCIATION SUBJECTS

1. Determination of formula to show the cost per annum for hauling 1 lb. or 1 ton car weight.
2. Continue the following subjects, assigned the 1916 committee on transportation-accounting:
 - (a) Investigation of cost of handling baggage free, to determine whether the cost of handling this baggage wipes out the profit resulting from the fare received.
 - (b) Investigation of subdivision of power cost among construction, maintenance and operation.
3. Forms of graphic presentation of transportation data and statistics.

ACCOUNTANTS' ASSOCIATION SUBJECTS

Not yet assigned.

Transportation-Engineering

TRANSPORTATION & TRAFFIC ASSOCIATION SUBJECTS

1. Further investigation of the operation of trail cars in high-speed interurban service; to include the relative merits of trail vs. motor cars.
2. Effect of car and equipment design on duration of stops for both passenger and freight service. Car design to be studied from a traffic standpoint in all its phases, first standardizing the method of determining results, having identical formulas and practice for obtaining observation and data from which conclusions are drawn. Investigation to include specimen data sheet showing information which should be obtained in order that member companies who desire to follow the recommendations may have full information before them.
3. Study of electric current saving devices, including summary showing results obtained, together with costs, including maintenance. (To be treated as a paper.)

ENGINEERING ASSOCIATION SUBJECTS

Same as above.

COMMUNICATIONS

Name for One-Man Cars

OAKLAND, CAL., Nov. 7, 1916.

To the Editors:

I saw in a recent issue an editorial request for a good name for one-man cars. I suggest the name "mono-man" cars and "bi-man" cars to distinguish between one- and two-man cars. The terms mono- and bi- are used in a great many every-day expressions.

FRANK L. TRATHEN.

CLEVELAND, OHIO, Nov. 10, 1916.

To the Editors:

Some time ago I noticed an editorial in the JOURNAL requesting suggestions for a better name for the so-called "one-man car."

A car that requires only one man to operate it, of course, reduces the operating expenses; so it is a benefit to the railway companies. A railway company whose operating expenses are reduced can afford to give better service, and this is of benefit to the public.

Therefore, I suggest "Mutual Benefit" as a name for such cars. "Mutual Benefit," no doubt, would soon become, paradoxically, "Double Ben"; and, some of the operatives would cut the name to "Ben" or "Bennie."

LOUIS P. LIPPS.

Some Recent Advances in EQUIPMENT AND ITS MAINTENANCE

Welding High-Speed Tips on Lathe and Planer Tools Cuts Cost—Boston Elevated's Pressure Timber Treating Plant is Now in Full Operation—Connecticut Company Makes Center-Entrance Cars from Single-Truck Ones—Old Hoes Can Be Used in Making Squeegees for Grouting

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

Grouting Squeegee Made from Old Hoe

Author Explains Why Brooming Cement Grout Joint Filler Is Not Satisfactory

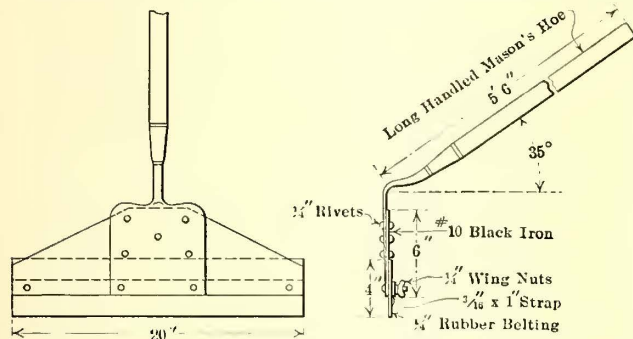
BY R. C. CRAM

Assistant Engineer Way and Structure Department Brooklyn Rapid Transit System

The application of cement grout joint filler in granite block pavements has always required careful attention to detail. The last or finishing coat is undoubtedly the most important and the usual method of applying it by brooming a comparatively thick mixture into the joints has generally been accompanied by the spreading of a coat of grout from 1/8 in. to 1/4 in. thick over the whole surface of the pavement. Attempts to leave the surface of the blocks practically free from mortar and still keep the joints full of grout generally meet with failure where brooms are used, as the bristles pick

Similar troubles have not usually been experienced with grouted brick pavements and the now prevailing practice of using squeegees for applying the finishing coat in grouting brick, combined with the comparatively smooth finish of modern granite blocks, has led to the use of the squeegee for final grouting work on granite pavements also.

The results obtained experimentally by this company last year with the squeegee in track pavements have warranted its adoption as a part of the tool equipment of every track gang, which is also equipped for pavement work. The illustration gives the details of such a tool, which is being used to advantage in Brooklyn. Its manufacture is simple and the use of old, badly worn hoe blades effects some salvage. In passing it may be noted that the Borough of Brooklyn now requires the use of a squeegee for grouting work in new granite pavement where cement grouted joints are specified.



SQUEEGEE FOR USE IN CEMENT GROUTING OF GRANITE BLOCK PAVEMENT

the grout out of the joints unless a thick mixture and fairly heavy coat are applied with a broom having quite soft bristles.

The heavy coat on the surface is somewhat wasteful of material, but greater objections to it result from the rather slow reduction of the coating to dust and the action of toe calks on horses' shoes in picking of the grout in such a way as to cause its removal from the tops of the joints. With grout so removed the corners of the block are unprotected and they wear round very rapidly.

Boston Elevated Completes Pressure Wood Preserving Plant

In the First Pressure Plant Installed on an Electric Railway This Company Can Treat 7,000,000 Feet of Timber Per Year

BY EDGAR W. BRIGHT

Tie and Timber Agent, Boston Elevated Railway

The Boston (Mass.) Elevated Railway has recently completed a timber treating plant at the company's South Boston yard which is the first pressure installation to be built by any street railway in the United States, and which embodies a number of interesting features in design in comparison with ordinary practice. This was referred to in the writer's article published in the issue of the ELECTRIC RAILWAY JOURNAL for March 11, 1916, page 504. The company has used creosoted ties and lumber extensively during the past five years, and for some time the lumber problem of the road has been in charge of the writer, under whose direction the plant has been established. The designing engineer is Grant B. Shipley, of Pittsburgh, Pa., whose patents are embodied in the plans and specifications for the work. The plant is adapted to treatment by either

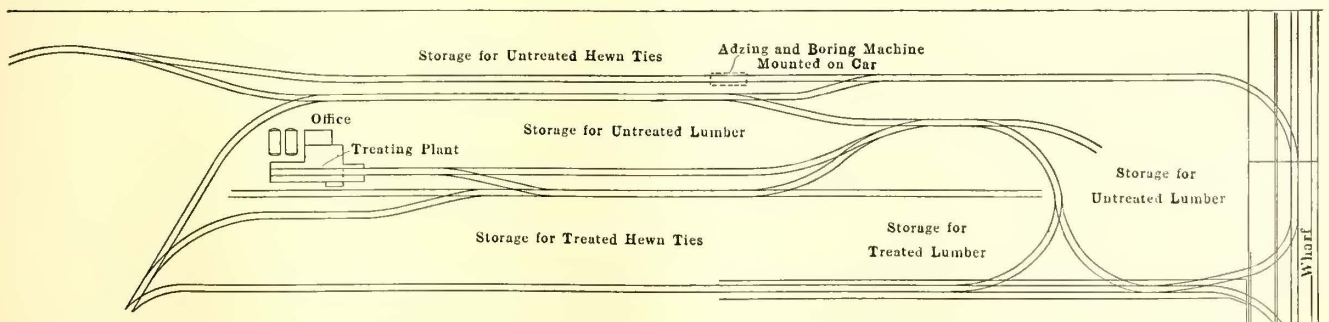


FIG. 1—GENERAL LAYOUT OF TIMBER TREATING PLANT SHOWING RAIL AND WATER TRANSPORTATION FACILITIES

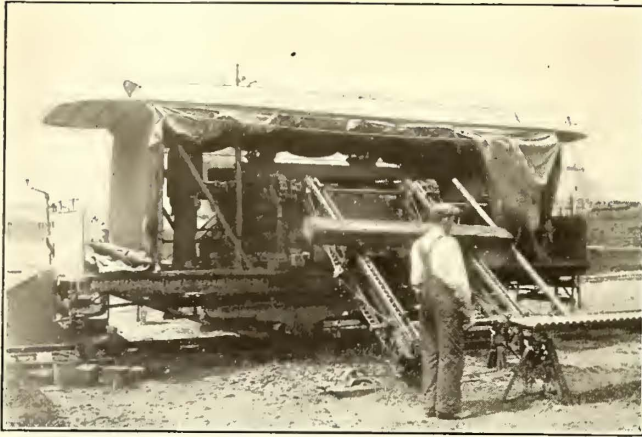


FIG. 2—ADZING AND BORING MACHINE, CAPACITY TWELVE TIES PER MINUTE

the full-cell or the Rueping process. It represents an investment of about \$30,000, and has a capacity when operating two charges per day in nine hours of about 210,000 ties of 7,000,000 ft. B. M. per year using air-seasoned timber and treating by the Rueping process.

The location of the plant in the company's general yard affords opportunity for convenient distribution of treated material from a central point and enables shipments to be received by water. Timber is brought to the yard in vessels, as the property fronts on Boston Harbor, and after being unloaded on the wharf indicated in Fig. 1, it is distributed for air-drying by trucks and service cars running on loop and other tracks feeding the storage areas shown. Before treatment ties are adzed and bored on a Greenlee adzing and boring machine (Fig. 2) with a capacity of twelve ties per minute, this machine being mounted on a car and thus being available for service on any track in the yard. Most of the material treated is long-leaf yellow pine. The equipment also includes a timber gainer, which is used in dapping guard timber used on elevated structures and elsewhere.

The treating plant is located near the south end of the property and is mounted on a solid concrete foundation. A general view of the structure is shown in Fig. 3. The installation consists of two storage tanks, a treating cylinder capable of handling lumber up to 50 ft. in length, a pressure tank mounted on scales, vacuum pump and compressor equipment and other apparatus, together with an unusually flexible piping system. All of the principal equipment except the storage tanks is installed in a cylinder house shown in plan in Fig. 4, and in cross-section and elevation in Figs. 5 and 6. The housing is of corrugated iron on steel framework.



FIG. 3—GENERAL VIEW OF PLANT

The plant is one of the few installations in the country in which a standard gage track is operated into the treating cylinder. It is far more flexible than the ordinary installation, besides being remarkably compact. Steam is supplied by a pipe line connecting directly with the company's South Boston generating station, and creosote is delivered to the storage tanks by automobile

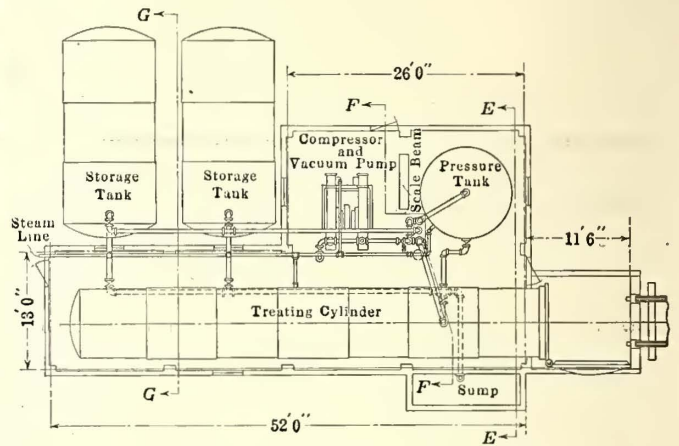


FIG. 4—PLAN OF CYLINDER HOUSE

trucks, provision being made in the piping to empty the truck tanks by either 20-lb. air pressure or by vacuum. This enables the trucks to be completely emptied.

The storage tanks are each 22 ft. 6 in. long by 9 ft. 9 in. in diameter, their capacity being about 13,000 gal. each. They are mounted on concrete saddles and are installed with horizontal axes at right angles to the longer axis of the cylinder house. The piping connections enable either tank to be utilized in serving the pressure tank, and live steam coils are installed in each to protect the creosote from freezing in the winter season. Provision is made for the drainage of these coils through a valve beneath each tank which is left slightly open when in service. Each tank is equipped with a safety valve and a stop valve controlling the delivery of oil to the interior of the establishment. Piping connections are also provided for the introduction of compressed air into the storage tanks to insure rapid delivery of oil to the plant, and throughout the plant the creosote is handled by air pressure. The shells of the storage tank are of 3/8-in. flanged steel, the heads being

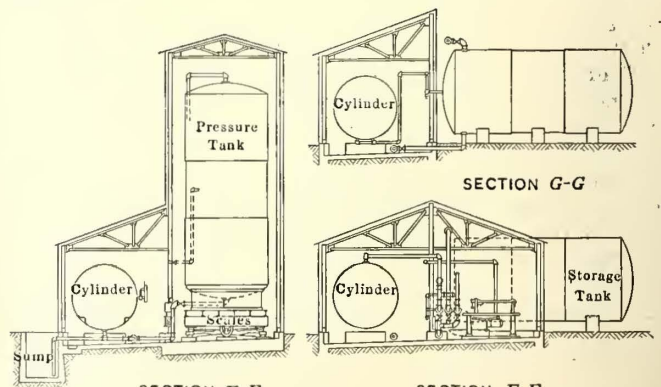


FIG. 5—CROSS-SECTIONS OF CYLINDER HOUSE
For section lines see Fig. 4.

of 1/2-in. steel. An 11-in. x 15-in. manhole is provided at each head end.

Two compressors are in use, both being steam-driven. Nearest the storage tanks is an Ingersoll-Rand "Imperial" type XI horizontal high-duty duplex compressor and air pump, with 7-in. x 7-in. x 10-in. cylinders, mechanical inlet valves and flywheel. This is supplemented

in high-pressure work by a Westinghouse air compressor capable of handling 29 cu. ft. of air per minute at 80 lb. pressure and delivering it at 200 lb. pressure when operated on a steam line pressure of 135 lb. per square inch. The piping enables the two compressors to be connected in series through valve manipulation.

The working pressure tank, 9 ft. 9 in. in diameter and 22 ft. 6 in. high, is mounted in the cylinder house on a Howe tank scale of the registering beam type, with 10-ft. x 10-ft. supports and graduations reading in 10-lb. steps. The scales are designed to carry a tank of 38,000 lb. steady load, and 120,000 lb. variable load of creosote, a total capacity of nearly 160,000 lb. The working pressure tank is equipped with steam coils for maintaining the proper oil temperature. Its shell is of flanged steel plate 1-in. thick, the tank being designed to withstand a working pressure of 175 lb. per square inch, and a hydrostatic test of 265 lb. Ball-and-socket joints are installed in the air and oil mains leading into the tank, to care for the movement of the latter upon the scales as the creosote volume is changed.

The creosoting cylinder or retort is 7 ft. 6 in. inside diameter and 51 ft. 2 $\frac{3}{8}$ in. long. It has a shell of $\frac{3}{4}$ -in. flanged steel made in seven courses or rings of one plate each. It is mounted on iron saddles resting on reinforced concrete foundations. The door, details of which are shown in Fig. 7, is located at the forward end. This has a steel frame of angle section bored accurately to

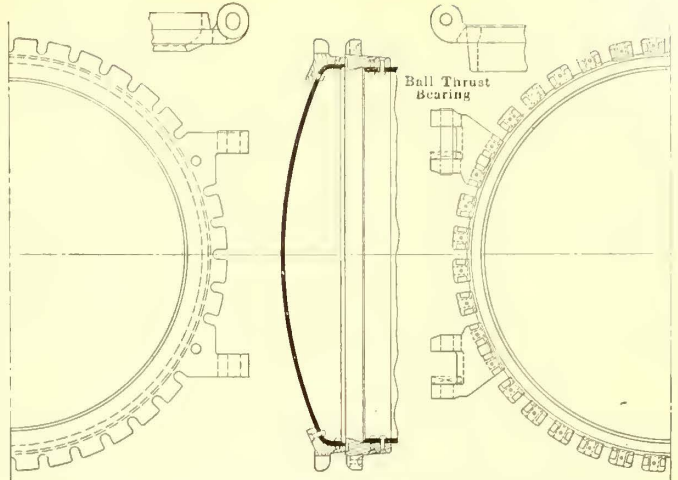


FIG. 7—DETAILS OF CREOSOTING CYLINDER DOOR

times both. This is done to reduce moisture and expel sap; then a vacuum is produced and maintained until the preservative is introduced and the wood is completely submerged. The pressure is then increased from 100 lb. to 150 lb. per square inch and maintained until the desired penetration has taken place, when the remaining oil is drained from the cylinder. Sometimes a vacuum is produced and maintained at the finish to drain the surplus oil from the outside surface of the wood to prevent loss of oil after the material is removed from the retort.

The Rueping or "partial cell" process consists of forcing compressed air into the pores of the wood; without releasing this air pressure, the oil is permitted to flow into the cylinder and air is displaced and forced into the top of the working pressure tank. After the wood is completely covered with preservative, the latter is then forced into the wood to the required amount. The air pressure is then released and the preservative is drained from the cylinder. A vacuum is then produced which causes the air within the cells to expand and force fluid out of the wood, leaving from 4 lb. to 6 lb. per cubic foot. About 20 lb. maximum of air suffices to force oil from the storage tanks into the pressure tank. At the beginning of a run about 118,000 lb. of oil is in the working pressure tank. The oil temperature is usually about 170 deg. Fahr. before entering the retort. Steam coils are provided in the retort as well as in the other tanks above noted, and beneath the retort a sump about 9 ft. deep has been built to receive drained oil from the interior of the tank. This oil can be reclaimed by utilizing one of the compressors

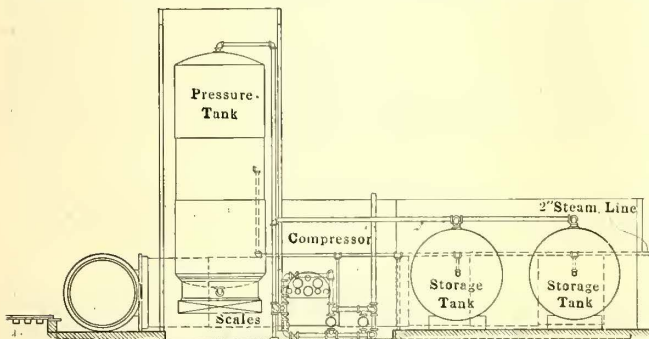


FIG. 6—LONGITUDINAL SECTION OF CYLINDER HOUSE

fit the shell. The outer face of the frame is turned and grooved for a gasket. Fitting the frame and hinged to it is a heavy cast-steel door frame, to which is double-riveted a dished head of flanged steel, designed for a working pressure of 175 lb. and a test pressure of 265 lb. per square inch. The door is carried on two hinges supported by ball-thrust collar bearings. It is fastened by forty 2 $\frac{1}{4}$ -in. T-head hinged bolts, each equipped with a steel washer and hexagonal nut. The door gaskets are of No. 600 "Ankorite" H. P. asbestos. The cylinder track consists of 4-in. x 4-in. x $\frac{3}{4}$ -in. angles supported by six pressed-steel brackets per course. Fig. 8 shows a charge ready for insertion into the retort, the timber being mounted on special bolster trucks equipped with locking hoops. These hold about 10,000 ft. B. M. per charge, and tie cars hold about 420 ties per charge. The trucks are pushed into the retort by a service car equipped with an extra heavy bumper and loaded with discarded tie plates to provide the necessary traction. Charges are withdrawn from the retort by the same car through a wire cable attachment. The rail sections in front of the retort are pushed back on short pipe rollers to facilitate handling when the door is to be closed. Twelve steel tie cars are also in service around the yard.

The full-cell process consists of impregnating the fibers and cells of the timber with from 5 lb. to 20 lb. of oil per cubic foot. In this operation the wood is either air-seasoned or steamed in the cylinder, some-



FIG. 8—CHARGE OF TIMBER READY FOR RETORT

as a vacuum pump; in fact, either pump may be operated on pressure or vacuum work, and the piping enables pressure or vacuum to be applied to either the retort or to the working pressure tank as desired. An extra discharge pipe with cracked valve is also provided in the retort to enable sap, water, etc., to be drained into a blind drain in case the full-cell process is in use. This enables the steam supply to be kept on the coils within the retort throughout any desired period. Before the introduction of oil in the Rueping process, air at 60 lb. pressure is admitted to the retort for about forty minutes, in order to open the cells for subsequent treatment. The amount of oil absorbed is obtained by scale readings instead of by the customary and less accurate system of weighted floats.

The operation of the plant requires the services of twelve negro timber handlers who load ties and lumber on cars; one yard foreman who has charge of loading material on cars for treatment and who also acts as timekeeper; and one engineer. The two last-mentioned report to the tie and timber agent of the company, who is directly responsible for the operation of the plant. The auxiliary equipment includes a full set of Foxboro indicating and recording pressure and vacuum gages, thermometers, etc., and Crosby pressure gages. A complete system of records is maintained on all work handled. The plant construction was begun in March of the present year, the first treatment being given in August.

Protecting Cables in Manholes from Explosion of Adjacent Cables

BY ALBERT F. HOVEY

Several methods of fireproofing cables in manholes against the explosion of adjacent cables have been developed by operating engineers. In one of the oldest and perhaps best known of these methods common rope and concrete are employed. The former is wound spirally around the cable with about 1 in. separation between the turns, and the cable and rope are then plastered with a one to one mixture of sand and cement. The rope provides a rough surface to which the concrete clings readily and gives a slightly flexible background, which aids somewhat in preventing cracking of the fireproofing under a chance blow.

The workmen's hands have proved to be better than any tool for applying the cement for this type of covering. As far as the fireproofing qualities alone are concerned, this covering is satisfactory, but its removal presents a formidable task. Efforts to reduce this difficulty have been made by placing the turns of rope closer together and, except for the fact that rope is now rather expensive, this scheme is considered fairly satisfactory.

Another method of fireproofing is that in which asbestos millboard, cut into 3-in. strips, is wound around the cable and held in place by a fireproof paste, silicate of soda. This covering proved satisfactory as long as the manholes remained dry, but if water ran in and covered the cables, the silicate was dissolved and the asbestos loosened, dropping from the cable. Recently, on account of the difficulty in obtaining deliveries of asbestos millboard, asbestos listing, a woven material with a selva has been substituted. This material can be purchased in the form of 3-in. tape and wound spirally around the cable, and the silicate of soda covering is used to hold it in place.

When material as expensive as asbestos is used for fireproofing cables, some provision should be made for salvaging the covering when it is removed from the cable. A simple and inexpensive way of doing this is

first to wrap the lead sheath of the cable with strips of cheesecloth dipped in paraffine. One layer of cheesecloth is sufficient. Then when repairs are necessary, the asbestos can be separated easily from the paraffined cloth and taken off in long strips. If these strips of asbestos are carefully rolled backward during removal, they can be preserved and re-applied.

In what is perhaps the most recent method of fireproofing underground cables, a layer of paraffined cheesecloth is wound around the sheath and over this metal lath, covered with cement and cut into strips, is spirally wound. The cloth is applied as described above, simply to aid in removing the covering. The metal lath used is a wire mesh covered with brick clay, put on under pressure and baked, the resultant product being a web of small briquettes which can be applied the same as any wire or expanded metal lath. This makes an excellent foundation for the cement mortar, as it is porous and flexible. The cement can be applied with a trowel or by hand, forming the covering into a homogeneous mass. While this type of covering is somewhat more difficult to install than the asbestos covering, it is considerably less expensive, as calculated from the prevailing prices of material. It can easily be removed by breaking the cement covering with a hammer and cutting the metal lath from the cable with a pair of tinner's snips.

Whatever covering is applied should be considered good insurance against both mechanical and electrical trouble. The added application of paraffined cheesecloth under any of these types of covering insures the lead sheath against damage at the time the covering is removed on account of any changes which are made to the cables in the manholes.

Motor Truck Service for Stores Department

The stores department of the Union Pacific Railroad recently installed motor truck service in connection with the operation of its Omaha store, the new equipment being a 2-ton gasoline truck, herewith illustrated,



MOTOR TRUCK USED IN STOREHOUSE SERVICE BY THE UNION PACIFIC RAILROAD

which was purchased from the McKen Motor Car Company of Omaha, Neb.

In initiating this factor in the material and supplies department it is believed that the Union Pacific is entitled to the distinction of pioneering the introduction of motor truck service in railroading.

The new service supersedes the former teaming transfer system for handling the company's material

and supplies locally in Omaha and immediate vicinity. It is not understood that this line will use motor trucks for inter-city deliveries of its railroad stock, as this tonnage amounts to hundreds of cars per month and is distributed to the different points on the railroad by stores department steam locomotive special trains.

Welding Tool-Steel Tips to Machine-Steel Shanks

Abnormal Cost of High-Speed Steel Forces Economies in Its Use—Welding Can Be Applied Here with Profit

The constantly increasing price of high-speed tool steel now makes it almost prohibitive for the average shop to use cutting tools composed wholly of such material. Furthermore, with high-speed steel at present prices it is very costly for a shop to have to scrap worn-out tools. However, noticeable economies can be effected by welding high-speed steel tips to ordinary machine-steel shanks.

Briefly, the process is as follows: The high-speed steel tip is first "tacked" to the machine-steel shank, and the whole is preheated. After fluxing with borax, welding is started. After welding, the tool is immediately laid in mica dust to cool gradually. It is then given a first grinding and is tempered, after which the finishing grinding is done and the tool is ready for use.

The accompanying illustration shows the several steps in the process. The tool numbered 5 was tested for strength of weld by hammering. It broke above the weld.

In tools made up by this process the reinforcing metal which is built out and around the tip serves both to give larger radiating surface and affords a large conducting path back to the butt of the tool, thus keeping down the temperature at the cutting edge. The machine-steel shank may be of any length desired, of cold or hot rolled, or carbon steel, while the high-speed steel tip should be short.

The above represents the practice of the Westinghouse Electric & Manufacturing Company, East Pitts-

burgh, Pa., which is at the present time using cutting tools with high-speed steel tips and machine-steel shanks for many of its planers and lathes. This company has found the electric arc process of welding very satisfactory, and much cheaper than any other process. This conclusion has been reached after tests employing oxy-acetylene and forging methods. For best results the current for this work should be approximately 100 amp., and the voltage of the welding circuit 60 to 70. A 5/32-in. Norway iron electrode should be used. The work should not be hurried, but a good operator should be able to make between twenty-five and thirty welds on tools of 1½ in. cross-section in a day of nine and one-half hours.

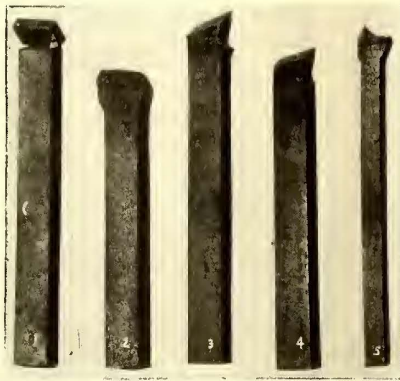
Rush-Hour Car Made of Two Single-Truck Units

Experiment Conducted by The Connecticut Company of New Haven to Determine Commercial Practicability of Plan

The Connecticut Company, like many other companies which have been engaged in electric railway operation for a long time, has a number of short single truck cars with old-fashioned platforms which have become obsolete owing to the progress in the art of car building. To determine whether it would be worth while to splice two of such cars to make one long center door car is a job that has just been completed at the New Haven shops of the company.

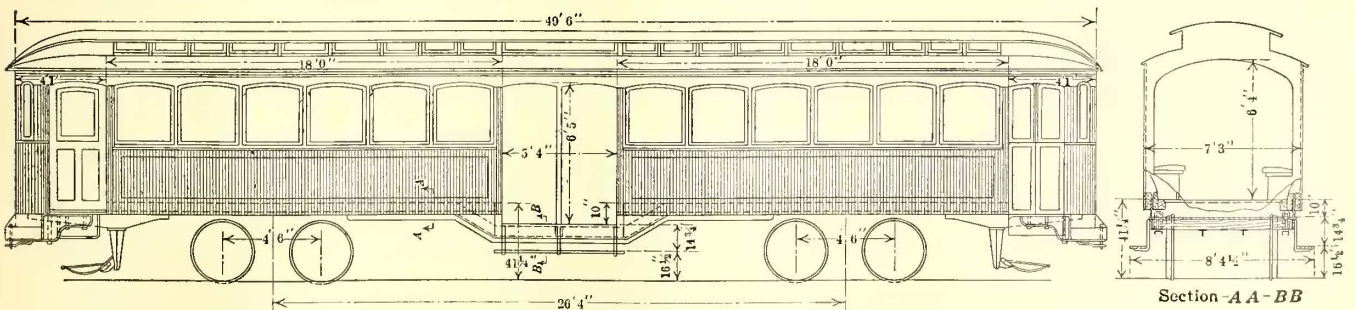
Each of the old cars used in the construction of this car were of the panel type, 18 ft. over corner posts and constructed with 4 in. x 6 in. wooden side sills. Additional sills of sufficient width to take the sheathing were bolted to the outside of the old sills making it a straight-sided car. The vestibules, platforms, and bulkheads were removed from one end, and the roofs extended to cover the well. A stirrup step at each end of the car provides access to the motorman's position in the front of the car on the left-hand side, but on the right-hand side a folding door and step is provided. The bracing under the center entrance consists of two 6 in. x 6 in. angles carried back 13 ft. from the center entrance on each side and attached to the old side sill. There are also two 4-in. channels attached to the bottom of the sills, and two 4-in. T-sections in the middle of the car. The channels and the T-sections are carried back 7 ft. on each side from the center door.

The center passageway is divided by an iron stanchion, 2 in. in diameter on which the fare box is mounted. Two folding doors manually operated are provided. The well in the center of the car is 5 ft. 4 in. measured longitudinally with the car and 6 ft. 8 in. measured transversely. This is nearly the same width as the car. The steps are stationary, the clearance conditions in New Haven permitting of this arrangement.



WELDING TIP ON LATHE TOOL

- 1—Tip "tacked" to shank.
- 2—Tool after welding.
- 3—Tool after first grinding.
- 4—Tool ready for use after tempering and finish grinding.
- 5—Tool tested for strength of weld by hammering.

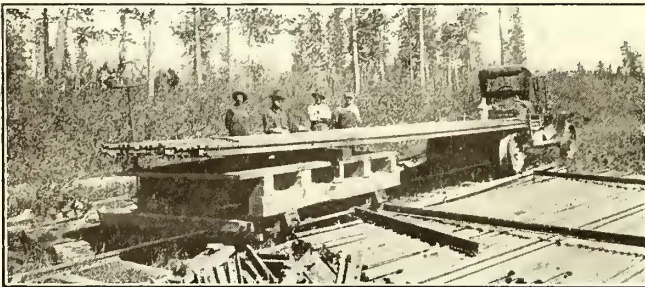


THE CONNECTICUT COMPANY'S DOUBLE-TRUCK CAR MADE BY SPLICING TWO SINGLE-TRUCK UNITS

The seating capacity of each of the old cars was 26, while the new unit seats 52. The weight of the body without the trucks, trolley or other equipment is approximately 18,000 lb. The drawing shows the car mounted on 33-in. wheels, but it is now mounted on Standard 0-50 trucks with 30-in. wheels and four Westinghouse No. 512 motors. The heights of the two steps from the street to the well are 15 in. and 14 $\frac{3}{4}$ in. respectively. The height of the riser from the well to the floor of the car is 10 in. The cost of splicing the two old cars as described was about \$1000.

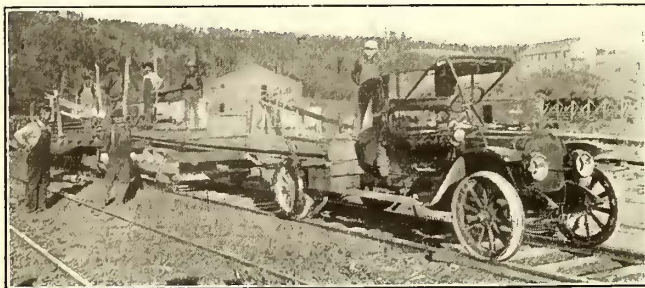
Motor Trucks with Steel-Flanged Wheels

The accompanying photographs show an application of a motor truck in salvaging rails on an abandoned lumber and tie road on the Burlington system. This ran from Nahant, Mont., into the great forests of the Black Hills to the west. The motor truck was used instead of a steam locomotive because wood-burning locomotives, the only ones available, were debarred under the forest reserve laws, the track was in bad re-



SALVAGING RAILS IN THE BLACK HILLS BY MEANS OF AUTO TRUCK EQUIPMENT

pair and there was a rank growth of grass over the track. A White 1 $\frac{1}{2}$ to 2-ton truck was used and in the first month of service it covered about 3300 miles, averaging 108 miles a day. By the use of a flat car as a trailer it was able to haul 12 tons of rails into Na-



AUTO TRUCK EQUIPMENT WHICH OPERATED SUCCESSFULLY ON ABANDONED STEAM ROAD

hant each trip. The truck made two round trips a day, climbing several grades as steep as 7 per cent on second and third gear, and registering an economy record of better than 10 miles to a gallon of gasoline. After depositing its load at Nahant the truck covered the 27 miles to the forests on fourth speed.

Oil Dripping from Ducts Gives Clue to Cable Troubles

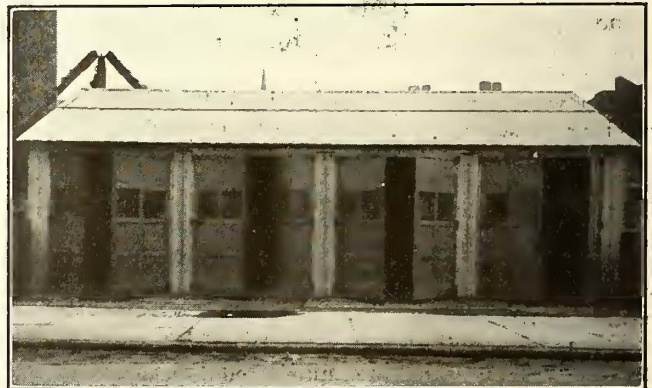
A certain section of underground cable which extended over a hill had been a source of frequent trouble, and the cause of this was by accident and reasoning found out, it is believed. An engineer inspecting the cables in a man-

hole at the foot of the hill noticed oil dripping out of the ducts, which naturally caused him to speculate as to its source. The cable installed was of an old type in which an oily substance was used as part of the insulation. The company had previously had considerable trouble with electrolysis in this section, but this had been eliminated. The engineer believed that this old electrolytic action had probably made some holes in the cable sheath and, when the cable became hot under load and the oily insulation more fluid, that the oil flowed through the holes and drained down the hill to the manhole. This in time caused dry or weak spots in the cable insulation and consequent burn-outs, several of which had occurred in the section. Working on this theory the cable was replaced with dry paper-insulated cable and the trouble is thought to be eliminated, there having been no burn-outs in this section since, although the new cable has been in use several months.

Portable Garage for Subway Construction Work

The illustration herewith is of a portable garage erected for the Rapid Transit Subway Construction Company, New York, N. Y., by the C. D. Pruden Company, Baltimore, Md. This structure was put up originally on Thirty-third Street, but has since been moved a number of times and is now located on the northeast corner of Thirtieth Street and First Avenue.

It is 28 ft. wide, 50 ft. long and 12 ft. high at the



PORTABLE GARAGE USED IN SUBWAY CONSTRUCTION WORK IN NEW YORK CITY

eaves. The framework consists entirely of structural steel, and the walls are of galvanized steel sheets with beaded edges, thus making the garage fireproof throughout. Four pairs of Kalemeined double doors, 10 ft. x 11 ft. 9 in. are provided, and in addition one single door and four wireglass skylights.

It is claimed by the makers that one firm utilizing this type of portable garage for storage of motor trucks saved the price of the building in less than one year.

Home-Made Safety Bulletin Boards

A recent poster of the National Safety Council is devoted to the above topic. It states that one of the members has adopted a good-sized blackboard as the background of his bulletin board. He pastes his illustrations on the blackboard and then changes in his text. His men recognize the personal effort he is making in their behalf and are carefully studying the new bulletin board. Another member accomplishes a very similar result with adhesive paper letters which he secures in bright colors as well as white. He, too, uses cut-outs for illustrations.

NEWS OF ELECTRIC RAILWAYS

Transportation and Traffic

Financial and Corporate

Personal Mention

Construction News

INDETERMINATE FRANCHISE FOR KEY SYSTEM

Charter Amendments Carry Three to One—Personal Appeal Methods of Education and Good Relations with the Public Prove Effective

At the recent election the resettlement franchise amendments in favor of the San Francisco-Oakland Terminal Railways, referred to previously in the *ELECTRIC RAILWAY JOURNAL*, were carried three to one. Now that the approval of the amendments has been secured, the matter will be placed before the State Legislature for ratification, after which the actual execution of the proposed resettlement franchise must again come before the people for approval. This latter step is expected to be effected at the election in May, 1917. In the meantime the popular favor with which the plan has been received places the company in a much more favorable light financially.

The San Francisco-Oakland Terminal Railways operates under 134 franchises, and by reason of the shortness of time some of the most important have yet to run it was found impossible to issue the long-term bonds essential to the proper financing of the desired improvements. When it became apparent that in spite of the urgent need of additional facilities there was no prospect of any relief, a committee of ten prominent citizens was organized to study the subject. This was in May, 1916. After considering the solution adopted in several Eastern cities the plan now in effect in Kansas City was selected as, in the main, most suitable to Oakland conditions, and the committee then drafted the amendments to the city charter, which it would be necessary to enact in order to provide a somewhat similar plan for the territory served by the Key Route System.

In reviewing the conditions under which the Key Route System now operates, the committee commented upon the fact that the 134 franchises could not be expected to possess workable provisions since they had been granted under entirely different conditions. Some were granted to competitive companies, most of them before the universal transfer was contemplated, some of them overlap, and all were for terms ranging from twenty-five to fifty years.

In planning a new basis of operation it was desirable, the committee believed, to avoid the temptation to neglect improvement on a line as the expiration of the franchise approached. Also, it was desirable to provide for the taking over of the electric railway properties by the city if municipal ownership should at some time be favorably considered. These two considerations were embodied in the plan offered as a solution and at the same time the plan was arranged so that it afforded the company a guarantee of sufficient tenure of rights to warrant the financial support required.

The essential feature of the charter amendment adopted is that it now becomes possible for the city to offer any corporation now operating a public utility a resettlement franchise in exchange for all the separate franchises held by that company. The resettlement franchise is to stipulate the value of the property involved, as determined by the State Railroad Commission, and is to give the company the right to operate indefinitely, subject always to the right of the city to acquire the property upon the vote of the people and after a six months' notice of such intention, the price to be based upon the value stated in the franchise. Provision is also made for the formation of a board of control in which the city shall have a representation equal to that of the company. This board will pass upon expenditures for betterments and extensions for the purpose of avoiding extravagant and improvident expenditures and at the same time the citizens will be assured of the necessary activity in this direction. The same board

is to determine the value of the additions, improvements and betterments, as well as the depreciation, that have occurred since the appraisal by the Railroad Commission, should the city take over the properties.

The city is to receive not less than 55 per cent of the net operating revenue of the road, which is defined as the "earnings which remain after the payment of wages, insurance, taxes, repairs, depreciation and 6 per cent per annum upon the valuation of the property fixed by the State Railroad Commission." This is in lieu of the present requirements which range from one-fourth of 1 per cent to 3 per cent of the company's gross earnings.

Subsequent to the adoption of the resettlement franchise plan, when it is desired to grant franchises for new lines, there is to be advertisement of such intention and sealed bids for providing the desired service are to be received. The successful bidder is to be awarded an indeterminate franchise prepared according to the same terms as the resettlement franchise plan. Should the city decide not to take over the properties under the new plan, it can assign its rights to purchase to a third party under the same indeterminate franchise conditions.

In Oakland it was necessary to use the initiative to put the proposed amendment to the charter on the general ballot. The 8500 signatures required for this purpose were secured twice over without great effort, but the campaigning for the election was not such an easy matter. However, good organization secured the passage of the amendment. The plan of the campaign was laid out so as to utilize methods of personal appeal as far as possible. The citizens' committee, believing in the fairness of the measure, adopted the policy of simply educating the public to the meaning of the new plan, and the results more than justified the belief that the public would readily respond to such treatment.

A list of registered voters in each precinct was also sent to some resident in that precinct whose opinion was believed to carry greatest weight, and he was asked to mail a personal appeal to each voter in the precinct. How well this plan worked is shown by the fact that the amendment carried in 238 out of 241 Oakland precincts, and although the majority was less in Berkeley, it also carried there by a safe margin.

On the day of the election friends of the measure who owned automobiles were on hand to see that voters thought to be favorable to the measure were taken to the polls. It is notable that the public has been, throughout the campaign, on the side of the company and this is believed to be a result of the public policy which the company has followed in recent months. In fact, just prior to the election citizens wholly unknown to the company called up and offered their services, such as the use of their automobiles, in securing the desired vote.

DOHERTY POWER DEMANDS INCREASE

Based upon the present requirements of the properties, it is probable that Henry L. Doherty & Company, New York, N. Y., will have to buy 100,000 kw., in turbine capacity. This includes 40,000 kw. arranged for Toledo, a 12,500-kw. turbine for Denver, one of 5000 for Ozark, and one of 6250 for Warren, in addition to the recent order of a 10,000-kw. unit. Moreover, the indications in Mansfield now are that it will need a 5000-kw. turbine and another of 10,000, instead of the two 5000 units as originally planned. Salina can use 2000 kw. additional, and Bartlesville, Sedalia and Mt. Vernon have made requests ranging from 750 to 1000 kw. Similarly, Danbury desires to add to its plant, while Lincoln, Durham and Athens have equipment ordered which will probably not be delivered until well on in 1917.

BAY STATE COMPANY SIGNS WAGES AGREEMENT Agreement Affecting 6000 Men to Continue from Oct. 1, 1916, to May 1, 1920

A new wages agreement extending from Oct. 1, 1916, to May 1, 1920, was signed on Nov. 11 by the Bay State Street Railway, Boston, Mass., and the Amalgamated Association. The agreement covers many points in relation to hours of labor and working conditions and affects about 6000 employees. A total wage increase of 4 cents an hour for blue uniform men and miscellaneous organized employees is spread through the life of the agreement. The previous graduated scale is retained as a working basis for blue uniform men's compensation. For the first period of the agreement, which expires May 1, 1917, wages are increased 2 cents an hour; for the second year, 1 cent an hour, and in the third and fourth years, an increase of 0.5 cent an hour a year is established. The new rate in cents an hour therefore may be tabulated as follows:

Term of Service	Oct. 1, 1916, May 2, 1917, May 2, 1918, May 2, 1919		to	
	May 1, 1917	May 1, 1918	May 1, 1919	May 1, 1920
First six months...	26.5	27.5	28.0	28.5
Second six months...	27.0	28.0	28.5	29.0
Second year.....	28.0	29.0	29.5	30.0
Third year.....	29.0	30.0	30.5	31.0
Fourth year.....	30.0	31.0	31.5	32.0
Fifth year.....	31.0	32.0	32.5	33.0
Sixth year, etc.....	32.0	33.0	33.5	34.0

The agreement contains full provision for arbitration of its terms along the line of a selection of a representative by each party, followed by the choice of a third member if feasible. In case a disagreement remains after six days of deliberation by the officers of the company and of the union, the selection of the third member of the board is to be determined by President Sullivan of the company and President Mahon of the Amalgamated Association.

Shopmen and employees of miscellaneous departments are to receive the same rates of increase in cents an hour as the platform men, added to the existing rates of pay of the miscellaneous employees.

Under the agreement no employee is to be assigned to snow plow work against his wishes so long as juniors on the list are available. Foremen on snow plow work are to receive 45 cents an hour, and other blue uniformed men in this work are to receive 40 cents. This rate also applies to the crews of cars pushing plows, with the exception of passenger cars pushing for one hour or less, and including salt cars, flat cars running in snow work, etc. At least three men are to be provided for each plow. When practicable the running period in snow work is not to exceed twelve hours for each crew, and in no case is a crew to be required to work more than six hours in snow service without time off for meals. The company agrees to pay for meals under snow fighting conditions.

An allowance of 15 cents for each report is to be made to conductors preparing accident reports after the close of their regular day's work. The agreement provides that nine months' work without error entitles a man to a clear record, and the company agrees to establish a duplicate card system of discipline records, one copy to be kept by the local superintendent and one by the employee on request. The employee may have the full particulars of his record, explanations, etc., inscribed on his card if he so desires.

Schedules are to be posted ninety-six hours before going into effect, the picking of runs to begin thirty-six hours after posting and to be concluded within thirty-six hours. At each carhouse runs are to be chosen at least three times a year, upon request. Leaves of absence are not to exceed thirty consecutive days in any three months unless on account of illness or absence from the United States. The company agrees not to discriminate against any member of the union and the latter agrees not to discriminate against any employee because of failure to become a member of the association. In the arrangement of schedules, as many runs as possible are to be planned for nine hours in eleven consecutive hours, the remainder so far as practicable being not less than eight or more than nine and five-tenths in twelve consecutive hours. Not more than 20 per cent of the total runs, however, may exceed twelve hours but not fourteen consecutive hours. Runs are to be scheduled on the basis of a six-hour limit of continuous work, and in no

case is the run to exceed seven and a quarter hours straight time if unsatisfactory to the men in the local carhouse. A relief of at least one hour is to be allowed for dinner and supper.

Men having regular runs except in snowplow work and an outside time of more than twelve hours are to be paid 20 per cent extra compensation, and after the first hour at the rate of 35 per cent extra. The basic principle of the work of extra men is to be nine hours in twelve, and only in extreme cases is work beyond fourteen consecutive hours to be permitted. Extra men reporting are guaranteed a minimum of six hours' work in fourteen consecutive hours, work performed after fourteen hours to be paid in addition to the six hours' guaranteed time. After the fourteenth hour additional compensation at the rate of 25 per cent and after the fifteenth hour, at 45 per cent, is to be allowed. Men running extra trips starting before 8 a. m. are allowed a minimum of two hours and this applies to all men reporting to cover the extra list in the early morning, except that double pay is not to be accorded. Instructors of motormen and conductors are to be paid 4 cents an hour above their normal rates. Seniority is to be observed so far as possible in the miscellaneous departments. The hours for all men in the mechanical and other miscellaneous departments are to be nine hours a day in ten consecutive hours on weekdays and eight hours in nine on Sundays and holidays. The same pay for eight hours' work on Sundays and holidays is to be made as for nine hours' work on weekdays.

GOVERNMENT OWNERSHIP INQUIRY ON NOV. 20

The first hearing in connection with the proposed congressional investigation of the subjects of government control and regulation of transportation and of government ownership of public utilities is to begin on Nov. 20 in the Senate office building at Washington. A statement outlining the purpose and scope of the investigation by Senator Francis G. Newlands of Nevada, who is chairman of the committee, has just been mailed to members of the Interstate Commerce Commission and state railroad commissions, commercial, farming and banking organizations and to about forty economists and publicists, as well as to the representatives of the railroads and their employees. The statement was issued for the purpose of inviting all who are interested in, or have any information regarding the subjects of the inquiry, to express their views either by written communication or at the oral hearings.

The resolution creating the committee calls for a report to Congress on or before the second Monday in January, but it is assumed that an extension of time will be granted and tentative plans have been made for an inquiry that may require nearly two years for its completion. It is expected to hold hearings in the principal cities of the country as well as at Washington.

TRACK REMOVAL ORDINANCE IN COURTS

The City Council of Kansas City, Mo., recently passed an ordinance, killed at a previous meeting, for the removal of the street car tracks from a part of McGee Street. An injunction was secured at a late hour that night, and served after midnight on P. J. Kealy, president of the company, to prevent the immediate compliance with the ordinance. The Mayor did not sign the ordinance, and has not yet done so. Following the issuance of the injunction against the enforcement of the ordinance to remove the tracks, came proceedings in the State courts to enjoin the lower courts from interfering with the act of the Council.

Several weeks ago, when an ordinance was pending for the removal of the tracks, a restraining order was secured from the county courts against the passage of the ordinance. At that time a writ of prohibition was asked of the Supreme Court to prevent the lower courts from interfering. The Supreme Court granted the writ, but not until the judge of the lower court had dismissed the restraining order. Then the removal ordinance was passed.

The present proceedings in the Supreme Court will, it is said, be carried through for the purpose of settling the question as to whether the county courts can interfere with the legislative functions of the city government.

UNION MEN QUIT IN INDIANAPOLIS

108 Out of 900 Trainmen Fail to Take Out Cars on Nov. 10—Service Not Interrupted

Following the hearing of the demands of the minority employees of the Indianapolis Traction & Terminal Company, as reported in the *ELECTRIC RAILWAY JOURNAL* of Nov. 4, page 988, Robert I. Todd, president of the company, caused an investigation to be made in the different departments to ascertain how many employees had authorized the committee to act for them. It will be recalled that at the hearing previously referred to the committee claimed to represent a majority of the employees but would not state how many, in spite of the fact that 80 per cent of the car service men had already signed the new wage scale and continuation of the individual working agreement of the company. As a result of Mr. Todd's inquiry, at one power station it developed that the committeeman coming from this branch did not represent any of the thirty-six men employed in the station, other than himself, and the station employees prepared a signed statement to that effect. Similar conditions were found to prevail in other branches of the service.

Mr. Todd then forwarded a letter to the committee advising the members of the facts and calling attention to the misrepresentations they had made at the first hearing. The attention of the committee was also directed to that section of the proposed contract which required all the employees of the company to become members of the Amalgamated Association, and their attention was also called to the injustice of attempting to force even one man into an organization as a condition of holding his position. The members of the committee were advised that for a few of the employees to attempt to force such a condition upon the majority of their fellow employees and upon their employer was carrying the matter to extremes, and that as a condition to further negotiations the demand for a closed shop and the demand that the company negotiate and contract with the Amalgamated Association would have to be withdrawn. The company promised that if this was done it would discuss with the committee, as a committee of employees, the merits of the other demands of the committee, that the committee would be expected to bring to the hearing on the afternoon of Nov. 9 a complete list of the employees they were authorized to represent.

When the committee appeared before Mr. Todd on Nov. 9 the members failed to comply with the conditions set out in the letter to them, and negotiations were broken off. The company then posted notices in the various carhouses setting forth an abstract of the injunction issued by the United States District Court on Nov. 7, 1914, enjoining officials and agents of the Amalgamated Association, officials and members of other labor unions, employees and other persons from interfering with the operation of cars, or persuading, intimidating or interfering with employees who are working under the individual contract of the company, which was declared in full force and effect. The employees were also requested to report to the office any such attempts to interfere with their work, in order that the matter might be brought before the court. Large display advertisements were placed in the principal newspapers and upon the front end of the cars notifying all persons that they would be liable to contempt proceedings in the Federal Court if they attempted to interfere with the operation of cars. A notice was also issued to the minority organized employees, advising them that the company again extended to them the privilege of signing the working agreement with car service men and deriving the benefit of the increased wages which had been accepted by more than 80 per cent of the trainmen. In order that the organized men might avail themselves of this opportunity they were given until 6 p. m. on Nov. 11 to sign the agreement, provision being made that they should be allowed sufficient time off, with pay, to do so.

Several of the union men signed the agreement, but during the day of Nov. 10 108 out of approximately 900 trainmen employed on the city lines failed to take out their cars. Their places were immediately filled by men on the extra list so that no interruption of service occurred except during the rush hours, when a few tripper runs were not operated.

On the night of Nov. 10, a mass meeting of the labor organizations was called by the Central Labor Union, at which its president, Otto Ray, was served by the United States marshal with a copy of the federal injunction restraining anyone from interfering with the operations of the Indianapolis Traction & Terminal Company. W. D. Mahon, international president of the Amalgamated Association, and Magnus Sinclair, executive board member, who were to have advised the organized men as to what action they should pursue, failed to appear. The men were told not to take out their cars, but to attend another meeting at 10 a. m. on Nov. 11, but again no action was taken.

An advertisement was inserted in the newspapers by labor unions, in which the facts with respect to the conditions of labor and the wages paid were distorted. In this advertisement it was also claimed that the men had been "locked out" by the company in an effort to break up their union.

In reply, the company published a full statement of the situation under the heading "Street Car Men Are Satisfied." The statement then gave a short history of the contract, statistics of the average and minimum wages paid, an account of how an employee may appeal in case of discipline to a special board of which three of the five members are fellow employees, etc. Figures were also given of wages earned per week by some of the men who claimed to have been "locked out" and an explanation that the trouble was due because less than 20 per cent of the car service employees found they could not force a closed shop and dominating control upon the 80 per cent majority.

Practically no disorder occurred, even at the outer terminals of the street car lines. The police department handled the situation most efficiently, permitting no labor sympathizers to gather on the streets or interfere with the operation of cars. The men who had failed to sign the working agreement at the expiration of the time fixed were considered by the company as having resigned, and their runs were assigned to men on the extra list.

A committee of the so-called "locked out" employees arranged for an audience with Governor Ralston on Nov. 14.

INDIANAPOLIS BOARD OF DISCIPLINE

The Indianapolis Traction & Terminal Company, Indianapolis, Ind., on Nov. 9 announced the establishment of a board of discipline to consist of twenty employees of the company from the various carhouses, three of whom may be chosen by a dissatisfied employee to act with two representatives of the company as a board of arbitration to pass finally upon all matters of discipline. Three members of this board of discipline and two representatives of the company are also empowered to take up any suggestion or complaint of any employee concerning the rules, working conditions, discipline or method of carrying on the business of the company, to investigate the complaint or suggestion and make a report to the president of the company. The order establishing the board of discipline follows:

"The company will provide boxes with four compartments plainly marked for each of the four carhouses. During the month of December each year each carhouse shall choose by popular vote five men whose names shall be placed in the box bearing the name of the carhouse at which they are employed. These twenty men shall constitute the board of discipline. To be eligible to be chosen on this board the men must have been regularly employed in car service by this company for at least three years.

"Any employee who is dissatisfied with a decision by the superintendent relating to discipline may take his case to the president and to the board of arbitration under the provisions of the working agreement with car service men. Or, if he so desires, he may come to the office of the superintendent and by lot may himself choose one name each from three of the boxes, excluding his own carhouse. The three members of the board of discipline so chosen, together with the superintendent and assistant superintendent, shall meet thereafter as soon as possible and hear all the evidence relative to the matter and decide the man's case, and their decision shall be final.

"Any car service man who has any suggestion or complaint to make concerning the rules, working conditions,

discipline or method of carrying on the business may have the same considered by a board constituted of the superintendent, assistant superintendent and three members of the board of discipline chosen by lot from three different carhouses, excluding the carhouse from which the suggestion comes, which board having considered the same shall make its report and recommendation direct to the president of the company. Nothing in this rule, however, shall deprive any man of the right to take any complaint to the board of arbitration as provided in the working agreement with car service men."

As explained in the notice, the privilege offered the men of taking their cases before the board of discipline for a hearing is optional, and in no way supplants the Public Service Commission of Indiana, the arbitration board provided in the individual working agreement. The company will pay the members of the board of discipline their regular rate of wages for the time they put in when hearing and considering cases, and in addition thereto the sum of \$5 a year.

HEARING BEGUN ON CLEVELAND POWER CONTRACT

The hearing on the question as to whether the Cleveland (Ohio) Electric Illuminating Company is to receive the contract for furnishing power for the Cleveland Railway was begun before the board of arbitration on Nov. 9. L. P. Creelius, superintendent of power of the railway, was the first witness. He said the company now generated 60 per cent of its power and bought the other 40 per cent from the Illuminating Company. He estimated that there would be a saving of \$240,000 a year from buying 30 per cent more, making 70 per cent in all. The Cedar Avenue power house of the railway, which is to be abandoned, produced the 30 per cent in question.

On the following day Fielder Sanders, street railway commissioner of the city, was the witness until noon. He testified to the effect that he had conducted negotiations with the municipal plant and had secured a bid for 54,000,000 kw. a year. The Illuminating Company, already having a contract with the railway for furnishing a portion of its power, was able to bid on 120,000,000 kw. annually. On the face of the bids the municipal bid was lower than that of the Illuminating Company, but his engineers had informed him that the company's bid was the lower, when the entire supply was considered. Mr. Sanders said that while he wanted the city plant to get the business, he felt that he must guard carefully the cost of the additional power to the railway on account of its effect upon fares. By dismantling the old plant and buying power from the Illuminating Company the railway would in five years get back the value of the plant and in the next ten years would save \$2,000,000 in the cost of power. That would mean about \$3,000,000 in fifteen years. Mr. Sanders thought that this would have a favorable effect on the rate of fare. He said that the Illuminating Company was prepared to furnish the necessary power at once, while the city asked for eighteen months in which to install additional generating equipment. The city plant was carrying a full load now and had applications from several thousand homes for domestic service.

W. E. Davis, light commissioner of the city, announced on Nov. 14 that the city will submit a new power bid based upon the cost of producing the power. On the same day Robert Orr, general manager of the Duquesne Company, Pittsburgh, testified that the Illuminating Company was not properly protected in its contract, in view of the very low rate it has proposed. The protective clause in the contract provides that, at the end of five years, new bids may be received on condition that they are 10 per cent or more below the rate at which power is being furnished. The city objects to this clause. Director of Law Fitzgerald stated on the previous day that there was a working alliance between the Cleveland Electric Illuminating Company and the Cleveland Railway. He objected to the 10 per cent clause and said that the railway wanted to buy all its power eventually. President Stanley of the railway said unofficially that the company did expect to buy all its power later on, but he declared he knew of no alliance between the companies. He

was doing what he felt was best for the stockholders and patrons of the road and he did not believe it would be the best thing for the municipal plant to take the contract.

The voters at Cleveland on Nov. 7 approved a bond issue of \$1,750,000, from the proceeds of which additions to the building and equipment of the municipal light plant will be made.

CONFERENCE ON SAFETY AT BOSTON DRAWBRIDGES

A conference between Mayor Curley of Boston, Mass., President Matthew C. Brush of the Boston Elevated Railway, President P. F. Sullivan of the Bay State Street Railway, President Charles L. Edgar of the Edison Electric Illuminating Company of Boston, Commissioner of Public Works Murphy, Deputy Commissioner Sullivan, Joseph A. Rourke, head of the Boston High Pressure Fire Service and John E. Carty, engineer in charge of Bridge and Ferry Service, was planned for Nov. 16 to study the safeguarding of drawbridge operation. The meeting was called as an outcome of the accident of Nov. 7, when a surface car of the Boston Elevated Railway plunged into Fort Point Channel. Since the accident the company and the public authorities have been investigating all possibly related circumstances, but formal conclusions have not yet been made public. So far as has been learned up to Nov. 15 by the representative of the ELECTRIC RAILWAY JOURNAL in Boston nothing has developed to modify the preliminary view published last week to the effect that the accident was due primarily to the failure of the motorman to observe proper speed on approaching the draw.

Relative to the possibility of further safeguarding operation at drawbridges, Mr. Brush has written Mayor Curley as follows:

"Since the unfortunate occurrence at the Summer Street extension bridge we naturally have been earnestly studying the question of operation of street cars across drawbridges, with a view toward the further prevention, if possible, of similar accidents in future.

"Our rules and regulations have been extremely comprehensive and strict in matters of this kind, and apparently we have taken all precautions customary in such cases. Notwithstanding this, however, we are of the opinion that there may perhaps be development of a recent nature of which, with the co-operation of the city, we may be able to avail ourselves, which may tend still further to prevent accidents of this kind.

"All of our own engineers and operating men have been carefully going over this matter, and we have conferred with H. E. Reynolds, assistant general manager of the Bay State Street Railway, and his engineers on the same matter.

"We are of the opinion that certain steps can and should be taken along the lines of safety, and that the eventual construction of a rather pretentious but effective barrier at drawbridges should receive consideration."

In addition to the above list of conferees, Mayor Curley invited President Richard C. Maclaurin of the Massachusetts Institute of Technology to send an expert to the meeting. The representative of the ELECTRIC RAILWAY JOURNAL in Boston also was present.

CIVIC FEDERATION CALLS CONFERENCE ON STRIKE LEGISLATION

V. Everit Macy, president of the National Civic Federation, has announced the formation of a committee to make suggestions to Congress and State Legislatures for the perfection of laws providing for amicable settlements of labor disputes. The committee is to be composed of representatives of the railroad interests, of the manufacturing and agricultural interests, representatives of the railway brotherhoods, the American Federation of Labor, shippers' organizations, and of the public, represented by the United States Board of Mediation and Conciliation, the National Association of State Railway Commissioners, and the National Association of State Boards of Arbitration.

In a statement made on Nov. 13, explaining the aims of the committee, Mr. Macy said:

"The recent industrial disturbances affecting the relations

between the railroads and their employees, and the public utility corporations of New York and other large cities and their employees, have brought the country again to a consideration of the question, 'What, if any, amendments can be made to the Newlands Federal Mediation act and to the State Railway Commission laws that will reduce these disturbances to a minimum in the future?'

"A committee of the National Civic Federation drafted in 1913 the measure which became the law known as the Newlands Federal Mediation act. In the recent railroad controversy, however, the machinery provided by that act seemed inadequate, and the President expects Congress to consider the matter of additional legislation in December, a bill modeled after the Canadian compulsory investigation act having already been introduced at his suggestion.

"In the case of municipal utilities, such as street railways and gas and electric light corporations, the Civic Federation, through its department on regulation of interstate and municipal utilities, drafted in 1914 a model State regulation bill, in which an effort was made to incorporate a provision enabling the various State railway commissions to take cognizance of labor disputes but at that time these State commissions did not look with favor upon the suggestion. Since then, however, a number of strikes in large cities have caused many public service commissions to change their views, and the State Legislatures this winter will doubtless have before them many proposals on this subject.

"While the questions relating to railroads can be dealt with only by Congress, and those relating to municipal utilities can be dealt with only by State Legislatures, the principles applying to both sets of problems are identical, and if a satisfactory method of procedure can be found in one case it will be just as applicable to the other."

The first meeting of the new Civic Federation committee will be held in Washington the first week in December.

CHICAGO COMMITTEE IN THE EAST

Chairman of Committee Inspecting Rapid Transit Systems Outlines Purport of Trip

The members of the local transportation committee of the City Council of Chicago which is making a tour of Eastern cities to study rapid transit problems were in New York on Nov. 9. The party was in charge of H. D. Capitain as chairman. Mr. Capitain has been chairman of the committee since May, 1915. He has served on the committee for more than four years and has been a member of the Council for four or five terms. At the headquarters of the committee in New York at the Hotel McAlpin he explained to a representative of the ELECTRIC RAILWAY JOURNAL that the trip of the Aldermen was anticipatory to the receipt by the city of the findings of Robert Ridgway, W. B. Parsons and Bion J. Arnold, appointed in January to report to the city on a unified and comprehensive system of transportation, including the present surface and elevated lines and the proposed subway. Mr. Capitain and some of the other members of the committee were more or less familiar with what had been done in the East in the interest of rapid transit, but it was deemed advisable for all of the members of the committee on transportation to take the trip and to go over the rapid transit systems in the eastern cities so as to prepare themselves better for a more intelligent understanding of the report of the engineers to the city.

Mr. Capitain said that while the members were interested in the physical properties and in the problems which had been met and overcome in the rapid transit lines in the East, they were particularly interested in the terms under which the rapid transit lines in New York, Philadelphia and Boston had been financed and were operated. He explained that one of the duties with which the engineering commission is charged was that of suggesting a financial plan covering the investments of the surface and elevated lines as well as methods for securing additional capital required by the city over and above its accrued traction fund, for subway purposes and for extensions to the elevated line.

The itinerary of the members of the party called for their return to Chicago by Nov. 18. In the meantime they were to visit Philadelphia, Brooklyn, Newark, Boston and Cleveland in addition to New York. The committee was accom-

panied by correspondents representing four Chicago papers, all of whom sent to their papers each day an account of a column or more covering the work of the committee for the day. Other members of the party were H. H. Evans, secretary of the committee on local transportation; R. F. Kelker, traction supervisor, city of Chicago; O. H. Tousey, representing the Board of Supervising Engineers, Chicago Traction; John F. Wallace, chairman of the railway terminal committee of Chicago, and M. S. Cressy, assistant corporation counsel of Chicago.

While the members of the committee were in New York Mr. Wallace arranged for an interview between Alderman Geiger, chairman of the Chicago Council committee on railway terminals, Mr. Cressy and Charles Peabody, a director of the Illinois Central Railroad. They are said to have secured assurance from Mr. Peabody of the early electrification of the suburban service of the Illinois Central Railroad out of Chicago if the necessary financing can be arranged.

Arbitration of Dismissals Proposed.—Officials of the South Covington & Cincinnati Street Railway, Covington, Ky., have consented to the appointment of former City Treasurer and Commissioner Harry W. Percival as third arbiter between them and their employees, in the matter of dismissal of six employees for alleged infraction of a company rule.

Men Deny Dynamiting New York Subway.—The six alleged dynamiters of the Lenox Avenue subway station of the Interborough Rapid Transit Company, New York, N. Y., appeared before Judge Delehanty in General Sessions on Nov. 13 and through their attorney, Louis Fridiger, entered pleas of not guilty. John McCourt, the seventh man indicted, was remanded to the Tombs until Nov. 15 for pleading.

Reargument of Compensation Cases Ordered.—Reargument was ordered on Nov. 13 by the Supreme Court of cases testing the constitutionality of the Washington, New York, New Jersey and Iowa workmen's compensation laws. No date was set for the rehearing. No reason was given by the court for the order. The court also directed reargument of an Ohio case involving interpretation of the Ohio employers' liability law.

Electrification of Whiteson Line Nearing Completion.—According to reports, the electrification of the Southern Pacific Company's west side line, from Whiteson, Ore., to Corvallis, will probably be completed by Jan. 1, 1917, but the operation of electric trains into Corvallis will be delayed until April or May because the equipment for the transformer plants will not be received until spring. At present the Southern Pacific Company has between 150 and 200 men on post and line crews working on uncompleted portions of the line.

Discussion of Philadelphia Agreements Postponed.—After having set Nov. 10 as the time for opening the public discussion of the proposed agreement between the city and the Philadelphia (Pa.) Rapid Transit Company for the operation of the new high-speed transit lines, the meeting was called off. Chairman Gaffney of the finance committee and Chairman Seger of the street railway committee have to consider the appropriations for 1917, and they agreed that it would be better to postpone the transit meetings until the financial matters were out of the way.

Mexican Military Authorities Equal to Occasion.—Street car operators in Matamoras, Mexico, declared a strike on Oct. 23, following a refusal of their employers to double the wages paid. The demand for higher pay followed the action of the street railway in doubling the fares. Fares were raised from 50 cents to \$1, Mexican currency. It is said that the men are paid six pesos a day in Constitutionals paper money, equivalent at present to about 12 cents United States currency. It is understood that additional demands were made and the men refused to move the cars from the carhouses until they were complied with. The military authorities took the matter in hand and threatened to shoot the men if they continued to refuse to work. The men promptly returned to work, accompanied by an armed guard. The chief business of the railway is between Matamoras and Santa Cruz, a ferry village opposite Brownsville. The line is about 2 miles and is operated by mule-drawn cars.

PROGRAMS OF ASSOCIATION MEETINGS

New England Street Railway Club

The meeting of the New England Street Railway Club at the Copley Square Hotel, Boston, Mass., on Nov. 23, will be "New Hampshire Night," in charge of J. Brodie Smith, vice-president of the club and vice-president and general manager of the Manchester Traction, Light & Power Company. Mr. Smith has secured as speaker Edwin F. Jones, Manchester, N. H., who has chosen for his subject, "Street Railways—A Look Into the Future." For twelve years Mr. Jones was city solicitor for the city of Manchester. At present he is senior member of the law firm of Jones, Warren, Wilson & Manning, attorneys for the Manchester railways.

American Society of Mechanical Engineers

The tentative program has been announced for the thirty-seventh annual meeting of the American Society of Mechanical Engineers in New York, Dec. 5-8. Among the papers of interest to electric railway operators scheduled to be presented are the following:

"Water for Steam Boilers—Its Significance and Treatment," by Arthur C. Scott and J. R. Bailey.

"Graphic Methods of Analysis in the Design and Operation of Steam Power Plants," by J. S. Pigott.

"Mechanical Design of Electric Locomotives," by A. F. Bachelder.

There will also be a public hearing on Dec. 8 by the boiler code committee which is engaged in the work of establishing uniform rules and legislation throughout the country for the construction and operation of steam boilers.

Academy of Political Science

The annual meeting of the Academy of Political Science is to be held at Earl Hall, Columbia University, New York, on Wednesday and Thursday, Nov. 22 and 23.

The first session is to be held on the afternoon of Nov. 22. The topic will be "Governmental Mediation and Arbitration."

The second session will be held on the evening of Nov. 22. The topic will be "Trade Unions and Compulsory Arbitration."

The third session will be held on the afternoon of Nov. 23. The topic will be "Trade Unions and Mediation and Conciliation."

The fourth session will be held on the evening of Nov. 23 at the Hotel Astor at 7 o'clock. The occasion will be the annual dinner of the academy. The topic for discussion will be "Recent Aspects of Labor Disputes Affecting Public Service Corporations." Oscar Straus will preside.

Central Electric Railway Association

Delegates to the convention of the Central Electric Railway Association at the Secor Hotel, in Toledo, Ohio, on Nov. 23 and 24, will be welcomed to that city by Charles M. Milroy, Mayor of Toledo. A. Benham, president of the Central Electric Railway Association, will respond to Mr. Milroy. The following is the program of papers scheduled for presentation before the delegates on Nov. 23.

Paper, "Headlights," by K. W. Mackall, electrical engineer of the Ohio Brass Company, Mansfield, Ohio.

Address, "The Electric Railway Industry," by Frank R. Coates, president of the Toledo Railways & Light Company.

Address, "Safety," by Harold W. Clapp, general superintendent of the Columbus Railway, Light & Power Company, Columbus, Ohio.

Address, "Electric Railway Freight and Express," by Nathan Rumney, general freight and express agent of the Detroit (Mich.) United Railway.

The program for Nov. 24 follows:

Address by F. W. Coen, vice-president and general manager of the Lake Shore Electric Railway, Sandusky, Ohio.

Paper, "Car Architecture," by L. B. Stillwell, New York.

In addition to the foregoing papers and addresses it is expected that L. S. Storrs, president of the American Electric Railway Association, and James P. Barnes, president of the New York Electric Railway Association, will be present and address the meeting.

Central Electric Railway Accountants' Association

The program has been announced for the annual and thirtieth meeting of the Central Electric Railway Accountants' Association, to be held at the Hotel Gibson, in Cincinnati, Ohio, on Dec. 8 and 9. The executive committee of the association is scheduled to meet at 9 a. m. on Dec. 8. At 10 a. m. the regular session will be begun with the address of the president and the presentation of the reports of the executive committee, the standing committee on passenger and freight accounts, the question-box committee and the secretary and treasurer. It is expected that this program will take up the entire morning session. At the afternoon session on Dec. 8 the following addresses are scheduled for presentation:

Address by P. H. Diehl, district manager of the Railway Audit & Inspection Company, Chicago, Ill., on a subject to be announced.

Address, "Electric Light and Power Accounting," by A. E. Dedrick, auditor of the Mahoning Valley Railway, Youngstown, Ohio. At this session the report of the electric light and power accounts committee will be presented and there will be a discussion of the form of annual report to the Interstate Commerce Commission.

The program of addresses to be presented on the morning of Dec. 9 follows:

Address, "Recent National Legislation Affecting Electric Railway Accounting," by A. C. VanDriesen, chief accountant of the Toledo Railways & Light Company, Toledo, Ohio.

Address, "A Clearing House for Interline Account Settlements of Electric Railways," by E. L. Kasemeier, auditor of the Ohio Electric Railway, Springfield, Ohio.

At the conclusion of the presentation of these papers general business will be transacted and officers for the coming year will be elected.

Pennsylvania Street Railway Association

The program has been announced for the meeting of the Pennsylvania Street Railway Association on Dec. 12 and 13, at the Adelphia Hotel, Philadelphia, Pa. The meeting will be called on the roof garden of the hotel at 11 a. m. The morning session will be devoted to the president's address, the presentation of the report of the secretary-treasurer and the appointment of committees. The afternoon session will be called at 2 p. m., and the following subjects will be discussed:

"Fire Insurance and Prevention." (a.) Co-operation in Fire Insurance, by E. W. Bowman, Supervisor of Insurance of the Philadelphia Rapid Transit Company. (b.) Inspection, by H. W. Forster, general manager of the Independent Inspection Bureau.

"Life Insurance." (a.) Employees Group Insurance, by W. F. Chamberlin, superintendent of the Group Insurance Division of the Travelers Insurance Company.

"Accident and Casualty Insurance." (a.) Some Thoughts on Liability, Casualty, Judiciary, Fidelity, Burglary and Other Forms of Insurance, by M. S. Bowman of the Accident and Casualty Department of the Travelers Insurance Company. (b.) Precaution Against Accident, by A. G. Jack, claim agent of the Southern Pennsylvania Traction Company. (c.) Public Safety Crusades, by Beatrice V. Clinch of the Philadelphia Rapid Transit Company.

Question Box.

There will be an informal dinner on the evening of Dec. 12, on the roof garden of the hotel.

The session on Dec. 13 will be called at 9 a. m. The subjects to be discussed follow:

"Use of the Electric Railways of Pennsylvania in Connection with Mobilization and National Defenses," by Lieut. Col. Chauncey B. Baker, U. S. A.

"Taxation," by Boyd Lee Spahr.

"Lightning Protection," by a representative of the General Electric Company.

"Electric Welding," by E. A. Hoffman, engineer of maintenance of way of the Wilkes-Barre Railway.

"Status of the Jitney," by D. I. McCahill of the West Penn Railways.

There will also be an open discussion of the question of economies made necessary by present-day problems in labor and materials.

Financial and Corporate

ANNUAL REPORT

Columbus Railway, Power & Light Company

The income statement of the Columbus Railway, Power & Light Company, Columbus, Ohio, for the years ended Dec. 31, 1914 and 1915, follows:

	1915		1914	
	Amount	Per Cent	Amount	Per Cent
Railway operating revenues	\$2,039,383	65.5	\$2,086,269	68.0
Power, light and heat operating revenues	1,072,670	34.4	968,238	31.6
Non-operating revenues	1,122	0.0	11,791	0.4
Total gross revenues	\$3,113,175	100.0	\$3,066,298	100.0
Operating expenses and taxes	1,846,437	59.3	1,886,745	61.5
Gross income	\$1,266,738	40.7	\$1,179,553	38.5
Deductions from income	476,281	15.3	479,461	15.6
Net income	\$790,457	25.4	\$700,092	22.9

During the last year the total revenues increased \$46,877 or 1.5 per cent. This arose from an increase of \$104,432 or 10.8 per cent in power, light and heat operating revenues and from a decrease of \$46,886 or 2.2 per cent in railway operating revenues and \$10,669 or more than 90 per cent in non-operating revenues. The operating expenses and taxes decreased \$40,308 or 2.1 per cent, so that gross income gained \$87,185 or 7.4 per cent. Deductions from income showed a slight decrease, so that after the payment of \$587,229 for dividends as in 1914, there was left a sum of \$202,227 available for depreciation, etc., as compared to \$112,862 in 1914.

Important additions were made to the railway properties during 1915, notable examples being a crane car for the handling of heavy material with speed, safety and economy; two special snow-handling machines, and a street-flusher car.

For 1915 as compared with 1914, the results of the safety-first propaganda were a 12 per cent reduction in boarding and alighting accidents, a 15 per cent reduction in collisions between cars and teams, and a 36 per cent reduction in collisions between cars. Collisions between cars and automobiles showed practically no change, although there was an increase of 40 per cent in automobiles in Columbus.

Miscellaneous comparative statistics for the railway department in 1914 and 1915 are given below:

	1915	1914
Revenue passengers	61,062,066	62,837,925
Transfer passengers	15,154,460	16,111,634
Total passengers	76,216,526	78,949,559
Per cent of transfers to total passengers	19.88	20.41
Revenue per revenue passenger in cents	3.20	3.19
Revenue per passenger, including transfers, in cents	2.56	2.54
Car mileage	8,204,525	8,376,901

NOTES TO BE RETIRED

The Republic Railway & Light Company, Youngstown, Ohio, has sold to Harper & Turner, Philadelphia, Pa., \$3,500,000 of preferred stock of the Mahoning & Shenango Railway & Light Company, its chief subsidiary. Approximately \$3,000,000 of this preferred stock is deposited as collateral behind the \$3,000,000 note issue of the Republic Railway & Light Company. From the proceeds of this sale the Republic Railway & Light Company will pay off the entire note issue which would mature Dec. 1, 1918, and these notes will be called for redemption at 100½ and interest. On account of the satisfactory earnings of the subsidiary properties, the directors of the Republic Railway & Light Company consider it wise at this time to fund permanently its \$3,000,000 of short-time securities, thereby strengthening the credit of the holding company and placing in a more advantageous position to acquire additional properties to round out its electric light and power and railway business in Ohio and Pennsylvania. After the retirement of these notes the Republic Railway & Light Company will have only preferred and common stock outstanding.

MAYOR CURLEY ASKS SQUARE DEAL

Tells Commission Boston Elevated Should Have Relief if Not at Fault for Present Condition—Favors Lower Taxes Rather Than Higher Fares

Mayor Curley of Boston, Mass., on Nov. 10 told the special legislative commission on the finances of the Boston Elevated Railway that, if in the commission's opinion the management of the company has striven for maximum efficiency in operation, the city of Boston should favor granting relief to the company. The Mayor believed the conclusion to be inevitable that the company must obtain relief in some form if it is to meet the reasonable requests of the public for additional rapid transit facilities. The company's stock is generally admitted to represent actual value, and its dividends have never been in excess of 6 per cent. The attention of the commission, therefore, must be confined to the question of responsibility for the present financial condition of the company. If this is due to the company's own fault, then apparently it is not entitled to some of the measures of relief desired. If, on the other hand, the commission finds that the company's condition is not due to improper management but is caused by its attempt to respond more rapidly to the public demand for increased transportation facilities than its resources would warrant, then it would appear to be a case which calls for extraordinary relief through legislative action.

In regard to the necessity of giving more than temporary relief, Mayor Curley said:

"If you find that a proper case of relief has been made out, I trust that you will not perform only half of your task, viz., to meet the present financial difficulties of the company without taking into account further difficulties that will arise if the still more extensive program of tunnel and subway development is carried out in the near future. If you find that under the limitations of the 5-cent fare the company cannot finance the tunnel and subway undertakings which this community has a right to demand shall be accomplished, then you will be called upon to recommend a radical remedy, one which will go to the root of the trouble and provide a permanent cure."

Taking up specific suggestions that have been made for the relief of the company, Mayor Curley said that as far as providing additional capital is concerned, it may be sufficient to have the State buy the Cambridge Subway and lease it to the company for sufficient rental to reimburse the State for the expenditure. This will be in effect only a loan of State credit to the company, just as the city of Boston lends its credit as a means of procuring tunnel and subway construction. Quite apart from any question of financial relief to the company, however, the mayor advocates State ownership of the Cambridge Subway because he believes that private ownership of the subways and tunnels under the street is prejudicial to the interest of the community. The sooner the Boston system is applied to the Cambridge Subway, the better it will be for the future.

Another means of relief which in the Mayor's opinion will harm no one, is the return by the State of \$500,000 deposited by the company as a guarantee for the payment of land damage claims. The 8-cent check used between the Boston Elevated Railway and the Bay State Street Railway should be abolished in the interests of non-discrimination. Moreover, additional relief would come in the granting of legislative authority to the company to take additional land so as to inclose areas at transfer points. This would enable the company to cut down operating expenses to some extent, and it would reduce the loss now caused by the improper use of transfer checks. Regardless of any question of financial benefit to the company, the Mayor strongly advocates the granting of this authority in the interest of the public itself, since these inclosed areas promote the safety, convenience and comfort of the public.

If the commission, however, is brought face to face with the problem of providing relief either through increased fares or a temporary reduction of company taxes, Mayor Curley believes that it will find itself in serious difficulties. The traveling public will oppose increases of fare and municipalities will oppose reduction of taxes. If one of these forms of relief must be adopted, in the Mayor's view it would be better for the community as a whole to have

a reduction made in taxes than to have relief come through increased fares. If a choice must be made between these two evils, he would unhesitatingly recommend a reduction in taxes.

In explanation of this point of view, Mayor Curley stated that an increase of fares would, in this particular case, be surrounded with great practical difficulties. Legislative opposition would be sure to arise owing to protests on the part of the traveling public. Moreover, there would be serious obstacles to the successful working of the increased fare schedule, whether the schedule provided for a uniform increase throughout the territory or increased fares on only the longer runs. Practically, as far as the public is concerned, there is no great difference whether relief comes in the form of increased fares or temporarily reduced taxes. The great majority of the people living in the municipalities served now use the company's cars, and a still greater number will use them when more rapid transit facilities are furnished. All the people, car users or otherwise, share in the benefits accruing from improved transportation—that is, from increased valuations of property and the resulting reduction of taxes or the extension of municipal service. On the whole, however, less hardship would result from a temporary reduction of taxes.

In closing, Mayor Curley stated that it would be unfortunate for the city if the result of the present inquiry were only to give relief to the company at the expense of the city's own street development or its hospital, public health or public library service, for example. He felt, therefore, that if the commission should recommend a temporary reduction in the taxes paid by the company it should also recommend as an integral part of the proposed legislation, authority to increase the tax limit of the city to an extent sufficient to make up the deficit caused by the reduction in the company's taxes.

I. C. C. ISSUES ACCOUNTING ANSWERS

Another Series of Questions and Tentative Answers Under the Uniform System of Accounts Prescribed by Commission for Electric Railways

Another series of tentative answers to questions raised in connection with the uniform system of accounts prescribed by the Interstate Commerce Commission for electric railways has just been released by the commission. As these answers have not received the formal approval of the commission, however, it should be understood that the decisions do not represent its final conclusions, and that they are subject to such revision as may be thought proper before final promulgation in the accounting bulletins of the commission. The questions raised, and the answers made to them, follow:

Q. This company built an extension to its line, and property owners served by the extension agreed to pay \$25,000 toward the cost thereof. How should this contribution be accounted for?

A. The amount donated by the property owners should be credited to profit and loss account No. 305, "Donations." The cost of constructing the extension should be included in the appropriate road and equipment accounts. See the second paragraph of the text and the note of account No. 305, "Donations."

Q. In connection with the reconstruction of a track over which operations are being conducted at the same time, it is necessary to have flagmen and watchmen where the work is being done, for the purpose of regulating the operation of cars and directing passengers. To what account should the wages of such employees be charged?

A. To account No. 66, "Miscellaneous Car Service Employees."

Q. To what account should be charged the cost of paper dials for watchmen's clocks?

A. To operating expense account No. 94, "Stationery and Printing."

Q. Is it permissible to credit operating revenue accounts with amounts representing the cost of transporting men engaged and materials used, in the operations of a company?

A. The rules contained in the uniform system of accounts do not permit charging operating expenses and concurrently crediting operating revenues with amounts representing the cost of transporting men engaged in and material to be used for maintenance and operation. Charges should be made to construction accounts for the actual cost (or an estimate thereof) of transporting men and material for construction purposes. The credit in such case should be made to operating expense general account VII, "Transportation for Investment—Cr.," if the cost of such transportation was charged, in the original distribution, to operating expenses.

Q. To what account should be charged the amount of a premium paid on a bond given the United States government in order to qualify a carrier to transport merchandise in bond?

A. To operating expense account No. 89, "Miscellaneous General Expenses."

Q. To what accounts should be charged rent and taxes on land leased for freight-house purposes?

A. The rent shall be charged to income account No. 217, "Miscellaneous Rents," and the taxes to income account No. 215, "Taxes Assignable to Railway Operations."

Q. To what account shall be charged amounts paid for the privilege of erecting poles to support distribution and transmission lines?

A. To account No. 23, "Miscellaneous Electric Line Expenses," or No. 49, "Transmission Systems," as may be appropriate.

Q. To what account should be charged amounts paid to other companies for the privilege of attaching wires to their poles?

A. To operating expense account No. 23, "Miscellaneous Electric Line Expenses," or No. 49, "Transmission System," according to the character of the line.

Q. Should the entire cost of purchased power be charged to operating expense account No. 59, "Power Purchased," or may the amount of power used by a work train be charged directly to the appropriate maintenance accounts?

A. The cost of all power purchased should be charged to account No. 59, "Power Purchased," as required by the text thereof. In this connection see the text of account No. 61, "Power Transferred—Cr."

Q. A portion of a company's track was laid upon a street, which was later regraded by the municipality for the purpose of eliminating hills. The cost of regrading that portion of the street lying under the tracks was assessed against the company. To what account should be charged the amount of this assessment?

A. To road and equipment account No. 504, "Grading."

Q. What is meant by the term "except final distribution," as found in road and equipment accounts Nos. 505, "Ballast," 506, "Ties," 507, "Rails, Rail Fastenings and Joints," 508, "Special Work," and 509, "Underground Construction"?

A. By this term is meant expenses incident to the distribution of ballast, ties, rails, rail fastenings and joints, special work and materials used in underground construction from the storehouse or delivery point to the place where such material enters into construction. (See Case, 114.)

Q. To what account should be charged rent of ground used for driveway purposes in delivering coal to a heating plant?

A. To income account No. 217, "Miscellaneous Rents."

Q. What is meant by the term "cost of transporting," as used in operating expense general account VII, "Transportation for Investment—Cr."? Is this term intended to include items of taxes, interest or return upon investment?

A. By this term is meant such expenses as have been, for practical reasons, temporarily charged to operating expense accounts, but which are properly includible as a part of the cost of construction. No credit should be made to this account for such items as taxes, interest or return upon investment, as these are not included in operating expenses.

Q. Track reconstruction work involves, as a rule, charges to both construction and operating expense accounts. Is it proper to distribute the pay of officials in charge of the engineering and track maintenance departments upon the basis of charges to construction and operating expenses?

A. If a substantial proportion of the time of officials in charge of the engineering or track maintenance departments is devoted to construction work, it is proper to include in the construction accounts an equitable proportion of their salaries, such proportion being based upon the amount of time devoted to construction work.

Q. If clerks in an executive office give substantially all of their time to the preparation of work orders and authorization for construction expenditures, should their salaries and expenses be charged to road and equipment accounts?

A. If clerks employed in executive offices give all or a substantial proportion of their time in the preparation of orders for new construction, or for additions and betterments, an equitable proportion of their salaries and expenses should be included in account No. 550, "Miscellaneous." The basis of apportionment should be upon the amount of time devoted to construction-work orders and not upon the estimated cost of construction.

Q. To what account should be charged the cost of an electric track switch installed in connection with new construction?

A. To road and equipment account No. 508, "Special Work."

Boston (Mass.) Elevated Railway.—The West End Street Railway, operated under lease by the Boston Elevated Railway, has petitioned the Massachusetts Public Service Commission to authorize an issue of \$2,700,000 of thirty-year 6 per cent bonds, dated Feb. 1, 1917. The proceeds will be used to refund an issue of like amount then maturing.

Central Illinois Public Service Company, Chicago, Ill.—The Illinois Trust & Savings Bank, the Continental & Commercial Trust & Savings Bank, Halsey, Stuart & Company and Russell, Brewster & Company, Chicago, Ill., are offering jointly for subscription at 90 and interest, yielding more than 5.62 per cent, \$4,000,000 of Central Illinois Public Service Company first and refunding mortgage 5 per cent gold bonds. The bonds are dated Aug. 1, 1912, and are due Aug. 1, 1852. The proceeds of the bonds will be used to retire the \$3,000,000 of three-year 6 per cent collateral gold notes of the company, due on Dec. 1, 1916, and to reimburse the company for expenditures made for improvements, betterments and extensions.

Columbus, Delaware & Marion Railway, Cincinnati, Ohio.—The committee representing the holders of the first mortgage 5 per cent gold bonds of the Columbus, Delaware & Marion Railway has been enlarged by the addition of G. M. Dahl, New York, and A. Q. Jones, Indianapolis, J. I. Burke, New York, acting as secretary. The committee has adopted a new form of deposit agreement and urges immediate deposit of bonds with the Guaranty Trust Company, New York. Rudolph Kleybolte, chairman of the committee representing a substantial majority of the underlying first mortgage bonds, recently gave notice that unless the committee for the first consolidated bonds should promptly signify its intention to reorganize the property and assume the first mortgage, they themselves would be obliged to foreclose and take the property.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—The Mahoning & Shenango Railway & Light Company has notified the Pennsylvania Public Service Commission that it proposes to issue bonds to the amount of \$500,000 which will be sold to Lee, Higginson & Company, Boston, Mass., at 98 and accrued interest, the proceeds to be deposited with the trustee to be drawn down from time to time for improvements and betterments.

Springfield, Troy & Piqua Railway, Springfield, Ohio.—The Springfield, Troy & Piqua Railway on Nov. 10 made application to the Public Utilities Commission for authority to issue \$280,000 of common stock and \$250,000 of bonds in order that it may reimburse the estate of Asa S. Bushnell, Springfield, to which it is indebted to the amount of \$670,844 for money advanced.

Steubenville & East Liverpool Railway & Light Company, Steubenville, Ohio.—A special meeting of the stockholders of the Steubenville & East Liverpool Railway & Light Company has been called by action of the board of directors to convene at the office of the company at Steubenville, on Dec. 9, to act upon the approval of a proposed contract for the leasing of that portion of the property of the company which is utilized in carrying on the electric light and power business to the Ohio River Power Company. The proposed lease is for the term of three years, with a renewal term of three years, at a rental of \$90,000 a year, and is to embrace an option to sell that part of the property to the lessee for \$1,500,000.

Toledo, Fostoria & Findlay Railway, Fostoria, Ohio.—The Lake Erie, Bowling Green & Napoleon Railway between Bowling Green and Pemberville has been purchased by the Toledo, Fostoria & Findlay Railway and will be operated by it. The property was sold some months ago at master commissioner's sale to a Detroit man, who has since been dismantling it. The line is 12 miles in length.

United Railroads, San Francisco, Cal.—The California Railroad Commission has requested the United Railroads to make an inventory and appraisal of its property in connection with its proposed application to readjust its finances and provide a new issue of securities. The United Railroads has not as yet made application to the commission for a change in either the ownership or financial plan of the corporation, but has advised the commission that it anticipates making a formal application. The commission states that it desires the corporation to prepare for submission, in connection with such reorganization proceedings, a complete statement of its ownership of property and the value of such property. The details of the proposed extinguishment of \$44,330,100 out of \$91,928,100 of capital liabilities were reviewed in the ELECTRIC RAILWAY JOURNAL of Oct. 7, page 744.

DIVIDENDS DECLARED

Central Arkansas Railway & Light Corporation, Hot Springs, Ark., quarterly, 1 3/4 per cent, preferred.
Citizens Traction Company, Pittsburgh, Pa., \$1.50.
Cumberland County Power & Light Company, Portland, Me., quarterly, 1 per cent, common.

ELECTRIC RAILWAY MONTHLY EARNINGS

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON ILL.					
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '16	\$183,593	*\$124,894	\$58,699	\$35,935	\$22,764
1 " " '15	168,333	*114,960	53,373	36,710	16,663
3 " " '16	590,838	*379,662	211,176	107,986	103,190
3 " " '15	545,797	*356,352	189,445	109,758	79,687
CITIES SERVICE COMPANY, NEW YORK, N. Y.					
1m., Oct., '16	\$1,122,910	\$20,041	\$1,102,869	\$393	\$1,102,476
1 " " '15	411,504	14,323	397,181	40,833	356,348
12 " " '16	8,233,952	232,384	8,001,568	340,068	7,661,499
12 " " '15	4,232,914	163,503	4,069,411	490,000	3,579,411
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.					
1m., Sept., '16	\$203,099	*\$134,446	\$68,653	\$49,298	\$19,355
1 " " '15	189,667	*124,600	65,067	48,787	16,280
9 " " '16	1,860,223	*1,251,301	608,922	438,526	170,396
9 " " '15	1,722,831	*1,141,499	581,332	443,599	137,733
GRAND RAPIDS (MICH.) RAILWAY					
1m., Sept., '16	\$111,638	*\$72,249	\$39,389	\$15,842	\$23,547
1 " " '15	100,771	*68,404	32,367	14,002	18,365
12 " " '16	1,279,977	*839,802	440,175	176,619	263,556
12 " " '15	1,195,379	*824,876	370,503	164,282	206,221
LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO					
1m., Sept., '16	\$152,529	*\$89,152	\$63,377	\$36,334	\$27,043
1 " " '15	126,284	*76,711	49,573	36,127	13,446
9 " " '16	1,207,012	*753,129	453,883	327,306	126,577
9 " " '15	1,032,334	*671,143	361,191	324,833	36,358
LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.					
1m., Sept., '16	\$78,549	*\$50,793	\$27,756	\$15,134	\$12,622
1 " " '15	73,130	*42,571	30,559	15,956	14,603
12 " " '16	785,306	*526,854	258,452	189,810	68,642
12 " " '15	715,579	*467,213	248,366	188,860	59,506
REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO					
1m., Oct., '16	\$338,613	*\$188,922	\$149,691	\$72,495	\$77,196
1 " " '15	276,355	*166,411	109,944	57,277	52,667
10 " " '16	3,269,261	*1,896,062	1,373,199	700,677	672,522
10 " " '15	2,511,276	*1,538,925	972,350	560,969	411,381

*Includes taxes. †Includes non-operating income.

Traffic and Transportation

DENVER TRAMWAY BULLETIN IMPROVED

Changes Suggested by Employees Adopted—Rotating Editorial Board of Employees Proposed

The October issue of the *Tramway Bulletin*, published by the Denver (Col.) Tramways, is an anniversary number, marking the opening of volume nine. The paper has been changed over to the familiar 9 in. by 12 in. size, and appears in a new dress of type. The changes in the make-up are discussed by the editor in part as follows:

"The *Bulletin* comes to you this first month of its new volume in a new dress and a larger size. As you turn the pages you will probably see other changes. All this is a working out of the many suggestions for improving the magazine which we received from trainmen, shopmen and other readers.

"In changing the size we are following the lead of all the technical magazines of the railway world and of most of the popular fiction magazines, which, as you have probably noticed, have been rapidly adopting the large page and flat form.

"With the new size we can use larger illustrations; bigger, more readable type; more emphatic headlines, and at the same time give advertisers better 'positions.'

"We have also chosen a big, postery style of cover and are going to change the cover illustration every month.

"We will use a heavier, high-grade glossy paper which will make the magazine look much more attractive and print the illustrations more clearly. The number of pages in future issues will depend entirely on the number required for the printing of the articles and news submitted for publication.

"Perhaps the best suggestion for improvement among the many that were made and adopted is that of an editorial board. This board is to be made up of four trainmen—one from each division—plus the editor and assistant editor. The board will not be author of any articles, but it will be responsible for the contents of the entire magazine and will plan and suggest the kind of articles to be written, decide who shall write them, and generally will be charged with getting out the most interesting magazine it possibly can.

"The division men on the editorial board will change each month. The day men will make up the November *Bulletin*. Then the night men will have a chance to show what they can do, and so on.

"During the year the shop men will be charged with producing a shop number, the power house men with a power house and substation number, the general offices an office number, and we are considering one other number. These special issues, while devoted particularly to their subjects, will naturally contain all matters of interest to trainmen also.

"In starting this new and improved volume, we want to ask the continuance of your past co-operation in giving us little items of news and in writing special articles. We appreciate your help."

LOUISVILLE & INTERURBAN INCREASES FREIGHT BUSINESS

An unprecedented volume of business is being handled by the freight department of the Louisville & Interurban Railway, Louisville, Ky. R. H. Wyatt, general freight agent for the company, stated that several new baggage cars have been put into service and that more such cars will probably be required. The car-lot business generally is handled by the trailers, while the express cars are devoted to package freight. The attention of the freight traffic manager has been directed to providing freight for the return hauls and for the most part it has been possible to keep all cars loaded for both way runs. Numerous specials are used daily on the various lines. From Shelbyville, Ky., the end of one of the branches, the company

is hauling 500 hogsheads of tobacco to Louisville. This is trucked into Shelbyville and will supply returning loads for the railway for some time, in connection with other tobacco traffic that is being developed. The shortage of cars on the steam roads has had the effect of practically eliminating competition for the freight department of the Louisville & Interurban Railway, and the company is making the most of its opportunities, incidentally demonstrating to many interurban shippers the superior character of its service.

Close attention is being paid by R. H. Wyatt to keeping all the cars in operation continuously. The same forty-eight hours of free time and the same \$1 daily demurrage charges prevail as in the case of the steam roads, but as a rule demurrage is not assessed on the average once out of fifty car lot shipments. In expediting loading and unloading of cars Mr. Wyatt and his subordinates impress on the shipper that they are anxious to get the car on the day after it is delivered.

MUNICIPAL AND PRIVATE LINE MAKE OPERATING AGREEMENT

An agreement has been reached by M. E. Sampsell, president of the Seattle & Rainier Valley Railway, and the city of Seattle, Wash., whereby the city will be allowed to operate cars of the municipal line on Fourth Avenue, down Fourth Avenue to the County-City Building, on Jefferson Street. The common user agreement provides also the exchange of transfers between the Seattle & Rainier Valley Railway and the municipal car lines on a zone basis. A. L. Valentine, superintendent of public utilities of the city, reports that municipal cars operating from Thirteenth and Nickerson Streets to Third Avenue and Stewart Street on Division A will be routed to the County-City Building. Transfers between the city line and the Renton line will be exchanged under an agreement for the equal division of the fares for passengers living north of Hudson Street in Columbia City. On all fares where passengers travel beyond that point to the city limits the Seattle & Rainier Valley Railway will get two-thirds and the city one-third of the fare. The city will pay a rate of 1 cent per kilowatt-hour for the power consumed by its cars on the common-user portion of the Rainier Valley line on Fourth Avenue.

Mr. Sampsell will appeal to the Public Service Commission or to the courts for relief from an order of the commission requiring it to issue and exchange transfers with the Puget Sound Traction, Light & Power Company. He contends that his company is losing \$40,000 a year by the exchange of transfers.

ELECTRIC RAILWAY SALES TALK

"Selling Rides" was the subject of addresses delivered to meetings of the trainmen of the Louisville (Ky.) Railway at the first of what will be a series of monthly meetings during the winter. There are two of these meetings, one in the morning and one in the evening, so as to enable all the crews to be present. The first two of these meetings were addressed by T. J. Funk, head of the claim department of the company and for many years superintendent of transportation, and by Frank Cassell, director of sales of the Belknap Hardware & Manufacturing Company, the largest of the jobbing houses in Louisville. Samuel Riddle, superintendent of transportation, also spoke along the same lines.

The men were addressed not merely as operators of street cars, but as the salesmen who dealt with the public in the actual sale of the stock in trade the company sells. In elaborating on the figure of speech the speakers likened the conductors and the motormen to salesmen of various kinds of commodities, in which not only the quality of the article itself had to be considered, but the manner in which it was presented and delivered to the public. The talks were well received and many of the men went away saying that they had formed new ideas as to their relations to the company and to the people they carry daily.

At the head of the stairway leading to the assembly hall in the company's building an electric sign had been erected in which the subject of the addresses, "Selling Rides," was spelled out.

PORTLAND JITNEY ULTIMATUM

According to an ultimatum of the City Council, jitneys in Portland, Ore., will operate under a franchise as provided in the ordinance passed on July 19 and effective on Nov. 15, or go out of business. This was made apparent by the majority of the City Council at a recent meeting, following a demonstration by jitney men, representatives of organized labor and their friends, favoring repeal of the measure. In opposing the franchise ordinance, and asking its repeal, the representatives of the jitney interests charged that the Council was being influenced by the Portland Railway, Light & Power Company. They declared that the proposal to operate jitneys on streets not occupied by street railway lines would put them out of business. In an effort to show that the jitneys are popular, a petition signed by 16,663 jitney patrons was presented to the Council, in which a request for a repeal of the franchise ordinance was asked.

Although an application for a franchise for the operation of jitneys on various streets of the city has been filed with the Council by the Union Motor Bus Company, the Council has not acted on the petition, but the grant will not be made on the terms sought by the jitney men. The City Commissioners say the jitney should not only be regulated, but should be required to serve districts not now reached by the street railway.

PICK-UP AND DELIVERY EXPRESS SERVICE IN VANCOUVER

For some years the British Columbia Electric Railway, Vancouver, B. C., has been operating an express service over its lines between Chilliwack and Vancouver, a distance of more than 70 miles. This service was operated on the lines of freight traffic except that the movement was much faster, being practically on passenger schedule, and therefore a higher rate was charged than the prevailing freight rates. At the same time, however, these rates were somewhat lower, and in many cases considerably lower than the old line express rates for similar distances.

This service differed from ordinary express service in so far as no delivery was performed at the terminals, nor was the freight picked up for shipment. Recent developments, however, made it advisable for the company to inaugurate in Vancouver a pick-up and delivery service in connection with this express movement. This is being done with no additional charge and no increase in the rate, an electric auto truck making trips sufficient to handle the business offered, both inbound and outbound. At this time it is impossible even to estimate the effects of the improved service, as the change was made at a time when the express traffic, owing to the movement of fruits, etc., was particularly heavy.

HARRISBURG JITNEY MEASURE AMENDED

At the general election in Harrisburg, Pa., on Nov. 7, the voters passed the proposed amendment to the present jitney ordinance. The amendment is the result of the strike of the platform men of the Harrisburg Railways during the summer. For a time during the strike hundreds of jitneys were allowed to operate without complying with the city jitney ordinance, which provides for filing a \$2,000 bond by drivers. After the strike was broken and the Harrisburg Railways was again giving adequate service, Mayor Ezra S. Meals insisted that unlicensed jitneys cease their operations and that the jitney rules be enforced. Opposition to the existing ordinance then arose, and an amendment was suggested to Council. Council, however, declined to act on the amendment, and put the matter up to the people to decide by initiative vote. The jitney amendment becomes effective as soon as the official vote is counted and filed. The amendment in brief provides that the jitney owner must file a bond of \$50 and pay into the city treasury \$5 a month until a fund of \$1,000 is raised upon which suit for damages can be brought in case of accident. The license fees are fixed as follows: For the bus carrying not more than seven passengers, \$10; more than seven and not more than fifteen, \$20; more than fifteen, \$30.

ELECTION UNFAVORABLE TO CALIFORNIA JITNEYS

At the election on Nov. 7 several measures passed in California which will place more rigid restrictions upon the operations of jitney buses. The hotly contested rights on Market Street in San Francisco for which the Jitney Bus Association by the use of the initiative had placed a measure on the ballot, was defeated by a majority of 18,000 votes. Both Sacramento and San Joaquin Counties passed regulatory ordinances for interurban buses which are practically the first interurban regulations in the State. In these counties interurban buses will now have to specify and adhere to definite routes, fares will be regulated, and should it be decided that there is no need of the buses under the public convenience and necessity laws, the right to operate can be withheld entirely. The drivers' bond in San Joaquin County becomes \$10,000 and in Sacramento County \$5,000.

Metal Ticket System Installed in Evansville.—The Public Utilities Company, Evansville, Ind., on Nov. 1, discontinued its use of paper tickets and put in a complete installation of metal tickets and Johnson four-dial fare boxes. The change was made over night, but the public and trainmen were forewarned and educated to the new system in advance of the change by means of special instruction classes for the men and printed circulars and newspaper advertisements for the public.

Reckless Motorists Draw Down Imprisonment Sentences.—In commenting editorially on the increased activity in connection with the apprehension of reckless automobilists in New York, the *New York World* on Nov. 12 said: "Reckless motoring cost those convicted of it \$22,991 in Traffic Court fines in October. But it is in the revocation of two drivers' licenses and the twenty-five sentences to imprisonment without the alternative of a fine that the public will derive most satisfaction. These are penalties that count."

Another Massachusetts Road Seeks Fare Increase.—The Norwood, Canton & Sharon Street Railway, Canton, Mass., through its president, M. A. Cavanaugh, has petitioned the Public Service Commission of Massachusetts for permission to increase its fare from 5 cents to 7 cents. The company operates through Sharon and Norwood, in two sections. The first section of the road extends from Day and Washington Streets, Norwood, to the Neponset River bridge between Norwood and Canton. This run is about 3 miles. The second section extends from Cobbs Tavern to Garden Street, Sharon Heights, a distance of 3 miles. The road was built in 1899.

Stormy Weather Demoralizes Jitney Service.—A formal complaint was filed recently with the City Council of Los Angeles, Cal., by the Pacific Electric Railway against the irregularity of the jitney competition which dwindled from 407 machines on a fair day to thirty-five during rainy weather. Due to the sudden shrinkage in the number of jitney buses, the company was obliged to put on extra cars to take care of the traffic. The company points out that it cannot afford to employ additional men, overhaul rolling stock and increase schedules for the few months in the year when jitneys fail to operate on account of wet pavements. In Pasadena eight out of thirty-three buses operated during the rainy days, while in Long Beach less than half the jitneys were running.

New Illinois Traction Map.—The publicity department of the Illinois Traction System, Peoria, Ill., has issued for local circulation a detail map showing the steam and electric lines of Illinois. The map is 19 in. by 27 in. in size, and is contained in a pasteboard folder carrying advertisements of the parlor-car and sleeping-car service. The lines of the company, marked in heavy red, show the main interurban systems from St. Louis 175 miles to Peoria and 220 miles to Danville, together with branches and connecting divisions; also the 110-mile northern system known as the Chicago, Ottawa & Peoria, the Galesburg and its suburban system, and the Cairo system. Smaller insert maps show the Illinois Traction System's entrance over the McKinley bridge and to the terminal in St. Louis and the environs of Chicago, with the most important electric lines indicated in red.

Personal Mention

William B. McKinley, president of the Illinois Traction System, Peoria, Ill., was re-elected to his seat in Congress at the recent election.

B. C. Cobb, of Hodenpyl, Hardy & Company, New York, N. Y., who with E. W. Clark & Company, Philadelphia, Pa., have taken over the Northern Ohio Traction & Light Company, Akron, Ohio, has been elected president of the last-named company to succeed Henry A. Everett.

Otto Kurtz has been appointed auditor of the Sheboygan (Wis.) Electric Company to succeed August Westermeyer, whose resignation from the company is noted elsewhere in this column. Mr. Kurtz has been connected with the company for several years in the capacity of bookkeeper.

C. O. Snodgrass, supervisor of the Ninth and Brighton division, has been promoted to the Forty-eighth and Harrison Streets division of the Kansas City (Mo.) Railways. This is the largest division, and practically all of the men who have risen through the service have been advanced from it. Mr. Snodgrass succeeds John T. Corrigan.

August Westermeyer has resigned as auditor of the Sheboygan (Wis.) Electric Company, the successor to the Sheboygan Railway & Electric Company, to take over with Edward Hammett, who has resigned as vice-president and general manager of the company, the Northern Furniture Company, Sheboygan, Wis. Mr. Westermeyer was connected with the properties at Sheboygan for fifteen years. He entered the employ of the company there as a clerk. He was born in Sheboygan in 1878.

J. H. Lockett has been appointed superintendent of the Ogden, Logan & Idaho Railway, with headquarters at the interurban terminal in Ogden, Utah. Mr. Lockett has been connected with the Pacific Electric Railway, Los Angeles, Cal., for the last twenty years in the transportation and the mechanical departments. The last six years of his service with that company was in the capacity of general foreman in the mechanical department. Mr. Lockett succeeds J. M. Read with the Ogden, Logan & Idaho Railway.

Norman McD. Crawford, who has been connected with the E. W. Clark & Company Management Corporation, Columbus, Ohio, since March, was elected vice-president of the Columbus Railway, Power & Light Company on Nov. 14 to assist in an executive capacity S. G. McMeen, of the Management Corporation, who is president of the Columbus Railway, Power & Light Company. Mr. Crawford was president and general manager of the Reading Transit & Light Company, Reading, Pa., before he became connected with the E. W. Clark & Company Management Corporation. He was formerly president of the Mahoning & Shenango Railway & Light Company, Youngstown. He was for several years vice-president of the Ohio Electric Railway, Cincinnati, Ohio, and previously for a long time was general manager of the Hartford (Conn.) Street Railway.

Edward Hammett has resigned as vice-president and general manager of the Sheboygan (Wis.) Electric Company, the successor to the Sheboygan Railway & Electric Company, and, with August Westermeyer, has taken over and will manage the Northern Furniture Company, Sheboygan, Wis. Mr. Hammett was born in Wheaton, Ill., and entered railway work with the Aurora, Elgin & Chicago Railroad. He was promoted rapidly while with the Aurora, Elgin & Chicago Railroad, and finally entered the selling field as district manager of the Electric Service Supplies Company at Pittsburgh, Pa. He resigned from that company to become connected with the electric railway and light properties in Sheboygan, in 1910, as superintendent and purchasing agent of the Sheboygan Light, Power & Railway Company. In January, 1914, he was made general manager of the company, to succeed Ernest Gonzenbach. Mr. Hammett is succeeded at Sheboygan by Raymond H. Smith, formerly general manager of the Jackson Light & Traction Company at Jackson, Miss., as noted in the ELECTRIC RAILWAY JOURNAL of Nov. 11.

Henry A. Everett has been succeeded as president of the Northern Ohio Traction & Light Company, Akron, Ohio, by B. C. Cobb, of Hodenpyl, Hardy & Company, New York, N. Y., who with E. W. Clark & Company, Philadelphia, Pa., recently negotiated the purchase of the controlling interest of the Northern Ohio Traction & Light Company. Mr. Everett was born in Cleveland on Oct. 16, 1856. For a number of years he was secretary and treasurer of the East Cleveland Railroad, of which his father, Dr. A. Everett, was president. This was one of the principal constituents of the present Cleveland Railway. Under the Everett regime the company was one of the first to adopt electricity as motive power. After the first consolidation in Cleveland in which the East Cleveland Railroad became a part of what was known as the "Big Consolidated," Mr. Everett entered the independent telephone field and also the interurban electric railway field. One of his first interurban projects was the Akron, Bedford & Cleveland Railway, which is now a part of the Northern Ohio Traction & Light Company. The skepticism of many of the bankers in Cleveland as to the success of interurban railways in the early days, the financial and engineering difficulties overcome and the final triumph of the interurban line between Akron and Cleveland are told by Mr. Everett in an interesting article which appeared in the ELECTRIC RAILWAY JOURNAL for Oct. 8, 1904. In the early nineties also Mr. Everett, with his associate Mr. Moore, took over the Toronto Railway under a franchise offered by the city and installed electrical equipment. Later he was identified with other electric railways and telephone interests in Canada, as well as in several cities in this country and built one of the early electric railway lines in Detroit. The Everett-Moore interests also took over the Toledo Railways & Light Company and Mr. Everett was president of that company until 1908, when he retired on account of ill health. He was also interested in the syndicates which built the Cincinnati, Dayton & Toledo line, the Aurora, Wheaton & Chicago, the Washington & Annapolis, the New York & Long Island Traction Company, the Springfield & Xenia Traction Company and the Scioto Valley Traction Company. At present he is one of the vice-presidents of the Lake Shore Electric Railway, Cleveland, Ohio, and is also interested financially in the London (Ont.) Street Railway, of which E. W. Moore, his associate for many years is president.

OBITUARY

Marshall Rust, president of the Mexico Investment & Construction Company, Mexico, Mo., operating a 16-mile electric railway between Mexico and Molino, Mo., died at Kansas City, Mo., recently, after a long illness.

Redmond Quain, one of the incorporators of the Ottawa (Ont.) Electric Railway and for some years a director of the company, died suddenly at Ottawa on Oct. 5, aged fifty-seven years. Mr. Quain was a native of Ottawa. He was a nephew of Thomas Ahearn, president of the Ottawa Electric Railway. A widow, one son and four daughters survive.

George L. Bugbee, manager of the Pacific Electric Land Company, Los Angeles, Cal., and for years one of the prominent railway figures of the West, died recently following an operation. Mr. Bugbee had been in Los Angeles for the past eleven years, and was auditor of the Los Angeles & Pacific Railway before its consolidation with the Pacific Electric Railway.

Wilbur Fisk Sadler, Jr., adjutant general of the State of New Jersey, and promoter of electric railways, died on Nov. 10 at Carlisle, Pa. General Sadler was taken ill following the mobilization of the New Jersey troops at Sea Girt, N. J. In 1892 and 1893 he built 33 miles of electric railway in Shenandoah, Girardville, Ashland and Mahanoy City, Pa., and a year later built a 19-mile electric railway between Scranton and Carbondale. In 1895 he promoted the electric railway from Pittston to Scranton, Pa. Two years later he assisted in building 33 miles of electric railway from Greensburg to the edge of Greater Pittsburgh, Pa. In 1898, General Sadler removed to Trenton, N. J., and assisted in building the Yardley, Morrisville & Trenton Street Railway and the Philadelphia, Bristol & Trenton Street Railway. General Sadler was president of the Broad Street National Bank, Trenton. He was unmarried.

Construction News

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

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

FRANCHISES

Dighton, Mass.—The Bay State Street Railway has received permission from the Public Service Commission to relocate its track on Main Street, at Somerset Avenue, and on Pleasant Street, Dighton.

Springfield, Mo.—The Springfield & Western Railway, which proposes to construct a line between Springfield and Carthage, has asked the City Council of Springfield for an extension of its franchise to January, 1919. The franchise of the company expires in January, 1917. Under its terms the company was required to have 10 miles of the line in operation by that time. J. P. McGammon, Springfield, is interested. [June 12, '15.]

Newark, N. J.—The Public Service Railway has been granted permission by the Board of Works to construct new tracks on Frelinghuysen Avenue, Newark.

Buffalo, N. Y.—Two franchises recently granted by the City Council to the International Railway were submitted to voters for approval at the November election and were carried by large majorities. The franchises give the company permission to lay double tracks and operate cars in Franklin Street between Chippewa and Allen Streets and in Elmwood Avenue, from Hertle Avenue to the north city line.

Belpre, Ohio.—The Town Council has granted to the Kanawha Traction & Electric Company a franchise to install and operate an electric light and power system in Belpre.

Elyria, Ohio.—The Cleveland, Southwestern & Columbus Railway has received a twenty-five-year extension of its franchise from the City Council of Elyria. The contract specifies eleven tickets for 50 cents and permission to extend the tracks to the factory districts.

TRACK AND ROADWAY

Visalia Electric Railroad, Exeter, Cal.—Surveys have been completed, and work will be begun at once by the Visalia Electric Railroad on its proposed extension to Lindsay. The line will enter the city limits from the south, and will use the depot and terminals of the Southern Pacific Company.

Glendale & Montrose Railway, Glendale, Cal.—A report from the Glendale & Montrose Railway states that it will probably build an extension to Sunland, 6 miles.

New York, New Haven & Hartford Railroad, Stamford, Conn.—This company has asked permission to reconstruct its eleven bridges over South Boston streets, at a cost of about \$1,000,000.

St. Petersburg-Tampa Railway, St. Petersburg, Fla.—Plans for the construction of a bridge by this company across Old Tampa Bay have been approved by W. B. Ladue, United States Engineer, Jacksonville. The plans provide for three 1000-ft. openings to accommodate small boats drawing not less than 6 ft. of water, and one 5000-ft. opening to accommodate large boats. George S. Gandy, Sr., St. Petersburg, president. [Sept. 16, '16.]

Honolulu Rapid Transit & Land Company, Honolulu, Hawaii.—The board of directors of the Honolulu Rapid Transit & Land Company has authorized the construction of a new 2-mile line from Liliha Street along School Street to Kalihi Road and the sale of \$400,000 stock to present stockholders to cover other minor extensions.

Pocatello Traction & Interurban Company, Pocatello, Idaho.—C. G. Haynes of Blackfoot, representing the Pocatello Traction & Interurban Company, reports the project of his company to build an electric railway north from Preston to the Yellowstone, is assured.

Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.—Announcement has been made that the Chicago, Milwaukee & St. Paul Railway has added 110 miles to its electrically operated lines in Montana, extending from Deer Lodge to Alberton. It is expected that work on the fourth and last unit between Alberton, Mont., and Avery, Idaho, will be completed about the first of the year.

Elgin & Belvidere Electric Company, Chicago, Ill.—This company has sold most of the rails belonging to the Belvidere City Railway in Belvidere, and the tracks will be removed on West Lincoln Avenue from the fair grounds to State Street and on South State Street from Logan Avenue to Eighth Street. The track on State Street from the right-of-way of the Chicago & Northwestern Railroad to Harrison Street will remain intact for another year.

Galesburg Railway, Lighting & Power Company, Galesburg, Ill.—This company has opened service on the new North Seminary Street extension as far as Fremont Street.

Chicago, North Shore & Milwaukee Electric Railway, Highwood, Ill.—This company contemplates an extension of the present Libertyville and Area branch that will tap the Lake districts of the county and may ultimately proceed to Woodstock and McHenry.

Murphysboro Electric Railway, Light, Heat & Power Company, Murphysboro, Ill.—This company has purchased a large steel bridge to span the Big Muddy River, between Carbondale and Murphysboro, in connection with its proposed extension to Carbondale. The cost of the bridge was \$80,000.

Cumberland Traction Company, Edmonton, Ky.—George H. Greenup, Elizabethtown, Ky., formerly general manager of the Cumberland Traction Company, recently sold at a commissioner's sale, has effected a reorganization of the company, and has bought in property rights, etc. He is making preparations to continue with construction work in the spring. [Oct. 21, '16.]

Cumberland & Westernport Electric Railway, Cumberland, Md.—This company is relocating 4000 ft. of its line to secure easier grades and improve the alignment. The work includes the construction of one steel bridge 24 ft. long and a concrete wall 700 ft. long and 7 ft. high.

Towson & Cockeysville Electric Railway, Towson, Md.—This company contemplates the construction of an extension from Timonium to Texas, Md., about 2 miles.

Northern Massachusetts Street Railway, Athol, Mass.—This company is laying new track from Central Square to the end of the line on West Main Street.

Boston (Mass.) Elevated Railway.—It is reported that an agreement has been reached whereby the Commonwealth of Massachusetts will construct a line to be used for freight service to and from the Commonwealth Fish Pier to be rented by the Boston Elevated Railway. Track construction will be begun immediately after the agreement is signed.

Springfield (Mass.) Consolidated Railway.—Work will be begun by this company on the construction of its proposed extension to Bergen Park as soon as the right-of-way can be secured and railroad crossings arranged for. The property owners along the new line have donated a fund of \$2,500 to help in the construction.

City Light & Traction Company, Sedalia, Mo.—Application has been made by this company to the Public Service Commission for authority to issue \$29,400 in securities to reimburse the company for betterment expenditures. Additional improvements are planned.

Trenton, Lakewood & Seacoast Railway, Trenton, N. J.—Approval has been given by the Board of Public Utility Commissioners of New Jersey to the Trenton, Lakewood & Seacoast Railway to issue \$20,000 certificates of indebtedness and \$19,500 of its capital stock. The application filed by the company requested that permission be given to issue \$34,000 certificates of indebtedness and \$26,000 of its capital stock. In approving a portion of the request, the Board stated that it would approve the balance upon submission by its chief inspector of statements that expenditures covering such balance have been actually made. [March 18, '16.]

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The Board of Utility Commissioners has issued two orders to the Trenton & Mercer County Traction Corporation, one requiring the company to align and resurface its tracks and put the paving in good condition between and alongside of its rails on Pennington Avenue and replace the ties there which have rotted, and one directing the company to resurface a portion of its tracks on Stuyvesant Avenue.

New York Municipal Railway, Brooklyn, N. Y.—Bids will be received by the Public Service Commission for the First District of New York, on Nov. 29, for the construction of the connecting link of the New Utrecht Avenue (West End) Line and the Culver Rapid Transit Railroad in Brooklyn. The section is to be a three-track approach to the Culver Line, about 600 ft. long, rising from the Thirty-eighth Street cut at a point where the West End Line leaves that cut, slightly west of Tenth Avenue and south of Thirty-seventh Street. The approach, beginning in open cut and curving to the northeast, rises to the elevated grade of the Culver Line at a point 371 ft. east of Tenth Avenue. The work to be done is in part open cut and in part embankment between retaining walls. The work must be prosecuted so as not to interrupt continuous train operation over the tracks of the Culver street surface railroad, which operates upon a right of way adjoining the proposed work. The work must be completed within four months of the delivery of the contract.

Southern Public Utilities Company, Charlotte, N. C.—This company is now building 2 miles of additional track in Charlotte, N. C., extending from the Morehead-South Boulevard connection with the Dilworth division toward Myers Park. The track is built on a solid concrete foundation 6 in. thick, with ties spaced 36 in. on center. Seventy-pound T rail is being used, and after the ties and rails are lined up the whole is concreted up to the surface of the rail. The surface of the concrete is floated with a wooden float to provide a wearing surface. As the concreting is being done the space between the rails and 14 in. on the outside is being paved. The remainder of the street is being paved by the property owners.

Minster & Loramie Railway, Fort Loramie, Ohio.—This company, which is operated by the Western Ohio Railroad, reports that it has under consideration an extension to Covington or Piqua, making a through line from Lima to Dayton.

Youngstown & Southern Railway, Youngstown, Ohio.—It is reported that plans are being made by the Youngstown & Southern Railway to construct a line from Columbiana to East Palestine to connect with the line of the Pittsburgh, Harmony, Butler & New Castle Railway.

Tulsa (Okla.) Traction Company.—This company reports that it will construct its extension to Sapulpa within the next six months.

Toronto (Ont.) Suburban Railway.—The Ontario Railway Board has issued an order approving the plans of the Toronto Suburban Railway for change of grade to standard, and renewal of tracks with girder rails where necessary on Dundas Street.

Southern Oregon Traction Company, Medford, Ore.—This company reports that it is building 2 miles of track.

Quebec Railway, Light & Power Company, Quebec, Que.—This company proposes to construct about 4 miles of city and suburban track during 1917.

Cleburne (Tex.) Traction Company.—Operation has been suspended by the Cleburne Traction Company owing to lack of sufficient patronage.

Dallas (Tex.) Southwestern Traction Company.—This company plans to begin construction of its proposed electric line from Dallas to Eagle Ford in the near future. Later the line will be extended to Grand Prairie and Cleburne. E. P. Turner, Dallas, president. [May 20, '16.]

Lynchburg Traction & Light Company, Lynchburg, Va.—Work has been begun by the Lynchburg Traction & Light Company double-tracking its line on Main Street.

Norfolk & Western Railway, Roanoke, Va.—This company contemplates extending electrification on its main line from Vivian to Farm, W. Va., about 11 miles; also an ex-

tension up Tug Fork branch from the junction near Welch to Wilcoe, W. Va., about 5 miles, and an extension on the Bluestone branch from Cooper to a point a mile beyond Simmons, 3 miles. Part of the construction will be done by the company's own forces and part will be done by the forces of Gibbs & Hill, electrical engineers of New York, who have been engaged to supervise the construction. With these additions the railroad will have 47 miles electrically operated.

Grays Harbor Railway & Light Company, Aberdeen, Wash.—According to reports, the Grays Harbor Railway & Light Company will call for bids at once for paving between its tracks on Riverside Avenue. If the bids submitted are not satisfactory to the company, it will do the work on its own account. The matter of paving between the tracks has been before the city commission many times during the past few months, and an ultimatum was issued recently by the city, directing that the work be started at once, or the city would barricade the tracks along the street involved.

Seattle & Rainier Valley Railway, Seattle, Wash.—It is reported that \$100,000 will be expended by this company in the construction of track and paving of street intersections in the Genesee Street extension and the construction of tracks on Dearborn Street.

SHOPS AND BUILDINGS

Interborough Rapid Transit Company, New York, N. Y.—Bids will be received by the Public Service Commission for the First District of New York on Dec. 4 for the construction of station finish for nine stations on the Seventh Avenue portion of the Seventh Avenue-Lexington Avenue Line in Manhattan. The stations are located at South Ferry, Rector Street, Cortlandt Street, Chambers Street, Franklin Street, Canal Street, Houston Street, Christopher Street, and Fourteenth Street.

Rhode Island Company, Providence, R. I.—A report from the Rhode Island Company states that it expects to place contracts during the next three weeks for a new carhouse at Clyde with a capacity for forty-eight cars. The company has recently placed a contract for an addition to its Cranston carhouse.

POWER HOUSES AND SUBSTATIONS

Chicago, Ottawa & Peoria Railway, Ottawa, Ill.—This company has been rebuilding the high-tension wires extending from the power house of the Northern Illinois Light & Traction Company to Spring Valley.

Iowa Railway & Light Company, Cedar Rapids, Iowa.—This company contemplates the installation of a new 100-kw. generating unit at its Guthrie Center power plant.

Cumberland & Westernport Electric Railway, Cumberland, Md.—It is reported that two new power plants are under construction by the Cumberland & Westernport Electric Railway.

Southern Public Utilities Company, Charlotte, N. C.—A contract has been let by the Southern Public Utilities Company to W. W. Johnson, Anderson, S. C., for deepening the tail race and raising the bulkheads at the Portman Shoals hydroelectric plant owned by that company near Anderson, S. C. The deepening of the tail race is expected to increase the output at this plant, and the raising of the bulkheads will protect the power house from high water. The increase in power output is estimated at 20 per cent. The draft tubes to the five hydro-wheels are to be lengthened, as is that from the exciter turbine, and the floor of the power house is to be rebuilt of concrete, on a level 2 ft. higher than the present floor, to provide for better drainage and to escape high water. The new work will cost about \$30,000.

Rhode Island Company, Providence, R. I.—This company reports that it expects to place contracts during the next three weeks for a new substation at Oakland and a new substation at Harmony. The company has recently placed a contract with the General Electric Company for equipment for two substations.

Wisconsin Valley Electric Company, Merrill, Wis.—This company reports that it is constructing a new power plant and overhead lines, changing all equipment from direct-current to alternating-current.

INDUSTRIAL NEWS

Review of Trade and Market Conditions

Rolling Stock Purchases

Business Changes

Trade Literature

THE PRICES OF TO-DAY AND OF TWO YEARS AGO Statistics Are Given Showing an Increase in Many Cases of Several Hundred Per Cent—Some of the Causes Are Analyzed—The Problems of Purchasing

BY E. E. STIGALL

Purchasing Agent, Kansas City Railways Company

The prices of all materials have shown a steady advance during the past two years, and it is a wise idea to watch them closely. The ratio of present prices to the prices of two years ago is shown in Table I. This table gives the prices on materials generally used in street railway con-

TABLE I—SHOWING PER CENT INCREASE IN PRICE IN TWO YEARS

Material	Requirements	Approximate Per Cent Increase in Present Price as Compared with Price of Two Years Ago
Copper	Overhead system, stations and cars.	220
Steel	Track and shops.	300
Tin	Babbitt, solder, cables and overhead	110
Lead	Babbitt, solder, cables and overhead	200
Spelter	All galvanized material.	200
Alloy metals	Tool steel, special work.	200 to 800
Lumber	Poles, ties and shop work.	125
Leather	Belting	125
Rubber	Belting, hose, insulation.	110 to 125
Cotton	Fabrics, insulation, waste.	130 to 150
Glass	Windows	125
Varnish	Car work	135
Paint	Cars, buildings and pole line.	125
Fibre	Insulation	133 1/4
Rattan	Seats and sweepers.	120 to 200
Paper	Stationery and printed matter.	150 to 250
Dry colors	General paint shop work.	400
Linseed oil	Shop work, buildings and pole line.	250
Gears and pinions.	Motors and air-brake equipment.	125

struction and maintenance, and in many instances it also shows what this increase means in dollars and cents per unit.

Deliveries for material regularly required will vary from thirty days for material in stock, to six months or one year for material from the mill, or where the material is to be manufactured according to order. In addition to the high cost of materials and the extended deliveries promised some materials have become so scarce that one is inclined to the opinion that certain species have almost become extinct.

Care must be exercised by a company in ordering material to avoid the order covering too small or too large a quantity. The temptation to buy in advance large quantities in order to prevent trouble from the stock becoming exhausted is met with the possibility of overstocking against a future decline in price. The cost of carrying stock, of course, must also be considered when large quantities are ordered. The situation can only be met by constantly watching the conditions surrounding all of the material required from month to month and following up the orders after they have been placed.

The unit prices in Table II showing change in cost of particular items will illustrate what the general condition shown above means in added costs to the street railway companies.

In view of the conditions which have surrounded the purchase of staple articles for the last two years, I presume many purchasing agents have been looking for a substitute for the word "speculation." It is apparent that the present prices are based neither on the cost of doing business nor on the intrinsic value of the materials, but are due to a heavy demand throughout the country, resulting in the general policy to charge "what the traffic will bear."

There has been considerable difficulty in obtaining paper

without paying an excessive price for it, and the Federal Trade Commission has just made public the statement, following its investigation of these prices, that during one year the common stock of one of the large paper companies went from \$10 to \$50 a share. This same situation, of course, can be found in connection with the increased prices of other commodities.

Almost every street railway company will doubtless experience considerable difficulty in obtaining coal during the present winter. In my judgment the car shortage is due not only to the fact that the shippers and brokers are using cars for storage when they should be unloaded and released for transportation service, but this shortage has been made more acute on account of the railroads using coal cars for shipping lumber, steel products and other commodities which

TABLE II—SHOWING PRESENT PRICES AND THOSE OF TWO YEARS AGO

	Present Approximate Price	Price Two Years Ago
1 mile No. 00 trolley wire.....	\$721.00	\$327.00
1 No. 00 straight line ear.....	.52	.40
1 No. 00 splicing sleeve.....	.78	.42
1,000 ft. 9/16-in. steel span wire.....	35.70	19.50
1 Steel pole for line construction...	36.00	27.00
100-lb. Steel bars.....	3.62	1.67
100-lb. Steel sheets.....	3.95	1.87
100-lb. Steel shafting 1/2-in.....	7.70	2.10
1 lb. High-speed tool steel.....	3.25	.65
1 lb. Manganese 80 per cent.....	.12	.02
1 Car axle.....	21.50	11.25
1 Boiler tube 4-in, 18-ft. No. 10....	7.42	3.78
1 Manganese switch and mate.....	330.00	170.00
1 Overhead trolley switch.....	4.55	3.15
1 Air-brake equipment.....	230.00	170.00
1 Electrical equipment, 4 motors, 1 controller.....	3,250.00	2,450.00
1 10-in. valve, automatic stop.....	290.00	210.00
1 White oak tie.....	.68	.54
1 Leather belt, 2-ply, 8-in, 30-ft....	46.00	34.56
100 yd. Duck, 48-in. No. 8.....	78.00	34.00
1 doz. Warehouse brooms.....	5.50	2.75
10,000 Letterheads, No. 16 bond.....	52.50	31.50
10,000 Yellow second sheets.....	9.00	3.50

yield a much greater return per ton-mile than coal. The recent change in the tariff filed by the railroads to become effective on Dec. 1, providing that the demurrage charge will be increased after the first two days' free unloading time, from \$1 per day as at present, to a schedule showing a \$1 advance for every day a car is held should receive active support. Such a plan will tend to release cars from storage and place them again in transportation service.

It is obvious that this increased cost of doing business is being absorbed by the street railway companies and cannot be passed along to the patrons as can easily be done in practically every other business. Our terms continue to be 5 cents cash and a universal transfer throughout the system.

HIGHWAY CROSSING SIGNAL INQUIRIES NUMEROUS BUT PURCHASES ARE FEW

Orders for highway crossing signals from steam roads have been very active during the past summer. The Santa Fé road is making a large installation, and other steam roads have planned to protect all the hazardous crossings of their tracks with the Dixie and the Lincoln automobile highways. Electric railway companies have made quite a few inquiries about highway crossing signals during the summer, but no general buying has taken place. In fact, the electric roads have bought very few such signals during the past season, as compared with the purchases of previous years.

The swinging aspect or disk commonly known as the wig-wag, has met with great favor by purchasers of such signals. It has been shown conclusively to the steam roads and to a great many electric lines that a crossing warning by sound alone is not sufficiently effective, particularly on highways much traveled by automobiles. Probably the

most arresting aspect for daylight use is the wig-wag design. Some manufacturers, however, have installed with success banks of flashing lamps as a daylight warning to supplement the bell signals.

The installation of a highway crossing signal on an electric road offers a more difficult problem than it does on a steam road. The question of control, which is now obtained in numerous ways, is most important. Some signals are controlled by trolley contractors, others by short sections of third-rail, others by the depression of the running rail, and still others by track instruments. Signals of various makes are operated mechanically by springs, or by different sources of electric energy, such as primary and storage batteries, or by 600-volt current taken from the trolley wires. One manufacturer in conjunction with the engineers of an operating company has recently planned to install some highway crossing signals to be actuated by alternating current and to be controlled by alternating current devices. It is thought that by using alternating current for control and operation the reliability can be greatly increased.

FOREHANDED BUYING MEANS EFFICIENCY

James H. Drew, Indianapolis, Discusses Effects of Different Buying Methods on Manufacturer and Purchaser

In a recent interview with a representative of this paper James H. Drew, president Drew Electric & Manufacturing Company, said, in part:

"The subject of forehandedness in buying, to which the JOURNAL has been giving attention, deserves serious consideration. As the interests of supplier and user in the electric railway field are interdependent, any methods of forehanded buying are of advantage to both. If the manufacturer is able by this wiser buying to make a better product at a lower price, the railway benefits by the lower price.

"According to all indications basic materials will continue at the present high level for some time to come. The largest industrial and utility companies are buying for the second and third quarters of 1917 and even beyond. Immediate deliveries of iron and steel products are to be had only at a considerable premium, if at all. Copper base products of any magnitude are, in that respect, little better. From these conditions the lesson seems obvious, forehandedness in buying is certainly desirable.

"There is the possibility that some international complications may arise to affect our munitions export, which is generally said to be the reason for the present tremendous activity in all lines, but such complications are in nowise forecasted. If we can judge by present reasonable expectations, the war in Europe will continue for at least two more years, and war prosperity in this country will continue unabated. Such being the case the electric railways may expect to have a continued period of bounteous receipts with the attendant requirements for maintenance material and additional equipment. The demand will hold the prices up. As opposed to forehandedness in buying, hand-to-mouth purchasing will be attended no doubt by inconvenience, higher prices and disappointments in delivery.

"Of course, buying too far in advance of visible needs becomes speculation. This, however, is a charge that can hardly be laid to electric railways. Owing to the serious handicaps placed on their financial resources, most of them have not been able in the past to use that principle of forehandedness that good judgment would dictate. I believe, however, that owing to wise publicity and more open methods, the general public is coming to see less of 'horns' and more of 'halo' on the average operator, and this sentiment is bound to be reflected in business and investment circles as time goes on. With the business established as a necessary public institution, financial support will become more stable. Furthermore, a great deal of capital is coming back from abroad and will be available for an investment in American utilities. This is a subject all by itself and will not permit of discussion here. I mention it because money has to do with forehanded buying.

"Most companies, if not all, can and do know their ordinary requirements for several months or a year or two in advance, and the requisitions or estimates of any department should not be pigeonholed for any unreasonable length of time. The evil day (I say 'evil' with a manufacturer's res-

ervation) will surely come when the trolley will wear out or break, or when a certain piece of car equipment will 'go bad,' or when more cars or power-plant equipment will be needed. The order will then have to be placed to keep the line running. Why not take the necessary steps beforehand and have the material ready? If any department is found wanting in efficient operation or economical maintenance it comes in for criticism. A year or so ago one line superintendent stated that he was maintaining his overhead lines (about 400 miles at that time) on emergency requisitions. (Sometimes it was a question of 'using a club' to get the materials. This was probably an extreme case, but there are others of similar but less pronounced unforeshadowedness. As compared to the above example I know of one purchasing agent who saved three and one-half times his year's salary on one purchase by studying the market and buying at the lowest period of that year.

"In emergency buying there are several disadvantages. There is not time for careful consideration in order to secure the material best suited for the conditions. There is not time to get competitive prices, quality and design. The manufacturer who receives the order may have to disarrange his routine to turn out the material in the specified time, a course which will cause him or the buyer or both confusion, delay and additional expense. There is then the chance that the product may not be delivered quickly enough and that it will not be deliberately and carefully made up and inspected. Then, if defects show up in operation and cause the railway customer vexatious and expensive delay or accident he will become prejudiced against that manufacturer's goods and the latter will not only lose a customer but part of that goodwill which is so valuable to all manufacturers who have a loyal interest in the electric railway industry. Orders placed when a department is tied up usually have expensive carriage charges attached. In some instances they have to be installed on the road with overtime labor or under other circumstances which pile up the costs, directly and indirectly.

"In most sections of the country up to this time the weather has been unusually mild. As weather conditions generally average about the same during a year's period, very bad weather for electric railway operation may be expected before next summer. I dare say the transportation of coal and other heavy supplies will be seriously handicapped between now and then. There is even now a coal shortage. When bad weather does come, unless the principle of forehandedness has been applied, it will probably find many companies short of those materials such as trolley splicers, sleet cutters, spare poles, snow-fighting equipment and other materials needed to keep the lines in operation during snow and sleet storms.

"Judging, then, by present conditions, when all manufacturers are running to full capacity and with less stock than usual on hand, and with the delay in getting raw materials, it seems to me that electric railways should by all means go into this subject of forehandedness in buying now. They will thus provide the necessary material and equipment to conduct their service expeditiously and, at the same time, increase their revenues and their economy of operation. By prompt handling of their business they will also secure that other desideratum—public goodwill. By forehandedness in buying they secure the quantity price on the right material and have it when needed. As a result their property is strengthened physically and financially."

WIDESPREAD DEMAND FOR CHESTNUT POLES

"When it is considered that 3,500,000 round poles exceeding 20 ft. in length are used annually by telephone, telegraph, electric railway and light companies, we must naturally consider the future supply of the chestnut pole." This statement and the others that follow were recently made by John L. Fay, sales manager of the Paducah Pole & Timber Company, Paducah, Ky. Mr. Fay pointed out that the general tendency toward central power supply, the increased demand for efficiency and the growing cost for line materials have caused railway and lighting property operators to study carefully the ultimate cost of their transmission and distributing system. The strength of the pole line is another factor that has been prominent of late, owing to the increased need for continuity of service.

There is a large demand now, Mr. Fay says, for chestnut

poles. A report made by R. S. Kellogg of the United States Department of Agriculture sets forth that 25 per cent of all the poles used by the public utility companies in the United States are chestnut poles. The pole purchasers generally are becoming better acquainted with chestnut, and this is evidenced by the fact that when Mr. Fay's company first started in business it was able to sell chestnut poles only in its own locality. However, as time has proved the comparative high strength of the chestnut pole and its great life, Mr. Fay cites that those companies which are now paying special attention to the strength of their lines have increased their demand for chestnut and the field has broadened so that it has of late been a large task to meet the requirements for supply.

With regard to the future, Mr. Fay's company has shown its faith in the possibilities for the sale of chestnut poles by acquiring, in addition to its 15,000 acres of chestnut timber, sufficient chestnut pole stumpage not only to care for the present heavy demand but for the unquestionable additional demand that will come in future years.

CLEARING-HOUSE FOR ECONOMIC INFORMATION

National Industrial Conference Board Formed to Study American Industrial Problems and Report to All Concerned

To prepare the industries of the United States for the economic changes that are to follow peace in Europe, the National Industrial Conference Board, representing the twelve most important industrial organizations in this country, has been formed. This announcement was made on Nov. 15 at the twentieth annual convention of the National Founders' Association held in New York City.

The general aims of the board, as described to the convention by Magnus W. Alexander, its manager, who is assistant to the president of the General Electric Company, include a clearing-house of economic information, a forum for constructive discussion, and machinery for co-operative action on matters that vitally affect the industrial development of the United States. Explaining in greater detail, he said: "The essential point is the purpose of the conference board to study every problem and its development, to resolve it, if possible, into its essential facts for the information of the public, of government, of labor and all the members of the various associations represented in the board." The new organization, it was stated, would seek to influence legislation only by the presentation of facts and arguments carefully studied and of a character leaving no doubt as to their accuracy.

The twelve industrial organizations forming the conference board comprise 15,000 employers, who furnish industrial employment to about 7,000,000 workers in the United States. Frederick P. Fish of Fish, Richardson, Herrick & Neave, attorneys, is chairman of the board. The membership of the board as announced included the National Founders' Association, National Metal Trades Association, National Council for Industrial Defense, National Association of Manufacturers, National Erectors' Association, National Association of Cotton Manufacturers, American Cotton Manufacturers' Association, National Association of Wool Manufacturers, Silk Association of America, United Typothetae and Franklin Clubs of America, American Paper & Pulp Association, and the Rubber Club of America.

In discussing at the convention the subject, "How Shall Manufacturers Contribute to American Industrial Progress?" E. W. Rice, Jr., president General Electric Company, predicted that troubles will begin in this country when the war ends. He continued: "One of the most interesting industrial problems awaiting a satisfactory solution is that of real co-operation among the men and women engaged in industry. The lack of understanding and confidence is largely due to lack of knowledge of each other, and this knowledge is lacking in the manufacturer as well as in the wage earner."

At the annual banquet of the National Founders' Association on the evening of Nov. 15, Mr. Fish, chairman of the new conference board, said in the course of an address on "Industrial Co-operation": "During the next ten years the United States will be confronted by new and com-

plex problems in industry and finance. It is impossible to predict how serious these problems may be, but it is safe to say that the only way to meet them is by a knowledge as perfect as possible of the fundamental facts and causes existing in the situation. It is necessary at the outset to know precisely the condition of things as they are to-day, to understand the various elements entering into our manufacturing industry, and to analyze and study all the points which go to make for a prosperous manufacturing industry."

STEEL RAILS AND COPPER TAKE BIG JUMP

United States Steel Corporation Announces Advance in Steel Rails of \$5 a Ton—Copper Reaches Highest Point of Year

An advance in standard steel rails of \$5 per gross ton has just been announced by the United States Steel Corporation, this being the second advance since the first of the year. The increase, which is effective immediately, makes Bessemer rails \$38 and open hearth \$40 a ton f.o.b. Pittsburgh, Pa.

Angle bars and fish plates also advanced \$5 a ton and wrought-iron pipe advanced \$2 a ton.

On Tuesday of this week the price of electrolytic copper had advanced to 32.5 cents nominal for prompt delivery. The advance during the week was 2.75 cents. Prices of copper, which have been advancing daily for the past ten days, are making new high records for the year. Prompt second-hand copper was offered early in the week at 33 cents, 32 cents bid. Already bids have been made for first quarter delivery at 30.5 cents, with 31 cents asked. For the second, third and fourth quarters the metal is being held for 30.5, 29.5 and 29 cents, respectively.

So great has been the demand both for European and domestic consumption that even at these greatly inflated prices there is but a small percentage of 1917 production remaining unsold.

NEW INTERESTS IN THE HESS-BRIGHT MANUFACTURING COMPANY

To correct misleading rumors, the Hess-Bright Manufacturing Company, Philadelphia, Pa., announces that a group of bankers, including Frank A. Vanderlip, Philip W. Henry, Thatcher M. Brown and Franklin B. Kirkbride, of New York, and Marcus Wallenberg of Stockholm, have recently acquired from the American group of stockholders a controlling interest in the shares of the Hess-Bright Manufacturing Company. This group of bankers owns also a substantial interest in the S. K. F. Ball Bearing Company of Hartford, Conn.

The two companies will be operated quite independently of each other. The former policy of the Hess-Bright Manufacturing Company will be continued, except that its manufacturing facilities will be increased somewhat more rapidly to meet the constantly growing demand for its product. B. D. Gray, who retains his former stock holdings, will continue to manage the business as president. F. E. Bright retires from active participation in the company's affairs, but remains identified with the company as chairman of the board. Aside from these two changes the organization remains as before.

The directors are: F. E. Bright, chairman; B. D. Gray, president of the Hess-Bright Manufacturing Company; Willard Parker Butler, New York; Arthur V. Morton, vice-president of the Pennsylvania Company for Insurance of Lives and Granting Annuities, of Philadelphia; and Paul von Gontard, managing director of the Deutsch Waffen und Munitions Fabriken, Berlin, Germany.

COMMISSION TO STUDY LUMBER MARKET ABROAD

A commission to be financed jointly by the government and by the lumber interests will shortly be appointed for the purpose of studying the lumber markets abroad. The members of this commission will be experienced in timber production, manufacture of forest products and marketing forest products and will visit all the important European countries.

ROLLING STOCK

Seattle & Rainier Valley Railway, Seattle, Wash., are in the market for a one-man car.

Seattle & Rainier Valley Railway, Seattle, Wash., are in the market for thirty fare boxes.

Monroe Street Railway, Monroe, La., is reported to be in the market for three new street cars of the latest design.

Detroit (Mich.) United Railway is purchasing fifty trail cars and may buy several interurbans within the near future.

Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., has ordered five city cars from the St. Louis Car Company.

Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich., will shortly purchase two passenger and two express interurbans.

Chicago (Ill.) Surface Lines have ordered ten city cars from the American Car Company, St. Louis. These cars will conform to the design of the last order for 228 cars.

Hydro-Electric Power Commission, Toronto, Ont., has ordered two interurban cars from the Jewett Car Company for the London & Port Stanley Railway.

Lake Shore Electric Railway, Cleveland, Ohio, noted in the ELECTRIC RAILWAY JOURNAL of Oct. 21, 1916, as being in the market for fifteen 60-ft. motor cars, is said to be considering the purchase of sixteen trail cars.

Mason City & Clear Lake Railroad, Mason City, Iowa, is contemplating the purchase of two one-man cars for city service and also two electric locomotives for handling freight on their proposed belt line around Mason City.

Hodenpyl, Hardy & Company, New York, N. Y., and E. W. Clark & Company, Philadelphia, Pa., are reported to be considering the purchase of at least sixty city cars and twenty interurban cars to be used by the Michigan Railway Company and the Northern Ohio Traction & Light Company.

Southern Public Utilities Company, Charlotte, N. C., has ordered six double-truck cars from the Southern Car Company of High Point, N. C., for use on the Charlotte system. These cars are to be similar in every respect to the six purchased from the same company in the spring of 1915, and will become a part of what is known as the "70 series." They are to be 38 ft. 2 in. long, 8 ft. and 7½ in. wide. They will be equipped with two 750-volt motors, maximum traction trucks, air brakes, 750-volt air compressor, electric heaters and ventilators, Ohmer fare registers, inclosed vestibules with folding doors and step, and projecting type fenders.

TRADE NOTES

Perry Ventilator Corporation, New Bedford, Mass., has received an order to equip with ventilators the fifty cars being built by the Laconia Car Company for the Boston Elevated Railway.

Lord Manufacturing Company, New York, N. Y., has received an order for 100 Horne double-acting brakes for the fifty surface cars being built by the J. G. Brill Company for the Boston Elevated Railway.

Sherwin-Williams Company, Cleveland, Ohio, manufacturer of paints and colors, celebrated its jubilee anniversary this week at the Hotel Statler, Cleveland, Ohio, at which salesmen, agents and representatives from all parts of the world were present.

Westinghouse Electric & Manufacturing Company, Westinghouse Lamp Company and R. B. Nuttall Company, announce the removal of their San Francisco offices to the seventh floor of the First National Bank Building, 1 Montgomery Street.

Vaughn, Meyer & Sweet, Consulting Engineers, Majestic Building, Milwaukee, Wis., have recently changed their organization, returning to the original firm name of Vaughn & Meyer, after the recent dissolution and the withdrawal from the firm of Arthur J. Sweet. F. A. Vaughn and H. J. Meyer will continue to conduct the same engineering activities with their present organization as they have been doing for years past.

Westinghouse Air Brake Company, Pittsburgh, Pa., at its last annual meeting created the position of chairman of the board and H. H. Westinghouse was elected to that office. John F. Miller, who has been vice-president of the company

since 1905, was elected to the office of president. A. L. Humphrey was made first vice-president and general manager. Charles A. Rowman, heretofore auditor, was promoted to the position of comptroller, and John T. Eichner, formerly assistant auditor, was made auditor.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., reports the receipt of a contract from the New York Connecting Railways, New York, N. Y., for all the catenary hangers used in its construction. It has also received an order from the Pittsburgh (Pa.) Railways for 25,000 2/0 15 in. bronze trolley ears and an order from the Timber Butte Milling Company, Butte, Mont., for a 60-ton, double-truck locomotive, equipped with four 600-volt motors and HL control. This locomotive will have single end straight automatic air brake equipment and a pantograph trolley.

C. S. Hawley has resigned as president of the Laconia Car Company and of the Consolidated Car Heating Company to accept the position of treasurer of the Remington Arms-Union Metallic Cartridge Company, Bridgeport, Conn. Mr. Hawley, who was elected president of the Consolidated Car Company in 1909, left to become president of the Laconia Car Company in 1912. He again became president of the Consolidated Car Heating Company in 1916. Mr. Hawley has also taken an active part in the affairs of the American Electric Railway Manufacturers' Association, serving as a member of the executive committee from 1908 to 1912, as chairman of the finance committee in 1908, as vice-president from 1909 to 1912, and as president of the association from 1913 to 1914. No successor to Mr. Hawley has been named in either of the two companies above mentioned.

ADVERTISING LITERATURE

Chicago Pneumatic Tool Company, Chicago, Ill., has issued bulletin 34-X on its Giant gas engine. This is a horizontal, straight-line type engine with crosshead, and two stroke cycle operation, built as a single cylinder machine in sizes from 16 to 110 hp. and as a duplex machine from 70 to 220 hp.

Peter Smith Heater Company, Detroit, Mich., has just issued bulletin No. 8 on forced-ventilation electric heaters. In this 20-page bulletin are shown schematic diagrams of this type of heater, illustrations of the heater and blower, motor fan and of a forced-ventilation electric heater and control installed on a city car.

Electric Railway Improvement Company, Cleveland, Ohio, has issued a thirty-two page booklet on the early history and present facts regarding the installation of rail bonds by electric and copper welding. This booklet illustrates and describes the different types of electric weld bonds for the different types of rails.

Holden & White, Chicago, Ill., general sales agents for the Garland Ventilator Company, have issued a comprehensive catalog on car ventilators and ventilating systems. It first deals with the ventilating problem from the viewpoint of the transportation department, because car ventilation is of prime importance to successful passenger service. This catalog describes the condition which must be overcome in order to give a properly ventilated car, and shows why the ordinary deck sash is ineffective. For the mechanical department, a complete description is given of twelve types of car ventilators, including those for city, suburban and interurban cars, both monitor and arch-roof types. Among these is a ventilator for use in combination with lighting fixtures, a combination intake and exhaust ventilator, two types of intake ventilators, and two of forced ventilation. The importance of cowls is emphasized by illustrations to show the action of the air currents induced by these cowls. An interesting chapter describes the ventilators in tests, and shows the volume of air passing through the ventilators in cubic feet per hour, both tabulated and in chart form. A comparison of these ventilators with other ventilators is also graphically illustrated. Considerable space is given to the following subjects: Intake and exhaust; intakes; circulating or balanced ventilation; Garland forced ventilation. All of these subjects are of particular importance at the present time. A chapter is devoted to this company's honeycomb ventilator for carhouses and power houses.