The Annals

OF THE

AMERICAN ACADEMY OF
POLITICAL AND SOCIAL SCIENCE

The Railroad Problem

A Discussion of Current Railway Issues

PHILADELPHIA
36TH STREET AND WOODLAND AVENUE

Vol. LXXXVI NOVEMBER, 1919 No. 175

THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE

Membership. The subscription price of THE ANNALS of the American Academy of Political and Social Science is $5.00 per year. Single copies are sold at $1.00 each. THE ANNALS are sent to all members of the Academy, $4.00 (or more) of the annual membership fee of $5.00 being for a subscription to the publications. Membership in the Academy may be secured by applying to the Secretary, 36th Street and Woodland Avenue, Philadelphia. The membership fee is $5.00; life membership fee, $100. Members not only receive all the regular publications of the Academy, but are also invited to attend and take part in the scientific meetings, and have the privilege of applying to the Editorial Council for information upon current political and social questions.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC., OF THE ANNALS OF THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE

Published bi-monthly at Concord, N. H., as required by the Act of August 24, 1912.

Name of Stockholders or Officers	Post Office Address
Editor, Clyde Lyndon King,	Logan Hall, West Philadelphia, Pa.
Managing Editor (none)	
Business Manager (none)	
Publisher, American Academy of Political and Social Science,	10 Depot Street, Concord, N. H. 36th and Woodland Avenue, West Philadelphia, Pa.

Owners (if a corporation, give names and addresses of stockholders holding 1 per cent of more of total amount of stock). The American Academy of Political and Social Science, L. S. Rowe, President, J. P. Lichtenberger, Secretary, Charles J. Rhoads, Treasurer, 10 Depot Street, Concord, N. H., 36th and Woodland Avenue, West Philadelphia, Pa.

Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities. None.

American Academy of Political and Social Science,
CLYDE L. KING, *Editor.*

Sworn to and subscribed before me this 5th day of October, 1919.

G. R. NITZSCHE, *Notary Public.*

Term expires January 28, 1921
Form 3526

Issued Bi-Monthly by the American Academy of Political and Social Science at Concord, New Hampshire.

Editorial Office, Woodland Avenue and 36th Street, Philadelphia.

Entered as second-class matter May 8, 1915, at the post-office at Concord, New Hampshire, under the Act of August 24, 1912.

THE RAILROAD PROBLEM

A DISCUSSION OF CURRENT RAILWAY ISSUES

The Annals

VOLUME LXXXVI NOVEMBER, 1919

Editor in Charge of this Volume:

T. W. VAN METRE

Assistant Professor of Transportation, School of Business, Columbia University

THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE
36TH STREET AND WOODLAND AVENUE
PHILADELPHIA
1919

EUROPEAN AGENTS

ENGLAND: P. S. King & Son, Ltd., 2 Great Smith Street, Westminster, London S. W.
FRANCE: L. Larose, Rue Soufflot, 22, Paris.
GERMANY: Mayer & Müller, 2 Prinz Louis Ferdinandstrasse, Berlin, N. W.
ITALY: Giornale Degli Economisti, via Monte Savello, Palazzo Orsini, Rome.
SPAIN: E. Dossat, 9 Plaza de Santa Ana, Madrid.

CONTENTS

PART III—UNIFICATION OF TERMINALS

PART IV—RAILWAY EFFICIENCY AND LABOR

FOREWORD

In planning this volume of *The Annals* the editors have kept in mind the inclusive discussions that have heretofore been published in the columns of *The Annals*. The emphasis in this volume, therefore, has been placed upon the current issues as to railway regulation and the participation of labor in the management of the railroads. A number of contributors failed during the last week to present their articles, hence certain of the discussions are not as balanced in presentation as had been planned by the editors. However, the articles already printed by the Academy together with those published in this issue will present an inclusive and well-rounded discussion of the railway problem. For the guidance of our readers we give below the articles that have appeared in preceding issues of *The Annals* dealing solely with phases of the railroad problem and the names of the contributors of those articles. Other articles referring to the railroad problem can be found by consulting "The Twenty-Fifth Anniversary Index" of *The Annals:*

THE EDITOR

The Accounting System Prescribed for the Railroads by the Interstate Commerce Commission, W. E. Hooper, Vol. LXIII: 222–31, January, 1916.

Administration of Prussian Railroads, B. H. Meyer, Vol. X: 389–423, November, 1897.

Railroad Commission of California, S. E. Moffett, Vol. VI: 469–77, November, 1895.

The Interest of Labor in the Economics of Railroad Consolidation, W. H. Baldwin, Jr., Vol. XV: 137–49, January, 1900.

Disability and Death Compensation for Railroad Employees, Daniel L. Cease, Vol. XXXVIII: 45–56, January, 1911.

Federal Valuation of the Railroads in the United States, Thomas W. Hulme, Vol. LXIII: 182–190, January, 1916.

The Present Supply of Freight Cars, Arthur Hale, Vol. XXXIV: 592–600, November, 1909.

Southern Railroads and Industrial Development, W. W. Finley, Vol. XXXV: 99–104, January, 1910.

The Interstate Commerce Commission and the Railroads, S. O. Dunn, Vol. LXIII: 155–72, January, 1916.

How the States Make Interstate Rates, Robert Mather, Vol. XXXII: 102–20, July, 1908.

The Nation Should Superintend All Carriers, C. M. Hough, Vol. XXXII: 218–24, July, 1908.

Limitations upon National Regulation of Railroads, O. E. Butterfield, Vol. XXVI: 629–41, November, 1905.

National Regulation of Railroads, Martin A. Knapp, Vol. XXVI: 613–28, November, 1905.

Railroad Passenger Fares in Hungary (translated by J. J. Wetherill), Vol. I: 103–31, July, 1890.

Railroad Passenger Tariffs in Austria (translated by J. J. Wetherill), Vol. I: 462–68, January, 1891.

Railroads in the Philippine Islands, Captain Frank McIntyre, Vol. XXX: 52–61, July, 1907.

Railroad Pooling, Martin A. Knapp, Vol. VIII: 127–47, July, 1896.

Do "Cost of Transportation" Exhibits in Railroad Rate Cases Show Cost? A. S. Olmstead, Vol. LXIII: 214–21, January, 1916.

The Reorganization of Railroads, C. R. Woodruff, Vol. XVII: 205–43, March, 1901.

Five Years of Railroad Regulation by the States, G. G. Huebner, Vol. XXXII: 138–56, July, 1908.

The Conflict Between State and Federal Regulation of Railroads, Walker D. Hines, Vol. LXIII: 191–98, January, 1916.

Railroad Stocks as Investments, Carl Snyder, Vol. XXXV: 646–56, May, 1910.

Traffic Agreements Between Steamship Lines and American Railroads, R. Hardy, Vol. LV: 185–93, September, 1914.

The Desirability of a College Education for Railroad Work, A. J. County, Vol. XXVIII: 124–29, January, 1906.

Railroad Zone-Tariff System in Austria, C. Wessely, Vol. I: 344–49, October, 1890.

Railway Departments for the Relief and Insurance of Employees, Emory R. Johnson, Vol. VI: 424–68, November, 1895.

Railway Discriminations and Industrial Combinations, C. A. Prouty, Vol. XV: 41–50, January, 1900.

Foreign Railway Events in 1902–03, H. B. Meyer, Vol. XXIII: 121–40, January, 1904.

Industrial Services of the Railway, Emory R. Johnson, Vol. V: 897–914, May, 1895.

Result of Further Legislative Regulation of Electric Railways, Stuyvesant Fish, Vol. XXXII: 102–19, July, 1908.

The Nation and the Railways, Martin A. Knapp, Vol. XXXII: 125–37, July, 1908.

The Regulation and Nationalization of the Swiss Railway, I, Hans Dietler, Vol. XIII: 143–290, March, 1899.

The Regulation and Nationalization of the Swiss Railway, II, Hans Dietler, Vol. XIII: 291–322, May, 1899.

Distribution of Stockholding in American Railways, S. S. Huebner, Vol. XXII: 475–90, November, 1903.

The Union Pacific Railway, J. P. Davis, Vol. VIII: 259–303, September, 1896.
Causes Affecting Railway Rates and Fares, Walter E. Weyl, Vol. XI: 324–52, May, 1898.
Current Transportation Topics, Emory R. Johnson, Vol. IX: 107–16, January, 1897; Vol. X: 241–51, September, 1897.

COMMERCE AND TRANSPORTATION—JANUARY 1902, VOLUME XIX
Emory R. Johnson, Editor in Charge

Government Ownership of Railroads, Martin A. Knapp.
Advisory Councils in Railway Administration, B. H. Meyer.
The Concentration of Railway Control, H. T. Newcomb.
Light Railways in Belgium, Alfred Nerincx.

RAILWAY AND TRAFFIC PROBLEMS—MARCH 1907, VOLUME XXIX
Emory R. Johnson, Editor in Charge

The Economic Necessity for the Pennsylvania Railroad Tunnel Extension into New York City, A. J. County.
The Pooling of Freight Cars, J. R. Cavanagh.
The Electrification of American Railroads, Thomas Conway, Jr.
Rate Control Under the Amended Interstate Commerce Act, Harrison Standish Smalley.
Prussian Railway Administration, Ernest S. Bradford.
Prussian Railway Rate Making and its Results, G. G. Huebner.
An Argument against Government Railroads in the United States, W. A. Robertson.

WAR ADJUSTMENTS IN RAILROAD REGULATION—MARCH 1918, VOL. LXXVI
C. H. Crennan, Editor in Charge

Failures and Possibilities in Railroad Regulation, T. W. Van Metre.
Federal Control of Railroads in War Time, Max Thelen.
Principles and Practices of Car Service Regulation, H. E. Byram.
Regulation of Car Service under Government Control of Operation, John J. Esch.
Physical Needs of the Railways under Government Control, J. H. Parmelee.
Adjustment of Labor's Demands During Federal Control of Railroad Operation, Glenn E. Plumb.
Precedents for Private Ownership and Government Operation of Transportation Facilities, Delos F. Wilcox.
Government Operation of American Railroads, Clifford Thorne.
Railroad Security Issues under Government Operation, Thomas Conway, Jr.
Status of Existing Railroad Laws and Regulative Agencies under Federal Control, Edgar Watkins.
Has the Importance of Federal Valuation of Railroads Been Increased or Lessened by Federal Control of Operation? H. B. Whaling.
Control of Railroads after the War, Henry A. Palmer.
Reconstituting Railroad Regulation, George A. Post.

The Old System of Railroad Regulation

By Samuel O. Dunn
Editor of the *Railway Age*

PUBLIC regulation and private ownership and operation of railroads was the policy of the United States until the end of the year 1917. The early regulation, except in some of the states, was neither comprehensive nor effective. The passage of the Hepburn act, which became a law in 1906, marked the commencement of really effective regulation by the federal government. At about the same time most of the states began passing laws and creating or strengthening railroad (or public utility) commissions, with the result that comprehensive and effective regulation by the state and the federal governments began almost simultaneously.

Throughout the period of effective regulation, and, indeed, for years before, there was much agitation, on political and economic grounds, for government ownership and operation. Government operation was adopted at the beginning of 1918 as a war measure. The advocates of government ownership hailed its coming as the death-knell of private management. Most of the advocates of private management also thought we had seen the last of that policy. They feared the difficulties in the way of a return to private operation would be insuperable.

The country has now (in September, 1919) had twenty months of government operation. President Wilson has announced that on January 1, 1920, we shall return to private operation. No large class of persons is in favor of a continuance of government operation. The leaders of the railway labor brotherhoods are advocating government *ownership;* but even they are opposed to government *management.* They favor the so-called "Plumb Plan," under which, while the public would buy the railroads, it would delegate their management to a board, one-third of whose members would be appointed by the President of the United States, one-third by the "official employes" of the railways, and one-third by the "classified employes." This is not the place

to present or discuss the reasons why government operation has proved unpopular. The patent fact is that it has proved very unpopular.

But the decision to return to private operation does not solve our perennial "railroad problem." If the government should simply hand the roads back, they would automatically be subjected to the old system of regulation. Everybody is opposed to that also. It is but stating the simple truth to say that that system as it stands today has no friends. People differ as to what its faults are; but all agree that it has great faults.

The Senate and House Committees have held long hearings on the railroad problem. Nobody has appeared to oppose all changes in the present system of regulation, while numerous plans for making great changes in it have been presented. The Esch-Pomerene bill, which it is understood was practically drafted by the Interstate Commerce Commission, and the Plumb Plan, which is supported by the leaders of the railroad labor organizations, represent the two extremes of conservatism and radicalism. Between them lie the plans of the National Association of Owners of Railroad Securities, the Association of Railway Executives, and the Transportation Conference of the Chamber of Commerce of the United States, as well as some plans proposed by individuals. It would be a great achievement of statesmanship for Congress to select the good features of all these plans and weld them into a single piece of constructive legislation.

The old system of regulation has tried to accomplish numerous purposes. The most important have been the following:

1. To abolish unfair discriminations between shippers and communities.
2. To improve railway service, and especially to increase the safety of the service.
3. To bring about peaceful settlements of labor disputes.
4. To stop financial abuses in the management of the railroads.
5. To secure low rates.

Nobody will question that regulation should try to accomplish all these purposes. There is another purpose which it is now contended in many quarters should expressly be made one of its principal objects. This is the adequate development of railroad facilities.

PREVENTION OF UNFAIR DISCRIMINATIONS

Less than fifteen years ago the purpose for which a stronger system of regulation was chiefly advocated, was the suppression of unfair discriminations between shippers and communities. These discriminations included the giving of secret rebates on freight and of free transportation to passengers. There were also many unfair discriminations between shippers and communities in the published tariffs.

Two methods were adopted to abolish unfair discriminations. Secret rebating and the giving of free passes except to specified classes of persons were prohibited under severe penalites. The strict enforcement of these prohibitions has produced the desired effects.

The other method used for abolishing unfair discriminations has been that of requiring all rates to be published and filed with the state and federal commissions some time before going into effect, and of empowering the commissions to change unfair rates either by fixing the exact rates or the maximum rates which must be charged. Unfair discriminations in the published tariffs have been in these ways largely reduced, although not completely abolished. Experience has shown that a regulating commission, in order to enable it completely to abolish unfair discriminations, must be empowered not merely to fix maximum rates, as the Interstate Commerce Commission is, but to fix the *exact* rates, or the minimum as well as the maximum rates to be charged. One of the changes in the act to regulate commerce recommended by the Interstate Commerce Commission is that it shall be given power to fix minimum rates. This recommendation undoubtedly ought to be adopted.

UNFAIR DISCRIMINATIONS AND ENFORCED COMPETITION

The necessity for giving the Commission authority to fix minimum as well as maximum rates, in order to enable it to stop all unfair discriminations, arises chiefly from competition between the railways. One of the anomalies of the old system of regulation has been that it has dealt with the railways both as if they were naturally quasi-monopolistic and as if they ought to be highly competitive. Because of their quasi-monopolistic character it subjects their rates to regulation by the Interstate Com-

merce Commission. At the same time, under the Anti-Pooling law and the Sherman Anti-Trust law, it attempts to enforce unrestricted competition between them in making rates, as well as in other matters.

In consequence there is still some competition in rate-making between the railroads. It occasionally happens that an individual road fixes a rate on a particular commodity or to a particular community which is lower than the rate authorized by the Interstate Commerce Commission and relatively lower than the rates on other commodities or to other communities. Railroads competing with this road have no means of preventing it from taking such action, since the law prohibits all agreements and combinations between competing roads. The result—whether other lines meet the reduction in rates or not—is an unfair discrimination, which not only injures the shippers or communities affected but also all the competing railways.

While the Interstate Commerce Commission should be given authority to fix minimum rates, it is now agreed by all recognized authorities that laws which seek to enforce competition in rates should not be continued in effect. These laws originally were intended to prevent the railroads from entering into agreements to make and maintain excessive rates. Later legislation having empowered the Interstate Commerce Commission to reduce any rate which is excessive, and to prevent any advance in rates which would be so, the only effect now produced upon rates by the Anti-Pooling law and the Sherman Anti-Trust law is to foster unfair discriminations.

DISCRIMINATIONS DUE TO REGULATION

While regulation has greatly reduced the number of unfair discriminations, many have arisen as a direct result of it. This has been due to the fact that rates have been regulated by both state and federal authorities independently of each other. In numerous cases state legislatures and commissions have fixed rates which were lower than corresponding interstate rates sanctioned by the Interstate Commerce Commission, the effect being unfair discrimination against interstate commerce. In the *Shreveport case* the United States Supreme Court held that where a rate fixed by a state worked an unfair discrimination, the Inter-

state Commerce Commission could correct the discrimination even by changing the state rate. In order to enable it more effectively to deal with such discriminations the Interstate Commission has recommended legislation authorizing it in appropriate cases to conduct hearings jointly with the state commissions and enter a decision upon a single record which would be binding upon all affected. The measure proposed by the Commission doubtless would remedy unfair discriminations due to our dual system of regulation.

REGULATION TO IMPROVE SERVICE

The second purpose mentioned above as having been sought by the old system of regulation, has been that of improving railway service, especially in respect to safety of operation. The attainment of this object also has been attempted by means of both express legislative requirements and the orders of commissions. Many years ago Congress passed a law requiring a certain percentage of all locomotives and cars to be equipped with power brakes and automatic couplers, and empowered the Interstate Commerce Commission to increase the percentage that must be so equipped as conditions warranted. This legislation has been successful, and all railway equipment now has the safety appliances then specified by law. Later Congress authorized the Interstate Commerce Commission to prescribe all the kinds of safety appliances which should be used upon locomotives and cars. The Commission, after conferences with officers of the railways, issued orders which have caused practically all locomotives and cars to be equipped with uniform safety appliances.

Some of the federal legislation to promote safety, as administered by the Commission, has been of more questionable value. The Commission was authorized to and did issue an order requiring all railways to use high power headlights on their locomotives. The Commission's order has been severely criticised by the officers of railways handling a heavy traffic upon multiple tracks, upon the ground that while high power headlights on railways with single tracks promote safety, their use is dangerous on railways with multiple tracks. It is generally agreed, however, that most of the regulation of railway equipment and operation by the federal government has been beneficial.

The same thing cannot be said respecting much or even most of the regulation of operation by the states. Many of the states have adopted so-called "full train crew" laws fixing the minimum number of men that must be employed on trains. It is claimed that this has resulted in forcing the railways to employ more men than are needed, has not promoted safety, and has caused economic waste.

There have been not a few examples of duplication, and even conflict, between state and federal regulation of operation. It has been contended with much force that as every large railway operates in more than one state and most of them in several states, and as the requirements for handling state and interstate traffic safely and economically are the same, practically all power of regulating operation should be concentrated in the federal government.

THE PROPOSED TRANSPORTATION BOARD

The Association of Railway Executives and some other important business organizations favor the creation of a Federal Transportation Board, to which should be transferred all the purely administrative functions now performed by the Interstate Commerce Commission, and to which should also be delegated such additional administrative functions as may be given to any federal authority. It is contended that it is not only contrary to our constitutional form of government, which is based upon the principle of a division of legislative, administrative and judicial functions, but contrary to public expediency, to unite in one body the semi-judicial and the administrative functions now performed by the Commission. The Commission, it is said, is primarily a judicial body and is well qualified so to adjust railway rates as to prevent unfair discriminations and to cause each class of traffic to bear its fair share of the total cost of transportation. Being, however, primarily a semi-judicial body, it is unfitted, it is contended, to perform such purely administrative functions as that of regulating operation. Furthermore, it is contended, the Commission already is overloaded and would be still more overloaded if a large part of the regulatory functions now performed by the state authorities were transferred to it. It would be much better able to fix rates equitably and satisfac-

torily if all such administrative functions as those of regulating operation and enforcing the laws against the railways were transferred to a Federal Transportation Board. Besides, it is argued, the administrative work of regulation would be better done if it were all turned over to a purely administrative body such as a Transportation Board.

COMPETITION AND RAILROAD SERVICE

Reference has been made to the effects the laws to prevent agreements or combinations between competing railways have had upon rate-making. These laws have had even more striking effects upon operation and service. While there have been exceptions, the railways usually have made the maximum rates fixed by the Interstate Commerce Commission the exact rates they have charged. In consequence the rates between the same points by different railways usually have been the same. When the rates charged by competing roads are the same, the only inducement a railway can offer a shipper or traveler to use its line is superiority of service. Intense competition in service has therefore been one of the main characteristics of railroad operation in this country. This competition has been very unequal because of differences in length of lines, gradients, financial strength, etc., and the "strong" roads have year by year captured an increasing part of the business. While this intense competition has tended to improve the service it has resulted in large wastes. The railways would have reduced the intensity of the competition and avoided many of these wastes, if the law had not prohibited them from entering into any agreements or combinations.

While there long had been criticism of the laws to enforce unrestricted competition, it took the crisis of the great war to bring the public to an appreciation of the more disastrous effects which they were apt to produce. Soon after the United States entered the war, the chief executives of the railways, at the suggestion of the Council of National Defense, formed an organization headed by the Railroads' War Board, to coördinate for war purposes the operation of all the railroads. At every step it took, this voluntary organization encountered obstacles created by the laws designed to compel unrestricted competition. Immediately after the government took control of the railroads, the Director

General suppressed all competitive activities upon the ground that they would interfere with the most efficient use of the railroads in the war.

Few people favor the complete abolition of competition in railroad service. It is generally agreed, however, that there has been too much competition, and that the railroads should be authorized to make any agreements or combinations which the federal authorities may hold will not be prejudicial to the public. It is regarded by most students of the railroad problem as desirable that many combinations of "weak" roads with "strong" roads shall be formed in order that in future competition in service shall be carried on only between large and strong systems. Most of the important "plans" which have been submitted to Congress authorize railroad combinations under the supervision of the government. It is even proposed in some quarters that combinations shall be made compulsory. Some of the leaders of public thought who favor voluntary combinations, and also some who favor compulsory combinations, believe they should be formed under the supervision of the proposed Federal Transportation Board. Others are in favor of giving supervision over them to the Interstate Commerce Commission.

SETTLEMENT OF LABOR CONTROVERSIES

The third purpose above mentioned which regulation has sought to accomplish, is that of securing the peaceful settlement of controversies between railways and their employes. There are now practically no state laws dealing with railway labor controversies. The only federal law is the Newlands act. It provides for a Mediation and Conciliation Board of three government officers. When a dispute arises which may lead to an interruption of transportation, this board may tender its services as mediator to both sides. If mediation fails, the controversy may be submitted to arbitration by a board composed of two representatives of the railroads, two representatives of the employes, and two representatives of the public. The companies and employes are not required to arbitrate, but if they do, they are bound to abide by the award for a limited period.

For some years this law—previous to its revision known as the Erdman act—proved an efficient means of settling labor contro-

versies. But it finally broke down completely. The arbitrators representing labor and the companies always became advocates of their respective interests. This rendered it necessary for the representatives of the public to decide the awards. The leaders of organized labor claimed that the awards were never fair to their followers, and in 1916, when the four brotherhoods of train service employes demanded that eight hours should be made the basis of a day's wage and that they should be paid time and a half for overtime, they refused to submit their claims to arbitration in any form. The controversy was carried to the White House. President Wilson asked the railway managers to grant the basic eight-hour day, but they refused to do so unless after arbitration. The heads of the labor organizations issued an order for a strike. President Wilson recommended to Congress the establishment of the basic eight-hour day by statute, and only the passage of the Adamson act prevented a strike.

After government operation was adopted the Railroad Administration created a "Board of Railroad Wages and Working Conditions," to which the claims of all employes for changes in wages and working conditions are referred. It is composed of three railway officers and three representatives of railway employes. It can only hold hearings and make recommendations to the Director General. As long as the country was at war this Board succeeded in agreeing upon the recommendations to be made to the Director General, and about $700,000,000 of the $1,000,000,000 increases in wages granted under government control were based upon its reports. The spokesmen of the employes used the seemingly successful work of this Board as an argument for the creation of wage boards composed of equal numbers of officers and employes as a permanent solution of the problem. Early in 1919, however, the railway shop crafts presented to the Board of Railroad Wages and Working Conditions claims for a large increase in wages in addition to those which had already been given them. All the representatives of the employes on the Board favored granting the demands, while all the railway officers opposed it. It would appear, therefore, that the theory that all railway labor disputes can be amicably and satisfactorily settled by boards of adjustment composed equally of officers and employes, also has now fallen to the ground.

Numerous new methods of settling labor controversies have been suggested. One of these is that, after the railways are returned to private operation, several boards of adjustment shall be created which shall be composed equally of representatives of the railway companies and of the employes. Every controversy shall be submitted in the first instance to one of these boards. If a majority of its members agree, its award shall be final. If not, the Federal Transportation Board which it is proposed shall be created, shall organize a board of arbitration composed of equal numbers of representatives of the officers, the employes, and the public, to which the controversy shall be appealed; no strike or lockout shall be permitted in any controversy until after it has been arbitrated. Some advocate requiring the Interstate Commerce Commission to fix all railroad wages and working conditions as well as all rates. The Commission has indicated, however, that the task of settling labor controversies would not be welcomed by it.

The old system of regulation provided no efficient means of settling labor controversies, nor did it in any way correlate the regulation of wages and the regulation of rates. One of the most difficult problems Congress will encounter in trying to frame a new system of regulation will be that of adopting satisfactory and effective means of settling labor disputes and of having the settlements promptly taken into account in the regulation of rates.

REGULATION OF SECURITY ISSUES

No other charge ever made against them has done the railway companies of the United States so much harm as the oft-repeated allegation that they are enormously over capitalized. In view of the many and bitter attacks which have been made upon the companies upon this ground, it is a remarkable fact that the federal government has never attempted to regulate the issuance of their securities, and that until recent years few of the states did so. Apparently the first state which authorized its railroad commission to regulate the issuance of securities was Massachusetts. This was about a quarter of a century ago. Within the last twelve years about twenty states have begun regulating securities. It not infrequently happens now that a large rail-

road system must get the permission of a half dozen state commissions before it can issue any stocks or bonds to raise money, and such permission is given in most, if not all, of the states only after application, notice, hearing and deliberation by the commission. The railroad company may desire to use the money to be raised by the sale of the securities to improve its facilities and service in all the states it traverses, but a single state may prevent it from issuing them or delay their issuance until a favorable time for selling them is past.

The existing situation is admitted on almost all hands to be very unsatisfactory. Exclusive federal regulation is now advocated by the railway executives, the Interstate Commerce Commission, and most of the state commissions. Some eminent lawyers claim, however, that the federal government cannot assume exclusive authority to regulate the securities of corporations created by state laws, and therefore advocate the passage of a federal law requiring all railroad companies to take out federal charters. Some other lawyers contend that the federal government cannot compel a state corporation to take out a federal charter. Still other lawyers claim that the federal government can without federal incorporation assume exclusive regulation of securities issued by railroad companies doing an interstate business as properly incidental to the regulation of interstate commerce. That legislation empowering some federal tribunal to regulate the issuance of railroad securities will be passed seems highly probable, but it also appears probable that there will be important litigation before it will be determined just what form such legislation must finally be given in order to be constitutional. Those who advocate the creation of a Federal Transportation Board, favor delegating to it rather than to the Interstate Commerce Commission, the function of regulating the issuance of railroad securities.

EFFECT OF REGULATION ON RAILROAD DEVELOPMENT

While other effects produced by the old system of regulation have been the subject of a good deal of discussion, no other has been and is now the subject of so much discussion as its effect on railroad profits. Spokesmen of the railroad labor brotherhoods recently have charged before the House Committee on Inter-

state Commerce, that the owners of the railroads, by selling stocks on a bonus basis, padding the property investment accounts, watering capitalization, and other means, have derived large profits from the railroads which have been made illegitimately at the expense of the public and the employes. Some members of the Interstate Commerce Commission have claimed that under the old system of regulation the railroads were allowed to earn adequate net returns, and one member has especially called attention to the fact that in the last three years of private control, 1915, 1916, and 1917, the operating income of the companies was larger than in any preceding three years.

On the other hand, the spokesmen of the railroad companies claim that under the old system the companies were not allowed to earn adequate returns and that this resulted in a sharp decline in the development of transportation facilities. They contend that the principal purpose for which our system of regulation should be radically changed is that of adapting it to the promotion of the adequate development of railroad facilities. One of the principal duties of the Federal Transportation Board whose creation they advocate would be to keep informed as to the country's transportation requirements and certify to the Interstate Commerce Commission from time to time the amount of earnings the railways of each section need to enable them to give good and adequate service. The Transportation Board's certification would be binding upon the Commission unless conclusively shown to be erroneous.

Some other organizations advocate going even farther than the Association of Railway Executives. The National Association of Owners of Railroad Securities has proposed legislation to provide that the Interstate Commerce Commission must permit the railways of each large traffic section to earn an average of at least 6 per cent upon their book cost of road and equipment. Any road which earned more than this would be required to divide the excess, keeping one-third itself, paying one-third into the federal treasury, and distributing one-third among its employes. The Transportation Conference of the Chamber of Commerce of the United States has proposed legislation requiring the Interstate Commerce Commission to fix rates which will yield an average of 6 per cent upon a fair valuation of the railroads. Any

road which earned more than 6 per cent would be required to put part of the excess into a contingent fund of its own and part into a general contingent fund, these funds to be used if necessary to make up deficiencies in earnings in lean years. It also favors the creation of a Transportation Board to promote the adequate development of transportation facilities.

HAVE RAILROAD PROFITS BEEN SUFFICIENT?

It is most important to determine whether or not under the old system of regulation the railroad companies were denied opportunity to earn adequate net returns. The railroad companies have to compete in the world's market for capital against concerns of other kinds. Insufficient net earnings will render them unable to meet this competition for capital. If they are not able to raise their share of new capital they will be unable adequately to develop their facilities, and without sufficient transportation facilities the development of the commerce of the country will gradually be brought to a stand.

Now, it is true, as has been pointed out by one member of the Interstate Commerce Commission, that the operating income of the companies in the last three years of private control was the largest in *gross amount* in history. But it was not the largest relatively, for it yielded only about 5¼ per cent upon the railways' book cost of road and equipment. Besides, it is easily demonstrable that under the old system of regulation the general tendency of railroad profits was to decline seriously. The book cost of road and equipment is the basis used in the reports of the Interstate Commerce Commission for computing the percentage of net return earned. The Commission's statistics show that following the railways' recovery from the effects of the panic of 1893, the percentage of return earned steadily increased until 1906. There was a sharp decline after the panic of 1907, followed by a recovery which continued until 1910. In the five years ended with 1900 the percentage of operating income on book cost of road and equipment was 3.82 per cent; in the five years ended with 1905, 4.97 per cent; and in the five years ended with 1910, 5.41 per cent. It was in the year 1910 that the railroads started the first important proceeding for general advances in rates. This was based chiefly upon the ground that increases

of labor costs were rendering it impossible to earn reasonable profits. The advance in rates was denied. Most of the advances in rates asked for within the next five years also were denied. In this five years the average percentage of return earned was only 4.56 per cent, and in 1915 it reached the lowest point since 1899, being only 4.09 per cent. In the years 1916 and 1917 there was a sharp upturn in operating income, the percentage earned in these years being almost 6 per cent. But this was due to an unprecedented increase in traffic caused primarily by the war in Europe and secondarily by this country's entrance into the war. If there had been only a normal increase in business in 1916 and 1917 there would have been no substantial increase in operating income, and probably there would have been a further decline of it, and since the war ended the traffic has become smaller than it was in 1916.

THE DECLINE OF INVESTMENT

Did the decline in the percentage of return earned down to 1915 affect the amount of capital invested in the railroads? The new capital invested certainly declined during this period. The new investment made in 1910 was $778,000,000 and in 1911, the year in which the Commission first refused to grant a general advance in rates, it was $808,000,000. In 1912 it was only $680,000,000; in 1913, $478,000,000; in 1914, $584,000,000; in 1915, $311,000,000; and in 1916, $268,000,000. In 1916 the investment made was less than one-third what it was five years before. The statistics demonstrate that under the old system of regulation there was a rapid decline of investment in railroads; and it is certainly not unreasonable to assume that this was mainly due to the decline in the net return earned.

The natural resources of the United States are far from being fully developed. They ought to be much more fully developed. But the transportation machine has not sufficient capacity satisfactorily to handle the present commerce of the country. Its capacity ought to be doubled, tripled, quadrupled as time goes on. It seems to follow that our system of regulation should be so changed that it will be as much its purpose to promote the adequate development of transportation facilities as to protect the public from exploitation by the railway companies. It is a

remarkable fact that the former has never been one of its purposes in the past. Legislatures and commissions have been engaged for years in passing laws and issuing orders predicated on the principle that freight and passenger rates should be made as low as they can be without involving confiscation. The fact that adequate development of transportation facilities is more important to the country than extremely low rates, and that rates which are not confiscatory may nevertheless be so low as to stop the development of the railroads, has not been recognized or has been ignored by most of the regulating authorities. There can hardly be found a single word in any report or order of any regulating body indicating that it has considered it its function to stimulate the development of transportation facilities. The attitude of the regulating commissions has been the same as that of the regulatory laws. There probably cannot be found in any regulatory statute a single phrase indicating that it is any part of the purpose of regulation to promote the development of railroad transportation. Experience gives strong support to the suggestion that the law should be amended to provide that rates must be made sufficient to enable the railroads adequately to develop their facilities and that a Federal Transportation Board should be created, one of whose principal duties should be to certify to the Interstate Commerce Commission from time to time the amount of revenues that the railroads should in the public interest be allowed to earn.

REGULATION NOT A FAILURE

If the federal regulating authorities are to be given the responsibility and duty of so fixing rates as to enable the railway companies to earn adequate returns, the laws should be so framed as to prevent state authorities from interfering with them in performing this duty. Many state legislatures and commissions have in the past fixed rates which yielded the railways even smaller profits than those fixed by the Interstate Commerce Commission. The federal regulating authorities should be given power either to fix all rates, state and interstate, or to nullify any rate fixed by a state which would not pay as much as it should of the total cost of transportation.

The fact that the old system of regulation has had some bad

as well as some good effects by no means proves that regulation of railroads cannot be made a success. Effective regulation, and especially effective regulation by commissions, is a comparatively new policy, and has been hardly tried at all except in the United States and Canada. It was not reasonably to be expected that a complete success of it would be made from the start. If Congress will correctly appraise both the past failures and the past successes of regulation and the reasons for them, and change the old system as experience suggests it should, the new system of regulation may well prove a greater success than any other policy which the government could adopt in dealing with the railroads.

Public Service Under Government Operation of the Railroads

By MAX THELEN
Director of Public Service, United States Railroad Administration

IN writing this article on *Public Service under Government Operation of the Railroads*, I shall not express views either for or against any particular method of ownership or of operation of the railroads of the United States. My sole purpose will be to chronicle some of the salient facts which bear on the character of the service given to the public by the railroads while under government operation. These facts constitute a part of the nation's war history and are worthy of being collected and preserved.

THE WAR AND RAILROAD SERVICE

The winning of the war was the premier consideration in the operation of the railroads by the government. Whatever changes in the existing methods of operation or in the character of the existing service to the public were necessary to this end were made without hesitation. The comfort and convenience of the travelling and shipping public were necessarily and by common consent subordinated to the nation's first and primary need. To the lasting credit of the American people, it should be said that they clearly understood the situation and uncomplainingly and patriotically coöperated in the common cause.

War conditions inevitably made operation of the railroads by the government far more difficult from the point of view of the public service than would have been the case in normal peace times. The disruption of existing railroad organizations through enlistment in the armed forces of the nation, the resulting employment of inexperienced men and women, the reduction in passenger train mileage resulting principally from the necessity for securing adequate passenger equipment for the movement of troops, the changes in theretofore existing channels of transportation made necessary by the requirements of war traffic, and other situations created by the war, all combined to make a satisfactory public

service prior to the signing of the armistice and for many months thereafter far more difficult than would have been the case if the nation had been pursuing the normal paths of peace. The splendid manner in which these difficulties were surmounted by the railroad operating officials during the period of government operation will remain as a lasting tribute to their efficiency and their patriotism.

When the armistice was signed, it was only natural that complaints with reference to the character of railroad service should find expression. War time restraints were over and the pendulum inevitably swung the other way. The Railroad Administration proceeded as promptly as possible to restore pre-war service in so far as it appeared to be reasonably responsive to public needs and at the same time to retain and perfect the very great improvements in service which unified operation by the government had created. The number of complaints against the service rose to a maximum shortly after the signing of the armistice, but steadily declined thereafter until at the present time there is substantial agreement that the American people are receiving first-class freight and passenger service in so far as possible with the existing equipment.

FREIGHT SERVICE

At the time the government undertook the operation of the railroads, the North Atlantic terminals, as well as practically all the railroad lines east of Chicago to the Atlantic seaboard, were badly congested with traffic for export and for the industries in the East. The Atlantic terminals were crowded with freight cars which it was impossible to unload. Long lines of loaded freight cars destined for the East but which it was impossible to move filled the side-tracks as far west as the plains of Kansas. The nation was confronted with the most serious railroad operating problem that it had ever faced. These difficulties were accentuated by the severest winter which this section of the country had ever known. The facts concerning the severity of this winter and the effect on transportation conditions are too well known to justify detailed recital.

It was at this time, with transportation conditions more difficult than ever before, that the federal government undertook

the operation of the railroads of the United States. As the result of unified operation by the government and of the measures taken in pursuance thereof, the freight congestion was removed by May 1, 1918. Throughout the remaining period of the war, there never was any doubt as to the ability of the nation's transportation machinery to meet every war requirement.

Attention is now invited to some of the more important steps taken by the United States Railroad Administration to give an adequate and satisfactory freight service.

1. Solid Train Movements

In order to meet the food requirements of our Allies, the Railroad Administration devised the plan of solid train movements of food stuffs from the West to the eastern seaboard. Cars of food stuffs destined to a given port were consolidated into solid trains and moved via the most direct open route, irrespective of shippers' routing and regardless of any particular line or lines of transportation. The plan of solid train movements was thereafter applied to the movement of fruit and other perishables from California and the North Pacific coast states, to the movement of oil from the mid-continent field to eastern destinations, to the movement of spruce, fir and other lumber from the Northwest for use in the aviation service, in shipbuilding and in other war industries, to the movement of packing house products from Missouri River points to the East and in other instances, with very greatly increased transportation efficiency. The Railroad Administration is in receipt of many letters from shippers who received this new kind of service and who state that the service thus received by them was better than any service theretofore accorded to them.

2. Unification of Freight Terminals and Lines

For the purpose of securing greater efficiency in the transportation of freight into, through and around existing terminals, the Railroad Administration proceeded to the unification and coördination of such terminals wherever it seemed clear that transportation efficiency would be substantially improved thereby.

Terminal managers were appointed for the larger cities such as New York, Chicago, Philadelphia, Baltimore and Seattle, and more or less complete unification was effected in many smaller

terminals. In the West alone, 136 freight stations were closed as the result of unification.

Chicago furnishes a striking example of constructive results accomplished by such unification. There existed in that city an Inner Belt Line which was the Belt Railway of Chicago; a Middle Belt Line, which was the Indiana Harbor Belt Railroad; and the Outer Belt Line which was the Elgin, Joliet and Eastern Railroad. The Railroad Administration proceeded to reduce congestion in Chicago and to expedite the movement of through freight around Chicago by using the Outer Belt Line as an interchange railroad for traffic moving to points beyond Chicago, with the exception of perishables. Perishables were routed via the Middle Belt Line which has adequate and excellent icing facilities. The Inner Belt Line was used principally for the delivery of cars within the Chicago district.

All railroad marine facilities in New York Harbor were consolidated under a marine manager and were used in common. One hundred and seventeen coal carrying barges and 18 tugs belonging to the Philadelphia & Reading, the Lehigh Valley, the New York, Ontario & Western and the Erie Railroads were pooled under a single manager, with very satisfactory results.

Illustrations of improvements in the service resulting from unification of road haul facilities are found in the routing of Baltimore & Ohio freight trains between McKeesport and Newcastle over the tracks of the Pittsburgh & Lake Erie, where one engine will handle the tonnage of five engines between the same points on the Baltimore & Ohio lines; the handling of westbound coal from the Fairmont district and coke from the lower Connellsville region on the Baltimore & Ohio over the Monongahela, Pittsburgh & Lake Erie and the Pennsylvania to the Pittsburgh district, thus releasing the Baltimore & Ohio for movement of additional eastbound business, principally coal from the Fairmont district to seaboard; and the use of single track separately owned lines between Pueblo and Denver, 118.5 miles, and between Wells and Winnemucca, 185 miles, as a double track.

3. Routing of Freight

The Railroad Administration early established approved routings of freight, irrespective of the ownership of any particular

transportation system, for the purpose of eliminating circuitous routing and of securing greater efficiency and economy in operation. Re-routing of freight cars was freely used for the purpose of avoiding congested lines, of moving around congested terminals and of diverting freight from congested ports to those which were open. Such re-routing resulted not merely in reduced operating expenses but also in more prompt service.

4. Unified control of equipment

The Railroad Administration promptly placed practically all passenger and freight equipment in a single pool, irrespective of the corporate ownership, and drew therefrom as needed in order to meet the requirements of various sections of the country for particular equipment, either motive power or cars. This work, which was done under the supervision of the Car Service Section of the Division of Operation and the organizations in the various Regions, resulted in meeting the greatest transportation necessities of the nation with practically no increase in the amount of the existing equipment. With the exception of coal cars, all classes of equipment, were distributed without regard to ownership. In this way alone could the transportation emergency have been met.

5. Permit system

In order to prevent freight from accumulating at destinations where it could not be unloaded, the Railroad Administration adopted the so-called permit system under which it was necessary for a receiver of freight, before freight could move to him, to show that ocean tonnage was available or that the freight could be unloaded promptly on arrival at destination. This system worked so successfully in helping to remove the congestion in the eastern ports that it was later extended to the movement of grain in the West. While the permit system was suspended, in so far as domestic traffic was concerned, shortly after the signing of the armistice, it remained effective as to export shipments and has recently been re-instated to assist in the movement of the enormous grain crop.

6. Car Loading

An effective campaign to increase car loading was already under way before the government undertook the operation of the

railroads. Subsequent to that time, however, through action taken by the Food Administration and through patriotic coöperation on the part of the shippers, even more effective car loading was accomplished than had been secured prior to the war. The records of the Railroad Administration show that between January and October, inclusive, 1918, the average load per loaded car increased 2.2 tons, or 8 per cent over the corresponding period in 1917.

FREIGHT SERVICE AFTER THE ARMISTICE

After the signing of the armistice, the foregoing and other methods adopted by the Railroad Administration for the purpose of increasing efficiency and according better service in connection with the transportation of freight, were retained and to some extent improved upon, with the exception of the partial suspension of the permit system and of the recognition of the shipper's right to route his freight subject to the continuing supervision of the Railroad Administration in the interest of economy.

The most marked improvement in freight service subsequent to the signing of the armistice has been in the more prompt and efficient handling of less than carload freight, with the result that at the present time this service in various sections of the country is reliably stated to be better than at any other time in our history.

FREIGHT CLAIMS

The prevention and the prompt disposition of freight claims constitute part of the service which the public expects a transportation system to accord to it. Mr. Hines, personally, has taken deep interest in both the prevention and the prompt settlement of freight claims. Under his instructions, a campaign both of prevention and of the prompt disposition of freight claims has been instituted on all the railroad systems of the country. The purpose of this campaign is not merely to effect a clean-up of the existing claims but also to take measures of prevention for the future.

Reports received from the various federal managers show that they have appointed committees of general officers; that they are holding meetings of agents, trainmasters, local train crews, checkers and clerks at freight stations; that they are selecting

special representatives or field men to visit stations, check claims papers in the hands of agents and instruct employes as to the protection of freight from pilfering, and as to marking, handling and storage; that they are issuing circulars drawing attention to the principal causes of freight claims and enlisting the interest of employes in the prevention of loss and damage; and that they are taking other steps which experience has shown to be wise in handling these problems.

The sustained effort on the part of the Railroad Administration to dispose of freight claims is shown by the following tabulation:

STATEMENT BY REGIONS OF LOSS AND DAMAGE FREIGHT CLAIMS UNSETTLED

Region	March 1, 1919	July 1, 1919	Total Decrease Since March 1, 1919	Per cent of Decrease Since March 1, 1919
Eastern	287,720	176,220	111,500	38.7
Allegheny	143,161	97,686	45,475	31.7
Pocahontas	10,935	5,093	5,842	53.4
Southern	142,191	95,844	46,347	32.5
North Western	155,618	104,518	51,100	32.8
Central Western	100,515	62,366	38,149	37.9
South Western	48,057	33,945	14,112	29.3
Total	888,197	575,672	312,525	35.1

As will be noted, the number of unsettled freight claims decreased 312,525 or 35.1 per cent between March 1, 1919, and July 1, 1919. Each month since March 1, 1919, has shown a reduction of approximately 10 per cent in the number of unsettled freight claims.

The number of overcharge claims presented each month still runs disappointingly high. During the three months ending March 31, 1919, 358,996 overcharge claims were presented to the Railroad Administration, while during the three months ending June 30, 1919, 349,381 such claims were presented. On the other hand, the number of overcharge claims unpaid more than 90 days old fell from 54,454 on March 31, 1919, to 24,287 on June 30, 1919, clearly showing the results of the campaign to clean up the old unsettled claims.

Prior to federal control, many railroad systems were actively engaged in trying to prevent claims and in making prompt disposition of such claims as might accrue. Other railroads were making far less satisfactory efforts. The control of the United States Railroad Administration extends to all the railroads of the country operated by it, thus making its activities as to both the prevention and the disposition of freight claims more far reaching and effective than was the case prior to federal control.

PASSENGER SERVICE

The movement of troops and their equipment required the release of passenger train equipment wherever this could be done with reasonable regard to the requirements of the civilian population.

The extent of the problem of transporting the troops is shown by the fact that between May 1, 1917, and June 30, 1919, there were 13,890,691 individual troop transportation movements. This total consisted of 7,988,707 movements in special troop trains, 3,614,058 movements in regular trains and 2,287,926 movements of drafted men from their homes to camps in special trains. For this transportation, the Railroad Administration utilized 319,277 individual car movements including Pullman cars, coaches, and baggage and express cars. The Railroad Administration ran 18,895 special troop trains.

In order to secure the necessary equipment to move these troops, as well as to conserve manpower, a careful survey was made of the passenger train mileage of the country, and duplicate and nonessential mileage was eliminated. On December 31, 1918, 67,290,562 passenger train miles had been eliminated, divided into Regions as follows:

Eastern	16,253,914
Allegheny	4,870,000
Southern	1,702,480
Northwestern	23,280,400
Central Western	16,772,524
Southwestern	4,411,244
Total	67,290,562

A considerable portion of the passenger mileage thus eliminated represented unnecessary duplication of passenger train service such as existed between various of the larger cities of the country as the result of excessive and wasteful competition. For instance, the service between Chicago and St. Louis was reduced 40 per cent, but the over-night trains which were continued in operation were sufficient to furnish nearly all passengers with lower berths.

Subsequent to the signing of the armistice, such of the former passenger train mileage as seemed desirable, in view of the altered situation, was gradually restored. By June 30, 1919, 11,461,758 passenger train miles had been thus re-instated.

The magnitude of the passenger problem with which the Railroad Administration was confronted is shown by the fact that on 230,000 miles of Class I railroads under federal control the number of passengers carried during the first 6 months of the years 1917, 1918 and 1919 increased as follows:

1917	464,978,544
1918	516,505,600
1919	540,498,510

It will be observed that the number of passengers carried during the first 6 months of 1919 was approximately 16 per cent greater than during the corresponding period in 1917. Nevertheless, the amount of passenger equipment was substantially the same as in 1917.

In addition to the elimination of passenger train mileage hereinbefore referred to, attention is invited to some of the other significant steps taken by the government in connection with passenger service.

1. Consolidated Ticket Offices

Prior to the war, the various railroad corporations quite generally maintained separate city or up-town ticket offices, particularly in the larger cities. The Railroad Administration consolidated these various ticket offices and is now operating 111 consolidated ticket offices in cities where prior to the war 564 separate offices were maintained. These offices have proved of very great convenience to the public and there is a wide-spread demand on the part of the public that these offices be retained.

2. Unification of passenger terminals

Considerable convenience to the public as well as economy in operation has resulted from the unification of passenger terminal facilities in various sections of the country.

Perhaps the best known of these unifications is the use of the Pennsylvania Railroad Station in New York City by the through passenger trains of the Baltimore & Ohio and the Lehigh Valley, with very great resulting convenience to the public. Another illustration of such unification is the joint use of the Southern Pacific Company's Oakland Pier on the eastern shore of San Francisco Bay by the Atchinson, Topeka & Santa Fe Railroad Company and the Western Pacific Railway Company. This consolidation enabled the Railroad Administration to dispense with the ferry service of both the Santa Fe and the Western Pacific across San Francisco Bay and also has resulted in the saving of considerable time to passengers going to and from San Francisco over the line of the Santa Fe.

While attention has been drawn to only a few illustrations, the extent of the passenger terminal unification is shown by the fact that in the West alone 90 passenger stations were closed, without impairment of the service to the public.

3. Staggering of Passenger Trains

Under the competitive conditions which prevailed prior to federal control, it was customary to have passenger trains of rival railroads leave a city at about the same time frequently at least half empty and to arrive at the other terminus also at about the same time. The Railroad Administration eliminated a considerable amount of this unnecessary passenger service and staggered the remaining service so that with less passenger equipment the times of arrival and departure were more frequent than theretofore. A passenger travelling between Washington and New York can now leave either terminus at almost any hour over either the Pennsylvania or the Baltimore & Ohio with a ticket good over either line.

4. Dining Car Service

For the purpose of conserving food and of securing greater efficiency from the use of the existing dining cars, *table d'hôte*

dining car service was made effective on October 1, 1918. *Table d'hôte* luncheons and dinners were served at the uniform price of $1.00, except upon a few limited trains where $1.25 was charged for dinners.

After the signing of the armistice, it became apparent that this service did not meet the requirements of the American travelling public. Accordingly, on March 1, 1919, *à la carte* service was restored except on a few of the more heavily loaded trains where *table d'hôte* meals are served as a means of expediting service. The *table d'hôte* meal served a useful purpose while it was in effect. At the present time, there is very little complaint concerning the dining car service which is being given by the United States Railroad Administration and it is generally considered that this service is at least as good as it was prior to the period of federal control.

5. *Maintenance of Schedules*

During the war, it became necessary to lengthen passenger train schedules in quite a number of instances. After the signing of the armistice, these schedules have again been shortened wherever it seemed appropriate to do so and very particular attention has been paid to having trains run on schedule time. The records of the Railroad Administration show that the number of trains which run on schedule is at least as great as before federal control, while in certain sections of the country, particularly the South, the record is very much better.

ADJUSTMENT OF RATES

Proper service by the railroads to the public presupposes the existence of a procedure through which such alterations in rates as become necessary, from time to time, can be made in a prompt and satisfactory manner. The necessity for such a procedure became particularly apparent by reason of the changes in existing rate relationships effected by General Order No. 28, making general increases in freight and passenger rates.

For the purpose of meeting this situation, the Railroad Administration established a series of Freight Traffic Committees, conveniently located in various sections of the country, to which the shippers as well as the traffic officers of the carriers might appeal for adjustment of freight rates.

District, or local, committees were established with headquarters at Atlanta, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Dallas, Denver, Detroit, Jacksonville, Kansas City, Louisville, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland, Richmond, Salt Lake City, San Francisco, St. Louis and St. Paul. General committees, having jurisdiction, respectively, over Official (or Eastern), Western and Southern territory, were established in New York, Chicago and Atlanta. Committees intermediate between certain District Committees in Eastern territory and the Eastern General Committee were established in New York and Chicago. Special committees for the consideration of freight rates on coal and coke alone were established at Philadelphia and Pittsburgh.

A shipper or a traffic official of a carrier who desires an adjustment of an existing freight rate files a petition with the proper freight traffic committee. The matter is docketed for hearing, all interested parties including the state railroad commission are notified, a public hearing is held and thereafter the committee submits its recommendations. If the matter is one of local interest alone, the recommendation, under the revised procedure, is submitted directly to the Directors of Traffic and Public Service in Washington. If the matter affects one or more districts, the recommendation is first transmitted to the appropriate General Committee and by the latter to Washington.

Between June 15, 1918, and July 26, 1919, 11,376 freight rate authorities, authorizing modifications in rates, were issued by the Central Railroad Administration in Washington as the result of proceedings in the various freight traffic committees and action by the Directors of Traffic and Public Service in Washington. This number is equivalent to an average of 200 per week.

Whenever a proceeding substantially affects state rates, the matter is submitted to the appropriate state railroad commission for its advice and suggestions, before final action is taken in Washington. If the matter involves interstate rates and is of substantial importance and the parties have been unable to agree, the matter is submitted to the Interstate Commerce Commission for its advice and suggestions in accordance with the provisions of Section 8 of the Federal Control Act.

In order to make sure that the point of view of the shippers

should receive due consideration, it was provided, initially, that there should be on each freight traffic committee one or more members representing the shippers, the number being always one less than the number of representatives of the carriers. However, in the early part of 1919, a change was made so that thereafter each committee has consisted of an equal number of representatives of the shippers and of the carriers. With the same purpose in mind, it has also been provided that no freight rate authority shall be issued by the Railroad Administration, unless the matter has first been brought to the attention of the Division of Public Service in Washington and unless that Division agrees to the issue of the freight rate authority; provided that if the Division of Traffic and the Division of Public Service cannot agree, the matter may be submitted to the Director General personally for his decision.

The machinery which has thus been provided for the adjustment of rates works promptly and with apparent satisfaction to all parties interested. For the first time in the history of railroad rate making in the United States, representatives of the shippers have, from the moment of the initiation of the rate, an equal voice with the representatives of the carriers.

While referring to rates, it may be appropriate to draw attention to the fact that the increases in freight and passenger rates during the period of government operation have averaged only approximately 25 per cent while during the same period the cost of almost everything which our people eat and wear has risen from 50 to 100 per cent and even higher. Considering the purchasing power of the dollar, railroad rates and fares have been lower during the period of government operation than ever before.

SAFETY

Satisfactory railroad service presupposes that adequate means are taken to promote the safety of the public and of the employes.

The Safety Section of the Division of Operation has provided for the appointment of Safety Committees on all the railroad systems in the United States. These committees consist of representatives of both the officers and the employes and meet regularly for the purpose of promoting safety work. The Safety Section has inaugurated a "No Accident Week" campaign in

the various Regions and reports very satisfactory results therefrom. The "No Accident Week" campaign which was conducted during the week from June 22 to June 29, 1919, in the Northwestern Region showed a reduction in the number of accidents from 481, of which 6 were fatal, in the corresponding week in 1918 to only 119, of which 5 were fatal, being a decrease of 75.26 per cent in the total number of accidents. A similar campaign conducted in the Central Western Region during the same week showed a reduction from 9 fatalities and 447 other injuries in the corresponding week in 1918 to 4 fatalities and 94 other injuries, being a total decrease of 79 per cent.

Due to the very severe transportation conditions in the months of January and February, 1918, a reduction in the number of killed and injured during the same months in 1919 might reasonably have been expected. However, the same satisfactory showing continued during the months of March and April, 1919, as appears from the following table showing the reductions in the total number of killed and injured, both employes and all cases, during the first 4 months of 1919 as compared with the same 4 months in 1918:

REDUCTIONS IN ACCIDENTS

	Employes		*All Cases*	
	Injured	Killed	Injured	Killed
January	2,598	135	3,058	175
February	2,959	163	3,264	222
March	3,687	94	3,732	196
April	2,649	98	3,111	174
	11,893	490	13,165	764

The very satisfactory results which have followed the work of the Safety Section and its various committees have undoubtedly been due in large part to the uniform control over this work on all railroad systems of the country exercised during the period of government operation.

DIVISION OF PUBLIC SERVICE

The Division of Public Service is one of the 10 divisions of the Central Railroad Administration in Washington.

This Division was created primarily for the purpose of provid-

ing that in whatever action is taken by the Central Railroad Administration in Washington affecting the interests of the travelling or the shipping public, the public point of view shall receive full consideration. The Division is also charged with the responsibility of investigating and seeking to adjust such complaints concerning railroad rates or service as are transmitted to the Railroad Administration in Washington. The Division has jurisdiction over the relations between the Railroad Administration and the various state railroad commissions. Also, the Division has a Short Line Railroad Section to which short line railroads may apply for assistance in case they believe that they are not being fairly treated by the Railroad Administration.

The Division of Public Service and Accounting was created on February 9, 1918, with Honorable Charles A. Prouty as Director. The Division of Public Service was linked together with the Division of Accounting until February 1, 1919, at which time the writer of this article entered the Railroad Administration as Director of a separate and independent Division of Public Service.

The following tabulation shows the number of initial letters received by the Division of Public Service, relating to rates and service, from February, 1918, to July, 1919, inclusive.

February, 1918	16
March	63
April	79
May	147
June	1,800
July	1,029
August	746
September	875
October	851
November	1,117
December	1,184
January, 1919	1,500
February	1,530
March	2,323
April	3,473
May	3,297
June	3,126
July	2,692
Total	25,848

Of the foregoing letters, approximately 70 per cent refer to rate matters and 30 per cent to service matters.

The increase in the number of letters received subsequent to February 1, 1919, shows that the public was quick to avail itself of an independent agency in the Railroad Administration, charged with particular responsibility for seeing to it that due consideration is given to the point of view of the public. On the other hand, the decrease in the number of letters received, from 3,473 in April to 2,692 in July, reflects the undoubted improvement in railroad operation and the increasing satisfaction of the public with the character of the service, both freight and passenger, which the public is now receiving.

The limits of this article do not permit a detailed reference to the nature of the complaints received by the Division of Public Service, but it will suffice to say that they run the entire gamut of railroad rates and service. The Division of Public Service tries earnestly to give prompt, courteous and efficient attention to all letters received and has disposed, to the satisfaction of the parties interested, of nearly all the complaints which have come to it.

The number of complaints hereinbefore referred to does not include the communications which have come to the Bureau for Suggestions and Complaints. This bureau was established in September, 1918, for the purpose of receiving complaints and suggestions from the public with reference to the quality of railroad service in response to bulletins posted in passenger coaches, railroad stations and other convenient places. The work of the Bureau has been limited to letters received in response to the invitations contained in such bulletins. The number of original letters received by the Bureau has fallen from 3,702 in September, 1918, to 1,144 in July, 1919, and the number of secondary or follow-up letters relating to the same subjects from 3,792 in November, 1918, to 1,740 in July, 1919. Each complaint is followed up and such unsatisfactory conditions as are revealed by the correspondence are corrected. On February 1, 1919, the Bureau for Suggestions and Complaints was made part of the Division of Public Service.

The Division of Public Service was established and is operating in frank recognition of the fact that the first duty of transpor-

tation systems and, in fact, their only real excuse for existence, is to give to the public satisfactory service at reasonable rates.

The operation of our railroads by the government has undoubtedly created a more wide-spread public interest than formerly existed in the operation and welfare of our transportation system. More than ever before, our people realize the important part which transportation plays in the life of the nation and of each individual citizen. The greater public interest which has been aroused will certainly result in improved relations between the railroads and the public and in a more satisfactory service by these agents of the public.

PERMANENT CONTRIBUTIONS OF GOVERNMENT OPERATION OF RAILROADS TO PUBLIC SERVICE

In the opinion of the writer, it would be most unfortunate if the constructive work which has been done by the government in relation to both freight and passenger service should be permitted to be lost when the properties of the carriers are returned to their private owners for operation. It would seem far wiser for the American people to take a leaf from the book of their war-time experience and to insist that the improvements in service which have been effected by the Railroad Administration should be retained by the private railroad corporations in so far as is compatible with operation by a large number of separately operated railroad corporations.

The writer is of the opinion that it would be in the interest of the American people if the following constructive results, among others which have been accomplished by the federal government, during the period of federal control, and which bear on the character of the public service, were retained by the private railroad corporations when they again operate their properties:

1. *Pooling of Equipment.*—The continuation of the pooling of motive power and equipment under the supervision of some central authority, to be exercised at least whenever there is a shortage of equipment. Such pooling is particularly desirable as to box, refrigerator, stock and flat cars.

2. *Unification of Terminals.*—The retention of the constructive results which have been accomplished by the federal government, and the extension of the principle so that a railroad corporation having terminal facilities shall be obliged, on just and reasonable compensation, to permit the use of such facilities by another railroad corporation when the public interest requires such use.

3. *Consolidated Ticket Offices.*—The retention of the consolidated passenger ticket offices established by the Railroad Administration and the establishment of additional offices as needed.

4. *Disregard of Routing Instructions.*—A disregard of routing instructions whenever necessary to relieve congestion either of terminals or of railroad lines. A continuance of solid train movements wherever reasonably possible.

5. *Permit System.*—The use of this system whenever necessary in order to avoid congestion.

6. *Elimination of Waste in Unnecessary Competitive Train Service.*—Particularly, the refusal to install again the competitive and highly wasteful passenger service which existed prior to federal control between many of the larger cities of the country.

7. *Representation of shippers in initial making of rates.*—The establishment of some procedure by which shippers shall continue to have a voice in the initiation of rates.

8. *Speed in Adjustment of Rates.*—Adequate provision for the adjustment of rates with a speed approximating that with which the various Freight Traffic Committees of the United States Railroad Administration and the Divisions of Traffic and Public Service are now doing their work.

9. *Freight Claims.*—Continuation by some central authority having jurisdiction over all railroad systems of the effective campaign for the prevention and the prompt disposition of freight claims which has been initiated and is now being prosecuted by the Railroad Administration.

10. *Safety Work.*—Continuation by some central authority having jurisdiction over all railroad systems of the campaign for safety which has been initiated and is now being carried forward by the Railroad Administration.

11. *Public Service Work.*—The establishment by each railroad corporation of some Division or Agency charged with the duty of giving consideration to the point of view of the public in rate and service matters and of seeing to it that complaints from the public receive prompt, courteous and considerate attention.

The Accomplishments of the United States Railroad Administration in Unifying and Standardizing the Statistics of Operation

By WILLIAM J. CUNNINGHAM

Assistant Director of Operation, United States Railroad Administration[1]

THE standardization of statistics of operation, which has been brought about by the centralized control of the United States Railroad Administration, was intended primarily to aid the Director General and his staff, the Regional Directors, and the Federal Managers of the individual railroads, in keeping closer check on the efficiency of operation, as measured by units of transportation, equipment utilization and operating costs. Railroad officers, as a whole, now know more than they knew before about the details of the operation of their own properties, and they now know very much more than they knew before about their relative performance in comparison with neighboring roads. The publication of the monthly summaries by roads and by regions makes possible easy comparison of the results on one road with those of other roads operating under similar conditions, and enables each Regional Director to measure the efficiency of his region with that of neighboring regions without uncertainty or qualification as to bases and methods.

The value of the information made available by the new plan is not confined to railroad managers. The published summaries have opened up to the public regulating authorities, economists, investors and other students of transportation, a wealth of data which heretofore have not been available in comprehensive form or on uniform bases. This phase of the subject is of interest to the readers of The Annals, and it will be largely from this viewpoint that the following description of the plan, and the discussion of its underlying principles, will be undertaken.

STATISTICAL REQUIREMENTS OF THE INTERSTATE COMMERCE COMMISSION

At this point it is important to draw attention to the fact that the Interstate Commerce Commission in its classifications of

[1] Professor of Transportation, Harvard University, on leave of absence.

revenues and expenses has made very little provision for statistics of operation. The emphasis throughout all of the classifications, and in the data required in the annual report, has been placed upon the features of finance and public service. By combinations of the statistics of transportation production, (ton-miles and passenger-miles) with statistics of train-, locomotive-, and car-mileage, it is possible to derive a few statistical units, such as the average net freight train-load, the passengers per train-mile, the tons per loaded freight car-mile, and the passengers per passenger car-mile. It is possible also to derive a few unit costs for the transportation service *as a whole*, but, generally speaking, the annual report form of the Commission does not provide sufficient data for the purposes of the analyst of operating efficiency.

This comment is not intended as a criticism. The standardization of railroad accounting is one of the noteworthy achievements of the Interstate Commerce Commission. It meets the requirements of the original Act to Regulate Commerce, and of its amendments. Section 20 of that Act, as amended, instructs the Commission to provide for "a uniform system of accounts and the manner in which such accounts shall be kept" and especially refers to

> capital stock issued, the amounts paid therefor, and the manner of payment for the same; the dividends paid, the surplus fund, if any, and the number of stockholders; the funded and floating debts and the interest paid thereon; the cost and value of the carrier's property, franchises, and equipments; the number of employees and the salaries paid each class; the accidents to passengers, employees, and other persons, and the causes thereof; the amounts expended for improvements each year, how expended, and the character of such improvements; the earnings and receipts from each branch of business; the balances of profit and loss; and a complete exhibit of the financial operations of the carrier each year, including an annual balance sheet. Such reports shall also contain such information in relation to rates or regulations concerning fares or freights, or agreements, arrangements, or contracts affecting the same as the Commission may require . . .

The absence of any reference to statistics which reflect the degree of operating efficiency is apparent. The viewpoint is that of protection of those who pay the freight, those who travel, and those who invest their money in railroad securities. The uniform system of accounts, therefore, does not include within its scope any standards of cost accounting nor any indices (in detail) of

managerial efficiency, except those which are reflected by the totals of the income account, the balance sheet, and the profit and loss account.

In the absence of required standards, the railroads continued and developed their own statistical systems individually, and there grew to be wide divergencies in practice, ranging from an almost entire absence of statistics other than those required by the Commission, to elaborate cost accounting and efficiency data. There was no uniformity, either as to the general scope of operating statistics or as to the methods or bases. Each railroad evolved its own statistical standards according to its own conception of what was necessary or desirable, and in each case the system, to a large extent, was a reflex of the interest taken personally in the figures by those in managerial authority. It was, therefore, extremely difficult for one road to compare its operating statistics with those of its neighbors, as there was seldom any assurance that the units bearing the same title really meant the same thing. For example, in the important feature of freight car utilization, Road A would compute its "Average miles per car-day" by including every freight car on its lines; Road B would exclude cars stored; Road C would exclude cars held under repairs or awaiting repairs as well as those stored. Some roads took count of the cars on the line once every month and used that as the divisor. Others took the average of two or four counts per month. Others took the daily average. In practically every unit of performance there were variations in practice which prevented comparisons without qualifications of some kind.

Under pre-war conditions, when each road or system was operated as an independent unit, this lack of standardization was not highly important. When, however, the roads were taken over by the government, and operation was begun as a single system under centralized management, this lack of statistical standardization was extremely embarrassing. For the purposes of intelligent control, centrally and by regions, a standardized plan was vital.

STANDARDIZATION BY UNITED STATES RAILROAD ADMINISTRATION

The Operating Statistics Section of the United States Railroad Administration was created on May 6, 1918, as a part of the Division of Operation, and instructed to "arrange for, and

supervise, the making of standardized reports and statistics pertaining to the maintenance and operation of railroads under Federal control, and to make such compilations of statistics as may be required."

The first work of the section was to design the standard forms. The aim was to continue the best in current practice, and at the same time to avoid placing too great a burden on the roads which had not been progressive in that respect. An effort was made to utilize all of the basic data required by the annual report forms of the Interstate Commerce Commission, and to superimpose upon that structure the additional information considered essential to a scientific exhibit of the more important phases of physical performance. The plan, as promulgated in August, 1918, did not completely embrace its intended scope, (as it was the intention to go into the details of maintenance of way and equipment, and into certain further details of transportation expenses) but the initial requirements are scientifically comprehensive without being carried so far toward the ideal as to be impracticable or unjustifiably burdensome.

LIST OF REGULAR MONTHLY REPORTS

Form 1, Freight Train Performance. This form calls for train-miles, locomotive-miles, car-miles, gross ton-miles, rating ton-miles, net ton-miles, train-hours, and the following averages and ratios (separately by directions):

Ratio of locomotive-miles to train-miles
Car-miles per train-mile (loaded, empty and total)
Gross ton-miles per train-mile
Rating (potential) ton-miles per train-mile
Net ton-miles per train-mile
Average speed in train-miles per train-hour
Gross ton-miles per train-hour
Net ton-miles per train-hour
Net ton-miles per loaded car-mile
Per cent loaded car-miles to total car-miles
Per cent net ton-miles to gross ton-miles
Per cent actual gross ton-miles to potential gross ton-miles

Form 2, Passenger, Mixed and Special Train Performance. This form calls for less detail than the report on freight train performance, as the passenger service does not lend itself so readily

to statistical control. Freight trains, with certain exceptions, are not run unless there are sufficient cars awaiting movement to make up full train-loads. The passenger service, on the other hand, is practically fixed by the public time-table, and the trains are run regardless of the fluctuations in the number of passengers. The superintendent has little control over the minimum passenger train service, although he can regulate the use of extra cars or extra trains. Form 2 provides for train-mileage, locomotive-mileage, and car-mileage, separated by classes of cars. The statistics are reported separately for passenger trains, mixed trains and special trains. The averages and ratios for passenger trains are:

Ratio of locomotive-miles to train-miles
Car-miles per train-mile
- Passenger cars
- Sleeping, parlor, and observation cars
- Dining cars
- Other passenger train cars
- Total

Form 3, Locomotive Performance. This report calls for statistics of performance and of fuel consumption of freight, passenger and yard switching locomotives. From the basic information are derived the following averages or ratios:

FREIGHT SERVICE

Gross ton-miles per locomotive-mile
Net ton-miles per locomotive-mile
Locomotive-miles per locomotive-day, serviceable locomotives
Locomotive-miles per locomotive-day, all locomotives
Net ton-miles per locomotive-day, all locomotives
Per cent of unserviceable locomotives
Pounds of coal per locomotive-mile
Pounds of coal per 1000 gross ton-miles

PASSENGER SERVICE

Car-miles per locomotive-mile
Locomotive-miles per locomotive-day, serviceable locomotives
Locomotive-miles per locomotive-day, all locomotives
Per cent of unserviceable locomotives
Pounds of coal per locomotive-mile
Pounds of coal per car-mile

YARD SWITCHING SERVICE

Locomotive-miles per locomotive-day, serviceable locomotives
Locomotive-miles per locomotive-day, all locomotives
Per cent of unserviceable locomotives
Pounds of coal per locomotive-mile

Form 4, Distribution of Locomotive Hours. This is an entirely new report which calls for the total number of locomotive-hours and their distribution by classes, (freight, passenger, yard switching and others) and a complete record of the hours spent on the road between terminals, the hours spent at terminals before beginning and after completing the road run, the hours spent in the enginehouse, and the hours spent in the shop or awaiting repairs. The aim is first to separate the serviceable from the unserviceable locomotives, and then, for each class of service, to show the division of serviceable locomotive time between hours devoted to the production of train-miles and hours of unproductive time.

Form 5, Freight Traffic Movement and Car Performance. This form provides an exhibit of the total volume of freight traffic and of freight car efficiency, and shows the average number of cars on the road daily (separated between serviceable and unserviceable), the net ton-miles, the train-miles, and the car-miles. It includes the statistics of mixed trains as well as those of freight trains. (Form 1 is confined exclusively to freight trains.) The averages follow:

Net ton-miles per mile of road per day
Net ton-miles per train-mile
Per cent of cars on line to cars owned
Per cent of cars in or awaiting shop to total on line
Net tons per loaded car-mile
Per cent of loaded car-miles to total car-miles
Car-miles per car-day
Net ton-miles per car-day

Forms 1 to 5, inclusive, relate entirely to what is termed physical performance. The dollar mark does not appear on any of the five forms. Consequently they are independent of the expenditure accounts. The distinction is important from the viewpoint of early availability. The accounts relating to expenditures ordinarily are not closed until the 20th to the 24th of the month following that to which the figures apply, and the complete income

account ordinarily is not available until the 25th. The physical performance statistics, however, are based in greater part on the conductors' train reports. Those which do not come from the train reports are taken from other records of the operating department which are available a few days after the close of the month. Consequently it is possible to complete the reports of physical performance fifteen days after the close of the month, and the statistics are available at least ten days before those which relate to cost. It is highly important that the figures shall be in the hands of the supervising officers at the earliest possible date.

The underlying theory of the five forms is that the operating department is charged with a given number of locomotive-days and car-days, and is credited with its production in ton-miles or passenger car-miles. The production in ton-miles and passenger car-miles, in turn, is related to the operating department's expenditure in train-miles, locomotive-miles, and car-miles, and the supplementary statistics throw light on the components of the train-load and the car-load, as well as upon the effect of changes in the nature of the commodities handled, in the balance of traffic, in the proportion of fast and way-freights, and in other physical, traffic and operating features. The desiderata are that each locomotive and car should be employed to its capacity, and should produce the maximum of ton-miles with the minimum of train-, locomotive- and car-miles. The statistics show clearly the relation between the ton-mile production and the utilization of equipment, and the relation between the actual and potential train production. The physical performance statistics are compared at a later date with the cost statistics provided by Forms 6 and 7. These two forms are due to be completed on the 30th day of the month following that to which the figures apply.

Form 6, Locomotive and Train Costs. This report deals with the direct or "out-of-pocket" costs—those which are directly related to train-, locomotive- and car-performance. They require a separation of these primary expense accounts according to the Interstate Commerce Commission's "Rules governing the Separation of Operating Expenses between Freight Service and Passenger Service."

The basic data are reported separately for freight service and passenger service and separately for:

Locomotive repairs
Enginehouse expenses
Enginemen
Trainmen
Locomotive fuel
Other locomotive supplies
Train supplies and expenses

For the freight service the unit costs are expressed in:

Cost per locomotive-mile
Cost per train-mile
Cost per 1000 gross ton-miles

For the passenger service, they are shown as:

Cost per locomotive-mile
Cost per train-mile
Cost per passenger train car-mile

Form 7, Condensed Income Account and Operating Expenses by Primary Accounts. This form is a copy of the condensed income account and the primary expense accounts of the Interstate Commerce Commission, with certain re-arrangement and grouping to provide sub-totals of the primary expense accounts which adapt themselves to operating statistical requirements. A summary is provided to show the operating ratio divided between the seven general accounts of the Interstate Commerce Commission classification.

Form 8, Freight and Passenger Revenue Statistics. This report (which is due on the 10th day of the second month following that to which the figures apply) requires in monthly form most of the revenue statistics called for annually by the Interstate Commerce Commission. From the basic information the following units are derived and are used as supplementary data in the analysis of operating results:

Miles per ton, revenue freight (average haul)
Revenue per ton, revenue freight
Revenue per ton-mile, revenue freight
Revenue per freight train-mile
Revenue per loaded freight car-mile
Miles per passenger (average journey)
Passengers per train-mile
Passengers per passenger-carrying car-mile
Passenger revenue per passenger

Passenger revenue per passenger-mile
Total revenue per passenger train-mile
Passenger revenue per passenger-carrying car-mile.

SOME DISTINCTIVE FEATURES OF THE NEW PLAN

The foregoing will give a general idea of the scope of the plan. Attention will now be directed to some of its distinctive features. The principal innovations appear in the statistics of freight train operation, as that field contains the largest possibilities of statistical control and had the greatest need of harmonizing divergencies in statistical practice.

Gross Ton-Miles

At the outset it was decided that gross ton-miles are absolutely essential. They represent the product of the gross weight (tons of 2000 lbs.) of the train behind the tender, and the miles moved. Gross ton-miles are the superintendent's transportation product, against which his costs may be measured. All of the gross load is not paying freight. The paying freight is represented by the net ton-miles. Any complete statistical plan requires both sets of figures.

The compilation of gross ton-miles had been common west of the Mississippi River for many years, and to a smaller extent this was true also of certain important roads in the south. Such statistics, however, were not common in the east, although the tendency was toward recognizing their value.

Rating Ton-Miles

The compilation of rating ton-miles was confined to a very few railroads. Rating ton-miles are the potential ton-miles which would have been produced had all trains been loaded to 100 per cent of the slow freight rating for normal summer weather, taking account of changes in the locomotive ratings over sections of the train run. It is customary to determine, and to publish as the tonnage rating of each class of each locomotive, what each class of locomotive is capable of hauling over each run or each section of a run when there are differences in the gradients to be overcome. It was decided that this information is vital to a scientific analysis of train loading efficiency, as the ratio of the actual gross ton-miles to the potential gross ton-miles gives the

percentage of train loading efficiency. The general manager of a railroad may fairly hold his superintendents responsible for a satisfactory ratio of actual to potential, the performance in every case to be interpreted in the light of other related statistics, such as the train speed and the ratio of net ton-miles to gross ton-miles. In the very nature of things the superintendent can seldom make a perfect performance of 100 per cent. His traffic will not be evenly balanced by directions, he must run some fast-freights and way-freights with less than the full tonnage required by the slow freight tonnage rating, and the weather conditions are not always ideal.

Net Ton-Miles from the Train Reports

The net ton-miles are the product of the tons of freight in the train and the miles they are moved. The net ton-miles represent the paying part of the gross load. From the viewpoint of management the net load is more important than the gross load, as the revenues follow the net tons although the expenses follow the gross tons. It is important, then, to know the ratio of net ton-miles to gross ton-miles. That ratio is influenced by the car-load, which, in turn, is influenced by the fluctuations in the relative proportions of low-grade freight and high-grade freight. The former moves in bulk in full car-loads; the latter moves in relatively light car-loads. The ratio of net ton-miles to gross ton-miles is influenced also by the fluctuations in the empty car movement.

The net ton-miles reported on Forms 1 and 5 are computed from the conductors' train reports which among other things show the car numbers and initials, the weight of contents, the gross weight, and the points between which moved. Except in a very few isolated cases (where the value of the statistics had been recognized) net ton-miles were not available until the latter part of the second month, that is to say, the net ton-miles for January would not be complete until March 15th to March 25th. The information was taken from the waybills, the source of freight revenue statistics, and the delay in the settlement of interline waybills prevented an earlier closing of the revenue accounts. As a consequence the net ton-miles were received so late that they did not provide a satisfactory basis for the computation of train loading and car loading statistics.

Another objection applied to waybill ton-miles as a measure of train- and car-performance. Ton-miles computed from the waybills rarely corresponded with the tons actually moved during the period for which the train-miles were reported, because of the delay in taking the interline waybills into account. There was always a "lap-over" of interline waybill ton-miles omitted from the preceding period, and a shortage of interline waybill ton-miles produced in the current period but not taken into account until the next period. In theory the "lap-over" should have balanced the shortage, but in actual practice the discrepancy was often so great as to invalidate waybill tonnage as a measure of train performance for any particular month.

It was decided, therefore, to require that the net ton-miles, like the gross ton-miles, the train-miles, the locomotive-miles, the car-miles and the train-hours, should be computed from the train reports. All of the basic data, then, would come from the same source. This insures the comparability of all these related data, and definitely allocates the transportation product to the particular period under review. Steps were taken later to utilize the train report ton-miles for revenue accounting and statistical purposes, and to discontinue the computation of waybill ton-miles except in certain states which require a separation of ton-miles between interstate and intrastate.

It may occur to the minds of those who are interested in ton-mile statistics purely from the viewpoint of revenue and public service that the substitution of the statistics from the train reports may be less accurate than those from the waybills, and that the use of train report ton-miles as a divisor into freight revenue may affect the integrity of the important unit "Revenue per ton-mile." There is, however, no cause for apprehension on that score, as experience has shown that differences in the two sets of statistics are so small as to be negligible. A comparison of the net ton-miles from the waybills (before that basis was discontinued) with those taken from the train reports, shows that for all railroads for five months the variation was but 0.8 per cent. In this test the effect of the "lap-over" items is nullified because they are spread over a period of five months. The variation would be greater in the comparison of a single month.

THE TIME ELEMENT IN OPERATING STATISTICS

The importance of the time element in operating statistics had not generally been recognized. The majority of railroad men and financiers, are accustomed to think in terms of train load- ton-miles per train-mile. Relatively few have been accustomed to think in terms of ton-miles per train-hour. The latter, however, is the better index to efficiency. The train-load, by itself, takes no account of speed. Ton-miles per train-hour are the resultant of load and speed. It is analogous to the horsepower unit. It combines in itself the net effect of the operating policy between the two extremes of loading the locomotive to every ton it can drag at low speed over the ruling grade, and of sacrificing tonnage in order to make the trip quickly. There is always a critical point between the two extremes which under normal conditions will produce the maximum of ton-miles per train-hour at the minimum cost per ton-mile.

To illustrate: assume that on a given run there are sections of 1 per cent grade over which a given type of locomotive can haul 1,500 gross tons (tons of car and lading combined) at a speed of six miles per hour on these maximum grades. The speed on other sections, of course, will be greater, but we will assume that, with a normal allowance for road delays, the run of 100 miles may be made in 10 hours. At that speed the production would be 15,000 gross ton-miles per train-hour (train-load of 1,500 gross tons times train-speed of 10 miles per hour). As the train- and engine-crews are on an eight-hour day basis, they would be paid overtime for two hours. (It is unnecessary here to go into the technicalities of the wage schedules which provide that mileage rates apply unless the miles per hour in freight service are less than 12.5, in which case hourly rates, based on 12.5 miles per hour, apply.) In this case it may be found that a reduction in the tonnage rating to 1,350 tons would permit an increase in the speed and reduce the trip hours to 8, or an average speed of 12.5 miles per hour. This combination of train-load and train-speed will produce 16,875 gross ton-miles per train-hour. The ton-mile production *per train-hour* is thereby increased from 15,000 to 16,875, and the cost per ton-mile is decreased because of the elimination of overtime. In this assumed case it is plain that the 1,500 ton rating is

uneconomical. In the great majority of cases it may not be clear whether there would be any real economy in decreasing the load to increase the speed. These principles are ordinarily considered when the tonnage ratings are established, and it is the intention that they shall be set at a maximum which will not prevent the trains from moving at economical speed.

In order to provide for the time element in operating statistics, the compilation of freight train-hours was required. Form 1 show these basic data as well as gross ton-miles and net ton-miles per train-hour. It is possible, therefore, to trace the relationship between increases or decreases in the train-load and increases or decreases in the train-speed, and to note the combined effect in ton-miles per train-hour. The fluctuations in ton-miles per train-hour may, in turn, be compared with fluctuations in the cost per gross ton-mile, reported on Form 6.

The time element has recognition also in Form 5, which shows as the final and inclusive unit of freight car efficiency, "Net ton-miles per car-day." This unit is the resultant of three factors:

1. Average ton-miles per loaded car-mile
2. Per cent of loaded car-miles to total car-miles
3. Average car-miles per car-day.

If, for example, the car-load is 30 net tons, the per cent of loaded to total car-miles is 70 per cent, and the car-miles per car-day are 30, the net ton-miles per car-day are 630 (car-load—30 tons—multiplied by per cent of loaded cars—.70—multiplied by car-miles per car-day—30). An improvement in any one factor favorably influences the inclusive unit; a loss in any one factor adversely affects it. If a campaign of intensive car loading brings about an increase of 10 per cent in the car-load, to 33 net tons, but also causes a slowing up in car movement of 10 per cent, to 27 miles per day, the road is no better off. In fact there is a slight loss, as the ton-miles per car-day will be 624 instead of 630. If, further, the heavier car loading increases the empty car movement, and thereby decreases the per cent of loaded car-miles to total car-miles, say to 67 per cent instead of 70 per cent, the inclusive unit —ton-miles per car-day—will suffer a further loss—597 instead of 630. The interrelation of these factors is often overlooked. From the single viewpoint of car performance there is no advan-

tage in improving one factor if it is done at the expense of either or both of the other two factors.

It should be noted, however, that one factor in this composite unit is practically constant from the viewpoint of the roads as a whole. The total number of freight cars varies but slightly from month to month. It is affected only by additions through the purchase of new cars, by the retirement of old cars, and by the fluctuations in the daily number of cars belonging to private car lines and Canadian roads. These changes are relatively slight in their effect on the total, so that it may be said that the net ton-miles per car-day for the roads as a whole will fluctuate almost directly with increases or decreases in the volume of freight traffic. This is not so true of individual roads which have some control over the cars on their lines. In periods of thin traffic, each road endeavors to reduce its number of cars belonging to other roads. This has a tendency to shift the balance of surplus cars as between railroads and regions, but, of course, has no effect on the grand total.

In one other notable particular, the new plan recognizes the prime importance of the time element, that is in locomotive utilization. Heretofore, there were no complete data to show the distribution of the hours in the locomotive day. Form 4 contains the most radical elaboration of orthodox statistical practice, as it provides for the division of serviceable locomotive time between that spent in productive road service, that spent at terminals "standing by" both before and after the road run, and that spent in the enginehouse between trips. The latter item is sub-divided further to show how much of the time the locomotive is undergoing repairs or receiving other attention at the hands of the mechanical department forces, and how much of the time it remains idle in the enginehouse awaiting call from the transportation department.

An examination of the details of the hours of serviceable locomotives is facilitated by the requirement that the hours under each subdivision on the report shall be expressed also in percentages of total serviceable locomotive hours. Thus it is easy to compare the percentage of time on the road, at terminals and in enginehouses. When traffic is heavy it is desirable, of course, to show a high percentage of time in productive road service, and to

take steps to control the unproductive hours at terminals and in enginehouses. When traffic is subnormal, it is inevitable that the time in the enginehouse (or as stored locomotives) will increase, but there is the same necessity for watching terminal time, as the crews are paid for the hours "standing by" at the same rate as on the road. The percentages, of course, show wide variations as between roads, reflecting differences in traffic conditions, in physical facilities, and in the policy of locomotive assignment—whether to single crews, double crews, multiple crews or to pooled crews. It is not safe to draw general conclusions from the figures alone without first hand information as to local conditions.

No attempt has been made by the Railroad Administration thus far to use the statistics for road-by-road comparisons. The figures, as reported, are summarized and published, but as comparisons with the preceding year will not be possible until the October, 1919, reports are received, the full value of the report for comparative purposes will not be apparent until the full year has elapsed. But even without the last year comparison the figures for the first year have been of value, as they give a clear picture which localizes the extent of the non-use of power. There is force to the assertion that under existing conditions, with a surplus of locomotives, the value of the data is not as great as when there is a shortage of power. The continuation of the record, however, provides a bench-mark for comparisons of future performance, and will have an educative value as all concerned learn to appreciate the full significance of the figures. The low percentage of time on the road will surprise many who have little conception of what it really is. The high percentage of time at terminals (in certain instances) will throw light on overtime payments. The data should be of importance to supervisory or executive officers in passing upon recommendations for the purchase or transfer of power, or as to the necessity for improvements at terminals and enginehouses.

The requirements of Form 4 brought some protests from roads which had no statistics of distribution of locomotive-hours, and which consequently were put to some additional expense in compiling the figures. The answer of the Railroad Administration was that while it recognized the difficulties which lie in increasing the percentage of hours on the road in productive service, yet it

maintained that effective remedial measures may not be applied without a complete knowledge of the facts, not from casual observation or off-hand statements, but from a current and comprehensive record.

It is pertinent at this point to refer to one feature which is subject to misunderstanding, and concerning which the United States Railroad Administration has been criticized. Prior to federal control, the Railroads' War Board inaugurated a monthly *Summary of Freight Operation* which among other statistics, showed what was termed, "Per cent of freight locomotives in shop or awaiting shop." No clear definition was given, but it was generally understood by the reporting carriers to apply only to the locomotives held out of service for general or classified repairs, which are made in the general shops, and was not meant to embrace locomotives held out of service for running repairs or other light repairs which in most cases are made in the engine-houses, although often made in the general shops.

Under federal operation the monthly summary above referred to was continued without change in basis until October, 1918, when the standardized statistics became fully effective. Under the new plan, the policy is to hold the operating department to a high standard in locomotive utilization, and the dividing line between serviceable and unserviceable locomotives was set at those which are held 24 hours or more for repairs of any kind, whether running repairs or classified repairs. The record is kept on an hourly basis, and the average number of unserviceable locomotives per month is obtained by dividing the monthly aggregate hours of locomotives held 24 hours or more for repairs, by the total hours in the month. This change in method naturally brought about an apparently large increase in the percentage of unserviceable locomotives. The percentage (in freight service) on the last report on the old basis (September, 1918) was 14.8 per cent. On the first report on the new basis (October, 1918) it is shown as 25.1 per cent. Actually there was practically no difference in the condition of the locomotives in the two consecutive months. The difference is due entirely to the change in basis which was made under war conditions with a view to showing conditions in their worst light so that all concerned might be impressed with their responsibility for keeping locomotives employed to their

maximum productive capacity. The use of the word "unserviceable" is somewhat strained, as it is not fairly accurate (although technically correct) to say that a locomotive which is held 24 hours for an hour's repairs, is "unserviceable." Yet the line had to be drawn definitely, and it was set at 24 hours delay for repairs of any kind.

As already stated the Administration has been criticized because its reports for July, 1919, show 27.2 per cent of freight locomotives unserviceable, while the July, 1918, report on the Railroads' War Board basis shows the percentage as 14.1 per cent. Practically all of the difference is due to the change in basis. The current summaries now bear the footnote:

> The factor of "unserviceable locomotives" here used is a factor designed to be correlated with performance in transportation and is not designed to reflect and does not reflect the physical condition of the equipment. The factor reflects not merely the need for repairs but also the extent of delay in obtaining the repairs; and does this not merely with respect to classified repairs, the need for which implies actual disability in the equipment, but also with respect to running repairs for which locomotives are held 24 hours or more. To ascertain the physical condition of the equipment reference should be made to the locomotives in shop or awaiting shop for classified repairs.

Separation of Freight Train Statistics by Directions

On Form 1 all of the basic information and all of the averages or ratios are shown separately by directions—east, west and total. Where the movement of traffic as a whole is not east and west, it may be shown as north and south, or branches which run north or south may be combined with east or west according to traffic movement. The requirement of separation by direction is designed to throw light on the effect of unbalanced traffic, and to permit a separate analysis of the performance in each direction. Such an analysis is essential to an accurate determination of the effect of fluctuations by directions.

Freight traffic usually is unbalanced. There is usually what is called the "direction of prevailing traffic," although with seasonal or other traffic fluctuations it may alternate between east and west. Ordinarily it is unnecessary to pay much attention to train loading in the light direction, as the locomotives and crews in the direction of heavy traffic must be returned in the light direction with little regard to train loading. It may be, however, that the

grades are easy in the direction of traffic and are heavy in the opposite direction. In that case it is probable that the train loading in the direction of light traffic requires the greatest supervision. In one specific case the westward gross tons normally are from 55 per cent to 65 per cent of the eastward gross tons, but the heaviest grades are against the westward movement. For a given type of locomotive the eastward rating is 2,000 gross tons; westward it is 1,200 tons, or 60 per cent of the eastward rating. It is plain, then, that in this case the eastward direction is controlling so long as the westward gross tons are not more than 60 per cent of the eastward gross tons. When it exceeds 60 per cent, it is the westward movement which controls the number of locomotives and crews.

This instance will illustrate the importance of the required separation in the statistics of traffic, of train-, locomotive-, and car-mileage, and of train-hours. Heretofore, its importance has been recognized in the statistical practice of but very few railroads.

ACTUAL FIGURES FROM ONE REPORT.

Space will not permit the reproduction of all of the forms and summaries. A single example will suffice to show the design of one form, and to illustrate the completeness of the data pertaining to freight train operation. The report herein reproduced contains the actual figures of one railroad on Form 1 for the month of May, 1919, compared with May, 1918. In this case the road had unusually complete statistics for 1918, and was able to adapt its records to fit the comparative requirements of the new report.

In analyzing this report we note first that the gross ton-miles show a decrease of 20.4 per cent. This change in the actual gross production should be compared with the potential. The rating ton-miles show a decrease of 21.5 per cent. This comparison indicates an improvement in loading to the locomotive rating. A glance at Item 14 shows an increase of 1.4 per cent in the per cent of actual to potential. We note further, however, that the improvement occurred wholly in westward movement. The eastward performance shows a decrease in loading efficiency. The details by directions, under Items 5 and 6, show that the traffic is unbalanced, the prevailing direction being eastward. The

To be mailed, on or before 15th of following month, to Operating Statistics Section, Division of Operation, U. S. Railroad Administration, Washington, D. C.

UNITED STATES RAILROAD ADMINISTRATION
DIRECTOR GENERAL OF RAILROADS

Form OS-1
Page 1 of 2 pages
(Revised Feb. 1-19)

A. B. & C. RAILROAD
(Name of reporting carrier)

FREIGHT TRAIN PERFORMANCE

(Not including mixed, special, or motor car trains)

Month of MAY, 1919, compared with same month of previous year.

Increase, black
Decrease, red.

ITEM	MONTH OF MAY		INCREASE OR DECREASE	
	THIS YEAR	LAST YEAR	AMOUNT	PER CENT
1. (a) Average miles of road operated (*Note A*)	3,563.2	3,561.2	2.0	.1
(b) Average miles other main tracks operated (*Note A*)	25.3	25.3		
2. Train miles (*Note B*):				
(a) East	181,796	261,469	d 79,673	d 30.5
(b) West	177,465	244,537	d 67,072	d 27.4
(c) Total	359,261	506,006	d 146,745	d 29.0
3. Locomotive miles (*Note B*):				
(a) Principal and helper, east	190,174	280,199	d 90,025	d 32.1
(b) Principal and helper, west	184,121	259,802	d 75,681	d 29.1
(c) Total principal and helper, east and west	374,295	540,001	d 165,706	d 30.7
(d) Light, east	2,195	3,057	d 862	d 28.2
(e) Light, west	6,431	16,349	d 9,918	d 60.7
(f) Total light, east and west	8,626	19,406	d 10,780	d 55.5
(g) Grand total, east and west	382,921	559,407	d 176,486	d 31.5
4. Car miles (*thousands*) (*Note B*):				
(a) Loaded, east	6,030	7,836	d 1,806	d 23.0
(b) Loaded, west	3,058	2,845	213	7.5
(c) Loaded, total	9,088	10,681	d 1,593	d 14.9
(d) Empty, east	704	856	d 152	d 17.8
(e) Empty, west	3,237	4,144	d 907	d 21.9
(f) Empty, total	3,941	5,000	d 1,059	d 21.2
(g) Caboose, east	186	281	d 95	d 33.8
(h) Caboose, west	183	263	d 80	d 30.4
(i) Caboose, total	369	544	d 175	d 32.2
(j) Total, east	6,920	8,973	d 2,053	d 22.9
(k) Total, west	6,478	7,252	d 774	d 10.7
(l) Grand total	13,398	16,225	d 2,827	d 17.4
5. Gross ton miles (*thousands*) (*Note C*):				
(a) East	267,713	362,186	d 94,473	d 26.1
(b) West	182,302	202,915	d 20,613	d 10.2
(c) Total	450,015	565,101	d 115,086	d 20.4
6. Rating ton miles (*thousands*) (*Note D*):				
(a) East	299,506	399,123	d 99,617	d 25.0
(b) West	268,963	324,897	d 55,934	d 17.2
(c) Total	568,469	724,020	d 155,551	d 21.5
7. Net ton miles (*thousands*) (*Note E*):				
(a) East	128,001	184,919	d 56,918	d 30.8
(b) West	55,322	60,429	d 5,107	d 8.5
(c) Total	183,323	245,348	d 62,025	d 25.3
8. Train hours (*Note F*):				
(a) East	16,029	22,970	d 6,941	d 30.2
(b) West	16,126	20,385	d 4,259	d 20.9
(c) Total	32,155	43,355	d 11,200	d 25.8

NOTES

(A) Miles of road—miles of first running track. Miles other main tracks—miles of second, third, fourth, or other multiple running tracks, not including yard tracks and sidings.

(B) Follow "Classification of train miles, locomotive miles, and car miles," Interstate Commerce Commission, July 1, 1914. Include electric locomotive trains, but exclude mixed, special, and motor car trains. Train miles—Account 801, both ordinary and light; locomotive miles—Account 811; car miles—Account 821. Where movement of traffic as a whole is not east and west, substitute north for east and south for west, or combine north and south with east and west according to traffic movement.

(C) Gross ton miles—tons of 2,000 lbs. behind locomotive tender (cars, contents, and caboose) moved one mile; to be computed from conductors' train reports. Include electric locomotive trains, but exclude mixed, special, and motor car trains.

(D) Rating ton miles—the potential gross ton miles which would have been produced had all trains been loaded to 100 per cent of the slow freight rating for normal weather conditions, taking account of changes in rating over sections of the run. When the potential train load in the direction of favoring grades is now expressed in number of cars an arbitrary tonnage rating should be used as the basis for Item 6.

A. B. & C. RAILROAD
(Name of reporting carrier)

FREIGHT TRAIN PERFORMANCE

(Not including mixed, special, or motor car trains)

Month of MAY, 1919, compared with same month of previous year.

Increase, black.
Decrease, red.

ITEM	MONTH OF MAY		INCREASE OR DECREASE	
	THIS YEAR	LAST YEAR	AMOUNT	PER CENT
AVERAGES				
9. Per freight train mile:				
(a) Locomotive miles, east (*excl. light*) ..(3a+2a)	1.046	1.072	d .026	d 2.4
(b) Locomotive miles, west (*excl. light*) ...(3b+2b)	1.038	1.062	d .024	d 2.3
(c) Locomotive miles, total (*excl. light*) ...(3c+2c)	1.042	1.067	d .025	d 2.3
(d) Loaded car miles, east.....(4a+2a)	33.2	30.0	3.2	10.7
(e) Loaded car miles, west.....(4b+2b)	17.2	11.6	5.6	48.3
(f) Loaded car miles, total.....(4c+2c)	25.3	21.1	4.2	19.9
(g) Empty and caboose car miles, east (4d+4g)+2a	4.9	4.3	.6	14.0
(h) Empty and caboose car miles, west (4e+4h)+2b	19.3	18.0	1.3	7.2
(i) Empty and caboose car miles, total (4f+4i)+2c	12.0	11.0	1.0	9.1
(j) Total car miles, east.....(4j+2a)	38.1	34.3	3.8	11.1
(k) Total car miles, west.....(4k+2b)	36.5	29.7	6.8	22.9
(l) Total car miles, total.....(4l+2c)	37.3	32.1	5.2	16.2
(m) Gross ton miles, east.....(5a+2a)	1,472.6	1,385.2	87.4	6.3
(n) Gross ton miles, west.....(5b+2b)	1,027.3	829.8	197.5	23.8
(o) Gross ton miles, total.....(5c+2c)	1,252.6	1,116.8	135.8	12.2
(p) Rating ton miles, east.....(6a+2a)	1,647.5	1,526.5	121.0	7.9
(q) Rating ton miles, west.....(6b+2b)	1,515.6	1,328.6	187.0	14.1
(r) Rating ton miles, total.....(6c+2c)	1,582.3	1,430.9	151.4	10.6
(s) Net ton miles, east.....(7a+2a)	704.1	707.2	d 3.1	d .4
(t) Net ton miles, west.....(7b+2b)	311.7	247.1	64.6	26.1
(u) Net ton miles, total.....(7c+2c)	510.3	484.9	25.4	5.2
10. Per freight train hour:				
(a) Train miles, east (*speed in miles per hour*) (2a+8a)	11.3	11.4	d .1	d .9
(b) Train miles, west (*speed in miles per hour*).....(2b+8b)	11.0	12.0	d 1.0	d 8.3
(c) Train miles, total (*speed in miles per hour*).....(2c+8c)	11.2	11.7	d .5	d 4.3
(d) Gross ton miles, east.....(5a+8a)	16,701.8	15,767.8	934.0	5.9
(e) Gross ton miles, west.....(5b+8b)	11,304.8	9,954.1	1,350.7	13.6
(f) Gross ton miles, total.....(5c+8c)	13,995.2	13,034.3	960.9	7.4
(g) Net ton miles, east.....(7a+8a)	7,985.6	8,050.5	d 64.9	d .8
(h) Net ton miles, west.....(7b+8b)	3,430.6	2,964.4	466.2	15.7
(i) Net ton miles, total.....(7c+8c)	5,701.2	5,659.0	42.2	.7
11. Net ton miles per loaded car mile:				
(a) East.....(7a+4a)	21.2	23.6	d 2.4	d 10.2
(b) West.....(7b+4b)	18.1	21.2	d 3.1	d 14.6
(c) Total.....(7c+4c)	20.2	23.0	d 2.8	d 12.2
12. Per cent loaded to total car miles (*excl. caboose*):				
(a) East.....4a+(4a+4d)	89.5	90.2	d .7	d .8
(b) West.....4b+(4b+4e)	48.6	40.7	7.9	19.4
(c) Total.....4c+(4c+4f)	69.8	68.1	1.7	2.5
13. Per cent net ton miles to gross ton miles:				
(a) East.....(7a+5a)	47.8	51.1	d 3.3	d 6.5
(b) West.....(7b+5b)	30.3	29.8	.5	1.7
(c) Total.....(7c+5c)	40.7	43.4	d 2.7	d 6.2
14. Per cent gross ton miles to rating ton miles:				
(a) East.....(5a+6a)	89.4	90.7	d 1.3	d 1.4
(b) West.....(5b+6b)	67.8	62.5	5.3	8.5
(c) Total.....(5c+6c)	79.2	78.1	1.1	1.4

(E) Net ton miles—tons of revenue and nonrevenue freight moved one mile; to be computed from the conductors' train reports.

(F) Train hours—the elapsed time of trains between the time of leaving initial terminals and time of arrival at final terminals, including delays on the road. May be taken from conductors' train reports or from dispatchers' train sheets.

percentages of decrease show that the loss in traffic both in gross and net (particularly in net) was relatively greater eastward than westward.

The next step is to compare the gross ton-miles with the train-miles. The percentages of change are 20.4 per cent decrease in gross ton-miles and 29.0 per cent decrease in train-miles. These figures indicate an improvement in the train-load. The results are shown in Item 9. The eastward gross train-load shows an increase of 6.3 per cent, the westward load an increase of 23.8 per cent, and in both directions combined, the increase is 12.2 per cent.

Attention should now be directed to the relation between locomotive-miles and train-miles. The train-miles show a decrease of 29.0 per cent. The decrease in principal and helper locomotive-miles is 30.7 per cent. We note in passing that there has been a substantial saving in light locomotive-miles—locomotives run without trains. The relation between the train-miles and locomotive-miles is seen in Item 9, which shows a decrease of 2.3 per cent in the locomotive-miles per train-mile. It is evident, therefore, that the increase in the train-load was not due to the greater use of multiple locomotives.

It might be of interest in this case to ascertain why the locomotive-miles decreased relatively more than the rating ton-miles. A simple computation (Item 6-c divided by Item 3-c) shows that the average rating per locomotive in 1919 was 1,519 as against 1,341 in 1918. This difference indicates one or more of six things: (1) the acquisition of new locomotives of greater power; (2) the relatively greater use of heavier power and relatively smaller use of lighter power, the latter being stored; (3) the application of superheaters to locomotives not heretofore so equipped; (4) an upward revision of tonnage ratings; (5) relatively more traffic on the divisions which have the heavier tonnage ratings; or (6) grade rivisions which permit of heavier train loading. In this particular case the increase in the average rating is due to a combination of four out of the six reasons just suggested.

One reason for the better westward performance is seen in the car-miles. They show a heavy decrease in loads eastward, but westward we find an increase of 7.5 per cent. It is of interest here to glance at the average car-load, Item 11. It shows a loss

of 12.2 per cent, with but little difference in the change as between directions. The difference between directions is greater, however, in the per cent of loaded to total car-miles. Eastward the proportion of loads decreased slightly while in the westward direction there is an increase of 19.4 per cent. Both the car-load and the percentage of loaded cars have a material effect on the car-load, as it is possible to handle a greater gross train-tonnage in heavily loaded cars with few empty cars, than in lightly loaded cars with a large proportion of empties. The unit resistance (per ton) of an empty car is approximately twice as great as that of a car loaded to its weight capacity. A locomotive on a given run may be able to haul 3,000 gross tons in fully loaded coal cars, yet be unable to haul more than 2,400 gross tons of empty or very lightly loaded cars.

Attention may next be directed to the net ton-miles so as to see the relation between the paying load and the gross load of the train. It is noted that the net ton-miles show a decrease of 25.3 per cent, the loss being much greater eastward. As the loss in gross ton-miles is 20.4 per cent, it is plain that the net ton-miles this year bear a lower percentage to gross. The details are shown in Item 13. The loss was altogether in eastward movement. Its per cent of net to gross is 6.5 per cent less than last year, while the westward movement shows an increase of 1.7 per cent, the combined unit showing a loss of 6.2 per cent.

Now, we may examine the effect of the time element. Train-hours show a decrease of 25.8 per cent, while train-miles show a decrease of 29.0 per cent. This indicates a loss in train-speed. Item 10 shows the extent of the loss—4.3 per cent decrease in miles per hour. The decrease is greater in the westward direction.

The combined effect of changes in gross train-load and speed is shown in the gross ton-miles per train-hour. In this case there is a gain in one factor and a loss in the other factor. The gross train-load shows an increase of 12.2 per cent; the train speed shows a decrease of 4.3 per cent. The gain in the load was sufficient to offset the loss in the speed, consequently we find an increase of 7.4 per cent in gross ton-miles per train-hour.

Finally, we may turn to the unit which is the net result of those already discussed—the net ton-miles per train-hour. The figures

show a slight improvement—an increase of 0.7 per cent. The eastward performance shows a loss of 0.8 per cent, but the westward performance reflects a gain of 15.7 per cent. The relatively small gain in net ton-miles per train-hour, compared with gross ton-miles per train-hour, is due to the lower ratio of total net ton-miles to total gross ton-miles. And, as already stated, this is due to a smaller car-load, although the loss in that factor is lessened by a relatively smaller gain in the per cent of loaded to total car-miles.

The foregoing comments are intended merely to be suggestive. No two persons will follow the same order in undertaking an analysis of the figures. It is plain, however, that whether we proceed from the basic data to the final inclusive unit, or work backward from that unit, it is easy to trace the effect of the changes in each factor, and to proceed with intelligent inquiries designed to bring out the reasons for the relatively poorer performance in the one direction. The statistics on this form should, of course, be compared with those on the reports of locomotive performance, of distribution of locomotive hours, of freight car performance, and of locomotive and train costs, as they are all interrelated.

PUBLICATION OF SUMMARIES

Reference has already been made to the fact that the policy of the United States Railroad Administration is to disseminate the statistical summaries so that the Federal Managers and other operating officials of the individual roads may have complete and current information, not only with respect to their own performance, but also with respect to the comparative statistics of all other railroads. This is accomplished by monthly summaries which show for each road and for each region the more important items compiled from the individual reports on Forms 1 to 8, inclusive. These summaries are:

Freight Train and Freight Locomotive Performance (based on Forms 1 and 3).

Passenger Train and Passenger Locomotive Performance (based on Forms 2 and 3).

Number of Locomotives and Distribution of Locomotive Hours (based on Form 4).

Freight Traffic Movement and Car Performance (based on Form 5).

Freight Locomotive and Freight Train Costs (based on Form 6).

Condensed Income Account (based on Form 7).
Passengers Carried One Mile (based on Form 8).

The data, with two exceptions, are shown both for the current and the previous year, with the percentages of increase or decrease in the significant items. The two exceptions are the summaries of Forms 1 and 4. Complete comparison with the previous year will not be practicable until October, 1919, as the general compilation of gross ton-miles, rating ton-miles and train-hours on Form 1, and the distribution of locomotive-hours on Form 4, were not fully under way until October, 1918.

SUMMARY

In conclusion it may be stated briefly that the United States Railroad Administration, in the narrower field of operating statistics, has brought about in unification and standardization, practically what the Interstate Commerce Commission has done in the broader field of railroad accounting. The new plan of operating statistics supplements and fits into the accounting requirements of the Interstate Commerce Commission, and requires no duplication of accounting work. The new forms which pertain to freight performance and the utilization of locomotives and freight cars, are much in advance of the previous practice, and place special emphasis on the importance of the time element in train, locomotive and car performance. Gross ton-mile and train-hour statistics are now universally available, the freight train data are now available by directions, and the new basis for compiling net ton-miles provides statistics which are properly comparable with train-, locomotive-, car- and gross ton-miles.

The figures are now available much earlier than was previously the case, and the monthly summaries, generously distributed, enable each operating official to compare his results with those of his neighbors without the former uncertainties and qualifications as to bases and methods.

The new plan has accomplished its primary purpose of providing the Director General and his staff with the basic data and the significant averages, ratios and unit costs which relate to or furnish indices of operating efficiency. It has also done much, as a secondary but equally important purpose, in inspiring an added interest in the figures among Federal Managers and their

subordinates. It is realized that statistics are valuable only to the extent that they are studied and their indications acted upon, and that the greatest measure of value comes from local rather than from central use. There is gratifying evidence of a tendency locally to take more interest in the returns, and to go to a greater extent in making comparisons with other roads and regions. This greater interest on the part of those directly responsible for results must inevitably be translated into terms of increased efficiency.

Unfortunately, it is not possible to measure the effect in any definite terms, as the efficiency of operation during the period of the war and since the signing of the armistice has been so greatly influenced by other factors, such as decreased traffic, higher material costs, increased wages, shorter working hours, loss of experienced employes, and high labor turnover, as to overshadow the benefits inherent in the new statistical plan. It is clearly evident, however, that the higher material costs and increased wage rates make it necessary, in greater degree than ever before, that those in authority should have complete and accurate statistics as aids to intelligent management. It is plain, also, that whatever the plan of railroad management subsequent to federal control, it will be highly desirable to continue a statistical policy which will afford accurate and complete comparisons of operating efficiency.

The Abolition of The Off-Line Offices

By Charlton A. Swope
Secretary of The Traffic Club of New York

OFF-LINE offices of railroad corporations are, or were, commercial offices located distant, short or long, from the terminal rails of the parent company. They were seldom known, technically, as off-line offices until the idea of closing them arbitrarily appeared. They were known as commercial offices and any change in name does not necessarily change their character except to describe their location.

Commercial offices were the result of the progressive development of the transportation systems and were as much a necessity as any other division of operation, except that they could be abandoned without actual paralysis and the result was comparative instead of exact determination.

To be somewhat more explicit, when the President, by proclamation, under the act of Congress, seized the railroads, and established a bureau for their operation under the jurisdiction of the Director General of Railroads, many problems were confronted, and a staff of railroad managers was established, divided into the old well marked divisions of operation, accounting, traffic, etc. The Division of Traffic, soon after its establishment, upon very short notice, decreed that all commercial off-line offices should be closed; that the furniture should be sold, given away or returned to the home offices; that the leases for the offices should be surrendered, or in the event of failure in this direction that the offices should be sub-let where possible. The employes were to be taken care of, as far as practicable, by removal to positions on the line of road. There is no doubt that it was the intention of the Railroad Administration to be fair and to impose no undue hardship upon the parent company, the employe or the public. If it is now to be considered a mistake, the difficulty lies in the admission of it, and owing to the complications which have resulted from government operation nothing in this particular matter is likely to be done until the return of the roads to their owners.

The war necessity covered a lot of arbitrary actions and while admitting that the main object was to win the war regardless, the question in hand must be treated from a posterior position if it is to be the subject of any discussion at all. The question of whether there was any necessity of seizing the railroads for government operation must be eliminated. Congress decided there was a possibility of the necessity, and the President decided there was the necessity. The adherents of good government must be content and argument ceases. Truly we have had too many examples of opposition to organized government to argue against the wisdom of the decision of the majority. However, the law of infallibility does not apply, and the Director General of Railroads, I assume, does not make any claim for such infallibility.

Transportation companies have a commodity to sell—transportation. The sale of a commodity requires salesmen. The agents located in the off-line offices were salesmen, offering to the public the transportation manufactured by their employers. It is very easy to see that when the conclusion was reached that competition was destroyed that there was no longer a necessity for salesmen and they were abolished. The fatal mistake was that there was a failure to recognize that the off-line offices were of as much, if not more, importance to the public than to their employers. This is easily proven to those familiar with all the facts and conditions. Why it was not apparent to the Railroad Administration is not quite understandable. The Director General of Railroads half-heartedly admitted as much, as will be shown later.

In all lines of business there is competition. In the transportation business there was, for years, excessive competition. There was competition in the quantity of the rate, but that was wisely eliminated by law many years since. There was competition of service, of as much importance as the competition of rate, especially under war conditions, and it was in this respect that the off-line office was of such importance to the public. One must have had the experience to appreciate what it meant to close up thousands of offices which were fixtures and the outgrowth of years, to understand the vital effects attending such action.

The argument for the abolition of these offices is sound if you

have no regard for the convenience of the public, but no transportation company can operate successfully without the success of its patrons. I ask those responsible for this action to inquire of any patron of a railroad. They accepted the hardship, not willingly, but because of lack of a method of appeal. The gain was a modicum of economy which cannot be proven. Offices were for long periods vacant with rent chargeable to railroad operation, and some of them have never been rented.

Under the head of off-line offices was included both freight and passenger representation. Owing to the difference in the nature of the service performed the passenger and freight representation of the off-line offices was separate and distinct, each department having its own representative, independent of each other, and in many cases, especially in the larger cities, the locations of the offices were in different places.

In the case of the closing of the off-line passenger offices, the necessities were fairly met by the opening of one or several consolidated ticket offices. These consolidated ticket offices represented primarily the initial lines, and were an economy reasonably justified by the conditions. Upon the whole the plan has worked well, and probably may be continued under any adjustment of future railroad operation. The foreign line, under this plan, is only nominally represented, but it can with justice be argued that the elimination of competition eliminated the necessity for the passenger organization, especially when, in trunk line territory for instance, it has been a fact for years that off-line offices were not in a position to sell direct to their patrons anything but local tickets over their own lines (except as they secured through tickets, as ordered, from the initial line) and that the total sales of tickets did not in some cases pay for the expenses of the organization.

I hope it may not be considered that the writer is taking any narrow view of the problem in this treatment of the passenger feature of the closing of the off-line offices. I do not think the facts are easily controverted, and at the same time I know it is the opinion of well informed railroad people that the condition as to passenger representation had a great deal to do with the final decision of the Railroad Administration in its arbitrary action in respect to the closing of off-line offices. On the other

hand, I think it can be clearly shown that the closing of freight department offices was a mistake from almost any point of view, and that such closing has had as much to do as any other one thing in the well pronounced aversion of the public to a continuation of the governmental operation of the railroads.

Primarily these offices were established for competition and it is true from the standpoint alone of the railroad corporations they were continued and maintained for this reason. Therefore from this point of view their abandonment was not of great importance. But they had grown to be of great value and importance to the public, and as it is well known that little consideration was given to the public in the operation of the railroads during the war period, it would seem that upon more deliberate consideration this very important adjunct of operation could have been left undisturbed and that the small economy effected was not justified by the results.

In the "Declaration of Policy" issued by the former Director General of Railroads, W. G. McAdoo, June 17th, 1918, appears the following:

> The policy of the United States Railroad Administration has been formed and shaped by a desire to accomplish the following purposes which are named in what I conceive to be the order of their importance:
>
> First. The winning of the war, which includes the prompt movement of the men and material that the Government requires. To this everything else must be subordinated.
>
> Second. The service of the public, which is the purpose for which the railways were built and given the privileges accorded them. This implies the maintenance and improvement of the railroad properties so that adequate transportation facilities will be provided at the lowest cost, the object of the Government being to furnish service rather than to make money.

Now let us see how well the Railroad Administration carried out this declaration of policy.

The Traffic Club of New York, soon after the declaration of the intention to close the off-line offices, appointed a committee, consisting of some of its most prominent and influential members, to protest to the Railroad Administration against such closing. This committee consisted of the following members of The Traffic Club:

J. C. Lincoln, Manager, The Traffic Bureau, The Merchants Association of New York

C. J. Austin, Traffic Manager, New York Produce Exchange
R. S. French, General Manager and Secretary, National League of Commission Merchants
E. J. Tarof, Traffic Manager, The Brunswick-Balke-Collender Co., Chairman of the Transportation Committee of the New York Board of Trade and Transportation
P. M. Ripley, Traffic Manager, American Sugar Refining Co.
T. T. Harkrader, Traffic Manager, The American Tobacco Co.
Allan Wallace, Traffic Manager, The H. W. Johns-Manville Co.

This committee protested to the Railroad Administration against the closing of the off-line offices, and receiving no encouragement, it formulated suggestions and recommendations for the establishment in New York City of four Central Bureaus in order that the shipping public be fully advised of the necessary information regarding general movement and freight rates covering off-line shipments. The Central Bureaus recommended by this Committee were as follows:

No. 1. The establishment of a Central Freight Tariff Bureau.
No. 2. The establishment of a Central Bureau for the issuance of Trans-Pacific Export Bills of Lading.
No. 3. The establishment of a Central Bureau to furnish passing records.
No. 4. The establishment of a Central Bureau for the issuance of Embargo Notices and Embargo Information.

These recommendations were made in May, 1918, to the Railroad Administration through its Director of the Division of Traffic. They were received favorably at first, but after long negotiation nothing whatever was done except that almost a year later a Bureau was established for the issuance of Trans-Pacific Export Bills of Lading. No explanation has ever been given by the Railroad Administration as to why some arrangement was not made to take care of the public necessities so ruthlessly ignored.

In the "Statement of Hon. W. G. McAdoo, Director General of Railroads, before the Interstate Commerce Committee of the United States Senate," issued January 3rd, 1919, appears the following:

PUBLIC SERVICE FREIGHT BUREAUS

Under private control of railroads, and for competitive reasons, practically

all railroads maintain so-called off-line agencies, the original function of which was solicitation of traffic. These off-line agencies were abandoned by the Railroad Administration for the reason that the competitive causes which gave rise to their establishment no longer existed. *It was found, however, that in some measure these agencies had performed real service to the public, and therefore the establishment of public-service freight bureaus has been begun with a force trained to handle for shippers matters which were formerly handled by the off-line agencies.*

I submit that it must have been embarrassing to the Railroad Administration to have to admit, after seven or eight months, a fact which should have been within the knowledge of the experienced traffic men who were responsible for the order at the time it was given, and especially when it is well known that the closing of the offices was protested by commercial bodies and individual shippers all over the United States. It will be noted particularly that the Director General states that the establishment of public-service freight bureaus has begun (after almost a year of neglect) and then is to be added the indisputable fact that such public-service freight bureaus have never to this day been established. It is true that a shadow of an attempt was made to do so by establishing a representative at the information desk located in the consolidated ticket offices to answer inquiries as to freight transportation, but this so little met the requirements that it was farcical. In addition, in Eastern territory, the trunk line general offices were "ordered" to provide themselves with tariffs and information to serve the public as to certain designated lines. This was no less farcical than the other plan, and it cannot be successfully denied that it proved to be so. These initial lines were already overburdened, with the impossibility, on account of the draft, of getting competent help. It was a failure also because freight rate information can be supplied only by those familiar with the tariffs they are handling, and such skill can only be acquired by years of training. Other information, such as suitable locations for plants, tunnel and bridge clearances, terminal facilities and train schedules can be supplied only by those who have made a special study of the parent line. Car passing reports, one of the greatest advances in modern transportation, were absolutely abandoned, leaving the helpless shipper to the mercy of kind Providence as to the arrival or ultimate disposition of his property. The quagmire of embargo notices was impenetrable.

No blacker spot appears on the government operation of the railroads than this unjustifiable action, for the saving of a small fraction of one per cent of the cost of operation, and for this destruction of the vital necessities to the conduct of legitimate business. I am confident that the use of this strong language will be approved by many if not all shippers, and the only reason for submission was the war necessity and the well known futility of continued protest.

There can be no discussion of the treatment of labor in this article, but it would seem to be a travesty upon justice that organized labor should be so well taken care of while so little thought was given to men who had spent their lives in the service of the railroads and who were equipped by experience and knowledge to give the public the service it so insistently demanded and needed. In some cases such employes, sixty years of age and over, and of thirty years and more of continuous service, were abandoned to drift from pillar to post seeking any employment which would save them and their families from actual want and starvation. Men who were almost entitled to retirement were thrown out in their old age and forced to attempt to begin life over again. Truly there was no necessity of winning the war which compelled any such hardships or warranted any such mistake of judgment on the part of men entrusted with government operation of the railroads. To the credit of the managers of the railroads they attempted to do what they could to temper the hardships, but the task was difficult and in many instances did not succeed. The policy was not generally carried out in the case of the aged employes who had a right to expect that they would have consideration for the many years of faithful service.

The attempt to show that government operation and ownership was the panacea for all ills has met the fate it deserves. The only class that now wants it or will tolerate it is the class which has received the only profits from it.

The Case for Government Operation and Ownership

By Wilber L. Stonex
Philadelphia, Pa.

UNTIL comparatively recently the theory of those favoring the private management of public institutions was that a few were wiser and more capable than the many and that every such institution, whether operated for profit or not, should be kept out of the control of the general public. Accordingly the schools, libraries, hospitals and all charitable institutions were at first controlled by the church acting through its ecclesiastics and later to a considerable extent through corporations usually self-perpetuating. Little by little such institutions have come with increasing number under public control, and this fact itself sufficiently proves that the people as a whole are satisfied with the result; and very few can deny that the result has been an enormous gain both in the quality of the service rendered by these institutions and in the efficiency of their administration.

The same is true of transportation facilities. In the early days of this country the poverty of the people and their inability to pay taxes forced them in many cases to grant to private individuals and to quasi-public corporations the right to construct and operate the more costly of these facilities and to collect fees from those using them for their reimbursement. It was in this way that the toll-roads and toll-bridges came into existence. This, however, was recognized to be a temporary expedient only; and gradually the people have taken over and given free service of these facilities, the private control of which in every case had come to be recognized as detrimental to the public interest. In acquiring them the public authorities generally borrowed money for the purpose and then paid off the indebtedness incurred by levying taxes on the property of those benefited. The levy of such taxes was in all material respects identical with the assessment of stockholders in private corporations, the benefits accruing from the free use of the utility being the equivalent of a dividend.

These general propositions apply as well to ferries, street rail-

ways and all other public utilities which require operation as well as maintenance and for which it is necessary to charge fares or rates. In these cases the fundamental difference between private and public operation is that under public management the primary purpose is to provide efficient service at the minimum cost, while under private management the primary purpose is to pay the largest possible dividends to the relatively small number who are in possession of the utility and for that purpose to charge the public all that the traffic will bear.

The temptation to private owners to exploit the public is irresistible and the results invariably are detrimental to the public, not only in a material way but by corrupting the public morals, as it almost always leads to the perversion of public officials and to the undue enriching of a few by reprehensible methods. This is especially true where the utility is a monopoly.

The largest single monopolistic public utility now under private control is that part of the national transportation service consisting of the railroads. In applying to it the principles I have laid down it is necessary to consider the railroads as a unit, for that is the relation they sustain to the public. That the railroads are public highways and that "the function performed is that of the state" is not open to question. This was settled long ago by the Supreme Court of the United States,[1] and the right of the government to acquire and operate them is as well settled as the right of a state to acquire a toll-road, or of a city to acquire and operate a street railway or a ferry. The only question to consider is whether the interests of the public can be better served if the service is rendered directly by the public through its own employes or indirectly through the agency of a public service corporation privately administered.

In considering this question it is necessary to bear in mind that for nearly three-quarters of a century the railroads have been privately operated under regulations of the state and federal government, and that they have never been operated by the government, except for less than two years and then under abnormal conditions which the private managers had been unable to meet, and that the carrying out of the details of this operation remained with those who were operating the roads when they

[1] Olcott vs. Supervisors, 83 U. S, 678.

were taken over by the government—the general manager of all the lines in the eastern territory being the president of the New York Central company. Because of this a comparison of the two methods can be made only by pointing out some of the evil conditions which have always been a feature of private management in spite of all attempts to regulate them in the public interest; and assuming in this case that, as in all others, public operation as the only alternative would be more satisfactory to the public. In this necessarily brief paper I shall limit my presentation of the case to the principal evils invariably resulting from the conflict of private with public interests.

The one harmful feature of private management which began earliest and has continued longest and caused the greatest loss to the public is that commonly called *stock-watering*. Closely associated with this as a feature of all railroad financiering under private management has been the basing of issues of bonds and stocks on the dividend paying capacity—actual and anticipated—of each road, and not on the amount of capital invested. If a road is prosperous these capital obligations are never reduced but are steadily increased. The stock and bond issues of the Pennsylvania company, for instance, issued and authorized, increased from $217,000,000 in 1900, to $1,000,000,000 at the beginning of 1919.

The methods adopted to bring about both these forms of overcapitalization have been as varied as ingenious. The result has been to make it impossible to tell what the amount invested by its stockholders in any railroad has been, and to enable them to claim the right to establish rates sufficient to pay, in addition to the cost of maintenance and operation, interest on their bonds and apparently moderate dividends on their stock. The amount of these issues runs into the billions. In the period from 1900 to 1916, inclusive, the stock issues alone have increased from $5,845,570,000, to $8,743,106,000, of which 45.66 per cent was paying dividends in 1900 and 60.38 in 1916; and the average dividend rate on the dividend paying stock had increased from 5.23 per cent in 1900, to 6.45 in 1916.

These evils would at once disappear if the government should acquire and operate its railroads, for the stocks acquired by it would be paid for by the issue of low-rate interest bonds, and the

outstanding bonds of the railroads at their maturity would be paid in the same way. The saving to the people by this alone would amount to an enormous sum annually. And following the unbroken precedents of all public financiering, taxation would be resorted to in order to reduce the amount of the bond issues until, as in the case of ordinary highways, canals, and all other property owned by the people, the indebtedness would be eventually paid, after which the railroads could be operated on the basis of the actual cost of maintenance and operation. This, I may note in passing, is the policy adopted for the Erie Canal in which the legislature authorizing its construction specifically provides for state taxation for the payment of the bonds issued for its construction.

One inevitable effect of overcapitalization of the railroads has been the depreciation of the credit of the companies to such an extent that they now turn to the government to provide funds for their maintenance—the purchase of rails and rolling stock. It has also reacted disadvantageously on the public as it has imposed capital obligations in many cases far exceeding the cost of construction of new lines. This has forced the overcapitalized companies to prevent the building of additional railroads; to oppose every appropriation by the public for the improvement of ordinary highways and canals; and even to buy up and destroy canals and steamboats to prevent competition. And for such purchases they issue more bonds and stock!

How this policy has been carried out to destroy coastwise water transportation is graphically described by Professor Van Metre in a paper published in *The Traffic World* of November 30, 1918. The following may be fairly taken as an illustration of its application in every case where the private managers meet or fear competition:

> If coastwise transportation is cheap and practical, why is it that with the great increase in the general productivity and commerce of the country the coastwise shipping business has not made satisfactory progress? The answer is merely that the business has been kept under control and wilfully suppressed by the railroad interests of the country. Virtually all of the coastwise lines on the Atlantic coast have for many years been directly controlled by or closely affiliated with powerful railroad interests, and these interests have also obtained control of a large portion of the water front of the leading seaports. . . . . Time after time companies organized to carry on a coastwise shipping business

have been destroyed by unfair methods of competition by railroads. . . . . The printed testimony of the committee's (House Committee on the merchant marine and fisheries, 1912–13) report is replete with actual instances of how, by these methods and by others equally reprehensible, the established transportation interests of the Atlantic and Pacific coasts had to the detriment of the commercial interests of the entire country throttled attempts at competition and caused investors in independent coastwise shipping companies to lose millions of dollars. . . . . Nothing accomplished by the railroad companies in their efforts to perpetuate their monopolistic power has resulted in greater loss to the country than the suppression of the coastwise shipping business.

The enormous development of our country and its commerce demands the extension of its railroad facilities. These the railroad companies should but do not provide. In 1905 the Interstate Commerce Commission reported that a prominent railroad president had declared that the traffic offered for transportation in the United States had increased 110 per cent over that of 1895 and that the instrumentalities for handling it had increased only 20 per cent. In September 1916 Mr. Howard Elliott said: "Equipment showed a marked decline in 1915 and in that year less mileage was built than in any year since 1864. There have been only three years since 1868 when there was a smaller mileage of railway construction than in 1915." In 1918 nearly twice as much mileage was abandoned as the new mileage built, and the greater part of the new mileage was branch lines and extensions to coal mines. As the private managers cannot or will not provide the facilities needed, the country must either go without or the government must provide them. And in any event if provided they must be operated in connection with the existing lines, because the private interests control practically all terminal facilities, and the railroads to render efficient and economical service must operate as a unit. By their control of the terminal facilities and of the water fronts of the leading seaports the railroad managers have secured a strangle-hold on the nation's commerce which can be broken only by the government.

The selfish disregard of the interests of the public either as a whole or of lesser units in every case where their interests conflict with those of the private managers is a fact so well known that no illustrations are needed. The hostility necessarily created by this condition is everywhere apparent and the only remedy suggested by those who have felt it is that this department of the

public service shall no longer be administered by those who have controlled it in the past. At the Farmers' National Reconstruction Conference held in Washington early this year the policy of government ownership and administration of the railroads was unanimously endorsed, and a resolution was adopted demanding legislation eliminating watered stock and stock fraudulently issued, and urging government ownership and operation at once. And this is also the demand of the Farmers' National Council, which represents a membership of about 750,000.

This hostility is equally pronounced among the employes of the railroads. The four great brotherhoods have formally declared in favor of taking the operation of the roads out of the hands of their private managers; and an overwhelming majority of the vast army of nearly two million railroad employes favor the same policy so that they may serve directly under the government where they can receive the protection of its civil service rules and the other benefits accorded those serving in its other departments.

The opposition to government operation and ownership which is most aggressive and efficiently organized is that of the great investment banking interests of New York commonly called the Wall Street financiers. Their interest in the subject is apparent. From the very first the money lending classes have found in the railroads a principal source of their profits. As recently as five years ago Mr. Clark of the Interstate Commerce Commission said: "I know of a large railway corporation that has paid $32,000,000 in commissions to bankers for the sale of its securities." Another source of large profits to these bankers has been from the purchase of these railroads securities and their resale at an advance to foreigners. The amount of these foreign holdings at the time of the breaking out of the war was enormous. To maintain these sources of profits a constant supply of such securities was absolutely essential. If the financial operations of the railroads were performed by the government by the sale of its bonds directly to the people, the Wall Street financiers would lose these sources of income, and to the same extent the people would profit by it.

But the interest of Wall Street financiers is not limited to commissions and profits on the sale of railroad securities. These financiers are not only the bankers of the railroads, they are also

their managers. Mr. Prouty of the Interstate Commerce Commission, speaking of the evidence before the Commission in 1903 in its investigation as to the reasonableness of certain rate advance made by the companies from which appeals had been taken to it, said: "In the present investigation into increases in the grain rates from the Missouri River to Chicago, it became apparent that the traffic managers of the railroads had nothing to do with it. On the contrary Wall Street financiers needed the money and ordered the rate to be made."

This was and still is inevitable because the policies of the railroads must be formulated by the directors who are elected to promote the interests of the stockholders. The railroad presidents are merely their servants charged with the duty of carrying out these policies. And for many years the railroad stocks have to a preponderating extent been either owned outright or controlled by Wall Street financiers.

The dominating influence of a few of these men appears from the reports filed with the Interstate Commerce Commission. In 1917, "1.3 per cent of the number of stockholders in the railroads in this country held about one half of the number of shares of stock." "Of the Wabash stock, 46,642 shares were held in Amsterdam, Holland, and 36,321 shares were held by fourteen New York and one Boston company or partnership." "Of the stock of the Chicago, Milwaukee and St. Paul, 216,528 shares were held by eleven New York concerns," etc. An illustration of the composition of the boards of directors of these companies may be found in the fact that in a recent election of the six directors elected for a three year term by the stockholders of a great railroad running west out of Chicago, one was Mr. Depew of the New York Central, one was a principal officer of the National City bank of New York, one was H. C. Frick and a fourth was a brother of the last named. The others were names less well known and have escaped me.

With these facts before us it is interesting to note that at the Reconstruction Convention of the Investment Bankers Association of America which met last December, the convention while unanimously putting itself "squarely on record as opposed to public ownership of railroads or their permanent operation by the government, and emphatically in favor of the return of the

railroads to their owners," qualified the demand for such return by adding, "under such regulations as will insure sound credit and adequate service."

But as this recommendation comes from the men who have for years dictated the policies of the railroads, it is well to bear in mind that there has never been a time since the first railroad charter was granted when legislators have not attempted to impose such regulations, with the further purpose of protecting the interests of the public; and that there has been no time since the first charter was granted when every effort and device conceivable has not been resorted to by "the owners" of the railroads to prevent the enactment and enforcement of such regulations. The demand of the investment bankers therefore suggests no new policy, or attitude different from that which the public has maintained and attempted to enforce from the beginning; and there is no reason whatever for assuming that if the railroads were to be returned "to their owners" there would not be the same opposition by the private managers to the enforcement of restraining legislation.

The attitude of the private managers toward attempts at regulation by the public has been too plainly declared to be open to question. About ten years ago Mr. Harriman gave out an interview which was published in the *New York Times*. In it he said: "In all the laws propounded by the states there is the question of Constitutionality. But one thing is obvious, and that is that the railroads have got to fight these measures as they come along." Even more instructive is the statement which was made by Mr. Shouts about the same time in a public address which was printed in pamphlet form and widely circulated and which under the circumstances may be fairly accepted as the attitude of the Wall Street managers. That which called for this address was that prior to 1910 the railroad companies had the right to establish freight rates and put them in force, and the only redress offered shippers was through appeals to the Interstate Commerce Commission. In such appeals the issue was as to whether a particular rate on a particular commodity between specified terminals was reasonable; and upon the shipper was placed the burden of proving the negative of the proposition.[1] As no rate was ever based upon the actual cost of the transportation

of a particular commodity between designated terminals, but upon the adequacy of the railroad's income from all sources the evidence was in the hands of the railroads and difficult of access to the shippers. The remedy allowed the shipper was so costly and inadequate as to be in fact a denial of justice. In 1908 the companies were about to put in force a large horizontal increase of rates. The shippers appealed to Congress to grant the Interstate Commerce Commission the power to suspend proposed increases pending an inquiry by it as to their reasonableness. This request met the bitter opposition of the railroad managers. It was while this bill was pending that Mr. Shouts, then president of the Clover Leaf, said:

> We still have hope that we are going to be let alone and allowed to run our own business. . . . . This is a period of governmental control and interference. In this period of business depression the railroads should be preparing for the return of industrial activity. But not a mile of new track is being laid, nor is any equipment being purchased that is not absolutely essential to the present needs of the roads. Improvements involving hundreds of millions have been abandoned because of the vengeful spirit that has temporarily possessed the minds of men whose duty it is to carefully consider proposed legislation.

Notwithstanding the attitude of the railroad managers Congress granted the relief asked by the shipping interests. And the facts that ever since the enactment of this law the railroad interests have fought to secure its repeal, and failing in this have allowed equipment to deteriorate and have discontinued the construction of new lines, sufficiently disclose the attitude of the Wall Street financiers toward governmental regulation and their ability to enforce the policy toward the public indicated by Mr. Shouts. Under these circumstances the demand of the Investment Bankers Association of America for "the return of the railroads to their owners," under regulation to be imposed by the government is not entitled to serious consideration.

Bearing in mind the relation actually sustained toward our railroad transportation system by New York financial interests, the question before us becomes the simple one of whether public interests will be better served if this department of the public service is operated and its policies dictated by a group of Wall Street financiers for the profit of a few or by the government, *not for profit* but, as is done by the Post Office Department, for

the benefit of all the people. And in my opinion we are limited in our choice to the one or the other.

But it must always be borne in mind that even government operation—whether by the system now applied to all its other departments or by the so-called "democratization" of the transportation department asked by the railway employes—to be free from the temptation to exploit the people as a whole for the benefit of a particular group or class must exclude all opportunity to do this. If the cost to the people may include a profit to be divided among the members of any groups or class there will inevitably be the temptation to make the cost include such profit, which in the case of the transportation of the necessaries of life adds to the cost of living, which tax falls most heavily on those of every community least able to bear it.

But government operation, however applied, would be unnecessarily costly and unsatisfactory without the ownership of all the instrumentalities, and there would still remain the demoralizing element of selfish interests seeking always to increase their profits. To make this department most efficient and economical and of the greatest benefit to the public, the government should be the sole owner of all the railroads, of their equipment, and of all other property now owned or controlled by the railroad companies.

The Advantages of National Operation

By Joseph B. Eastman
Member of Interstate Commerce Commission

IN considering possible solutions of the railroad problem, the fundamental purpose to be achieved is clear. As stated by the Interstate Commerce Commission, it is "to secure transportation systems that will be adequate for the nation's need, even in time of national stress or peril, and that will furnish to the public safe, adequate and efficient transportation at the lowest cost consistent with that service." Implied in this definition is the need for credit, so that adequate supplies of capital may be secured at minimum cost; the need for efficient management; the need for the best utilization of facilities, regardless of ownership; the need for relations with labor which will avoid disastrous interruptions of service and ensure whole-hearted, willing work. Having in mind these ultimate ends, I have been brought to the conclusion that they can best be attained if the roads continue in the possession and control of the nation.

Credit and Capital

One of the impelling reasons for this belief is the matter of credit. It is a vital phase of the problem, upon which much stress has for some time been laid by financiers. Our railroads are never finished, or at least ought not to be, and require a steady inflow of capital. Without it they cannot long furnish good service. The amount required each year runs into very large sums, and half a billion dollars is a conservative estimate, for many have set the figure higher.

With national operation the credit of the United States is squarely behind the roads, and capital can be obtained at low cost, as and where needed and without underwriting syndicates, commissions, or bankers' profits. It has been suggested that the nation's own interest rates would rise if it should continue in this field, but while this might be true in some degree it is impossible to believe that the Government would ever have to pay as much for its money as private enterprise. The total demand

for capital would in no way be increased and the elements of speculation and risk which add to interest charges would be removed, so far as railroad investments were concerned.

Under private operation the average cost of capital will be higher and not a few companies will find difficulty in securing capital at all. In the last analysis, the credit of private railroad corporations depends upon ability to issue *common stock*. Most of our roads are already heavily bonded, and unless they can market new stock, none of their securities will long attract investors. Inevitably this means high capital cost and the need for very large earnings. Before the war, carriers asserted that new stock could not be sold without income sufficient to pay at least 6 per cent dividends, with a protective margin of 3 per cent on par value each year for reserve purposes. Under present conditions, with the great demand for capital all over the world and prevailing high interest rates, there is little doubt but that 6 per cent will fall short of making railroad common or even preferred stock an attractive investment. Certain recent issues of railroad bonds bearing this rate of interest have sold below par. Financiers are now claiming that to ensure good credit net income must equal at least 125 per cent of the amount necessary to pay interest and such dividends, *however great*, as may be required to market new stock.

The situation is complicated by the so-called "weak" roads, which, either because of overcapitalization, poor location, mismanagement or improvident investments, are unable to produce necessary earnings on stock at a level of freight and passenger rates entirely adequate for other roads in the same general territory. To maintain credit upon a sound basis and enable the carriers generally to attract capital in accordance with their needs, private operation will, I fear,—unless there are extensive reorganizations—require either a government guaranty or, in the alternative, the raising of rates to an unreasonably high and excessive level.

A government guaranty coupled with private management is unsound in principle and will not meet with public approval. A guaranty of a minimum return is likely to impair rather than improve credit, because of the fear that the minimum in practice will tend to become the maximum. A guaranty of a larger

return is still more undesirable. The government can hardly afford to enter upon the policy of using the public treasury to ensure returns in private industries where deficits may arise from errors of judgment, or worse, from men over whose appointment or continuance in office it exercises no control.

I am aware that numerous plans have been suggested for overcoming the difficulty of the weak roads, either by lowering the bars against mergers and encouraging consolidations or by using the surplus of the strong for the benefit of the weak. But none of these plans seems particularly promising or likely in actual operation to cause much public satisfaction. The practical difficulties in the way of bringing about further consolidations on any large scale—in deciding what they are to be, in agreeing upon or fixing the terms, in dealing with state laws, in arranging the necessary exchanges of securities—are very great. If experience is any criterion, the chief beneficiaries for some time to come would be the bankers and lawyers in charge of the negotiations. As for the plans for a compulsory sharing of earnings, direct or indirect, aside from their complexity they could become effective, if at all, only against the opposition of the strong roads and after litigation; and they offer to some at least of the weak roads a hope of gain beyond their just deserts.

Moreover, under any of the plans for private operation which do not involve a government guaranty, credit is dependent wholly upon earnings, and rates must be placed at the level which will produce the required amounts. There is no such compelling necessity under public operation. Broadly speaking it is true that any other course would be unsound policy, but there are exceptions to this general rule and they are well illustrated by the present situation. There never was a time when conservatism in raising rates was more desirable, for we have had ample reason of late to fear the coming of a vicious circle of advancing wages and prices. Increases in freight rates have results more far-reaching than many believe, affecting as they do every item of the raw material as well as the finished product. The roads have recently been operating with earnings which would drive many of them to bankruptcy if they were in private hands; but the Director General has felt, and I think wisely, that the depression in revenue might be the temporary result of

the uncertainty following the cessation of hostilities and that the country can better afford, for a time at least, to carry the burden through taxation, as a part of the war cost, than to suffer further advances in rates whose ultimate effects no man can foretell. Backed by the resources of the nation the Director has been able to base his policy upon this belief; but it must be clear that no such policy could be pursued, either now or in any similar situation in the future, if the roads were in private hands.

BENEFITS OF UNIFICATION

The advantages of national operation are equally clear in the case of the utilization of existing facilities. Any one who will study carefully what the Director General and his aids have been able to do in the way of relieving and avoiding congestion and expediting service, under unfavorable conditions, through the unification of lines, terminals and equipment, must appreciate the possibilities in this direction; possibilities which even yet have only partially been grasped, and which expand as we look forward to the coming electrification of the properties and the development of terminal facilities. With public operation progress in realizing the benefits of unification need only be continued. Under private operation such progress is bound at best to be hampered and delayed by the conflicting interests of rival companies.

THE QUESTION OF EFFICIENT MANAGEMENT

It is when we come to the question of efficient management, I think, that the most doubt exists in regard to national operation. Among business men there is a widespread feeling that the roads ought not to remain under federal control. This is based upon a belief in the virtue of "private initiative," strengthened by an impression that the roads have not been well managed since they were taken over; upon the fear that federal control will be used for political purposes; and upon a distrust of what are termed "socialistic" enterprises and the desire to avoid an "entering wedge" in this direction.

While no doubt many expressing such views, particularly among bankers, lawyers and railroad executives, are actuated by motives of self-interest, conscious or unconscious, the general sincerity of this body of opinion is not to be questioned or its

importance and weight denied. Yet I believe that it is not well founded and that, if followed, the best results for the country will not in the end be secured.

"Private Initiative"

Faith in "private initiative" springs, I think, from experience in competitive industries. Probably it is true that maximum efficiency is a product of the struggle where profits and even the right to live depend, by reason of keen competition, almost wholly upon efficiency. Competition has been a factor in railroad enterprise, but its influence has lessened with the combinations which have been formed and with the public regulation which has been established, and will shrink still more if further extensive mergers are encouraged. It can be argued with much reason that its disadvantages have been as great as its advantages. Moreover, the assumption that private railroad owners have a peculiar self-interest in efficient management and economical operation has slender foundation. Those who use the railroads and pay for the service rendered have a greater interest in these matters. The primary interest of a stockholder is in dividends, and these may be obtained under even very poor management, provided rates are sufficiently high. The tendency of railroad stockholders for some time past has been to think more of rates than of management.

It will also be conceded that the control which is exercised by these stockholders, especially where the stock is widely held, is more often apparent than real. In practice actual control usually falls into the hands of bankers, and experience has shown that efficient management and economical operation are frequently not their most immediate concern. It is only necessary to instance the reports in the comparatively recent investigations of the New Haven, Frisco, Pere Marquette and C. H. & D. railroads to evidence this point, without reaching back into still more unsavory history. Even those most keenly desirous that the roads should have the benefit of "private initiative" are sufficiently apprehensive of the manner in which it might be exercised, so that they wisely urge stringent and costly governmental supervision, not only over rates, but over capitalization, mergers, new construction and service as well. Indeed the

chasm between public operation and private operation of the kind now generally proposed is really not so wide as many think.

The choice, therefore, is not between national operation and "private initiative" such as is manifested in highly competitive industries where success is inseparable from efficiency, but between national operation and "private initiative" in a field where competition is much less a factor, if it is to be a factor at all; where prosperity is deemed to be dependent chiefly upon rates; and where it is thought necessary to protect the public interest by duplicate, complicated, costly and continually expanding machinery for public regulation and control.

The Success of Federal Control

So far as the sentiment in favor of a return to private operation springs from a feeling that "federal control" has been a failure, it is not justified. The railroads were taken over in time of war and placed in charge of a Director General. So sudden and radical a change in the administration of an immense industry was never before made in this country. Even if conditions had been normal and favorable, no one could reasonably have expected that the new plan of administration would at once be perfected, or that serious mistakes would not occur. As it happens, conditions were neither normal or favorable. The change came on the eve of the worst winter in railroad history, at a time when great congestion existed in the eastern territory; the properties were in none too good condition, it was necessary to concentrate attention upon the movement of troops and munitions, the supply of skilled labor was depleted both by the draft and by the demands of war industries, and prices were soaring rapidly.

In spite of these handicaps, no one denies, I think, that the Railroad Administration succeeded in relieving congestion and handled both troops and all manner of war freight with great credit to itself. It is also conceded that it was able, through unification, to bring about improvements in operation and terminal practices which were of marked benefit. The more, indeed, its record is studied, the more it will appear that operation both before and after the armistice has on the whole been well conducted, in some respects better than ever before. Nor do I think that any well informed person has charged that fraud or

graft has been permitted to enter in. The division directors and federal managers were chosen from men who had made their mark in railroad work, and obviously without regard to political affiliations. Comparatively few actual changes were made in executive positions.

CRITICISMS OF FEDERAL CONTROL

The chief criticisms of the Railroad Administration, aside from irritation over reductions in passenger service incident to war conditions and a part of the railroad program prior to federal control, appear to be these:

(1) That large increases in rates have been made.

(2) That, notwithstanding these increases, expense of operation has risen to such a height that the roads are not paying their way, but imposing a grievous burden upon the public treasury. It is alleged that much of the increased expense has been due to unjustified increases in wages, and to the employment of more men than necessary.

(3) That radical changes in rate structure and established practices have been made or proposed in an arbitrary way, and that centralization has given rise to bureaucratic methods, to disregard of local interests, and to undue standardization.

Increase in Rates

While rates have been raised, it is common knowledge that the increases as a rule have fallen short of the contemporaneous increases in the prices of staple commodities. A unit of most commodities will now buy more transportation than ever before. If the roads have not been wholly paying their way it is due, not only to the increase in operating expense, but to the fact that the standard return (upon which the deficit is figured) was based on the average of three very excellent railroad years, and to the further and more important fact that traffic fell off sharply after the signing of the armistice. With returning traffic the showing in recent months has been much better.

Wages and Efficiency of Labor

Increases in wages have been large; but I do not believe it will be found that they have been disproportionate, on the whole,

to the rise in the cost of living or to the increases granted in most competitive industries. Perhaps standardization may have been carried too far in some cases, but it may be questioned whether the situation would have been essentially different if the roads had remained in private hands. The pressure of the cost of living and the rise of wages generally would have made increases on the railroads inevitable. No doubt the process would have been a threatened strike and reference of the matter to the National War Labor Board, or to some special board of arbitration. As it happens, the major increases under federal control followed the unanimous finding of a bi-partisan board of this character.

It is probably true that during the war the efficiency of railroad labor decreased, more particularly in the shops. But it does not follow that this was the result of federal control. Chiefly it was due to the impairment in personnel and discipline caused by shortage of labor—especially of skilled mechanics, who were drawn by the thousands into shipbuilding and other war industries. The decrease in efficiency was noted before the roads were taken over, and I know that it was equally, if not more strongly, marked in the case of street railways which remained under private management.

As to the charge that more men than necessary have been employed, it appears that the introduction of the 8-hour day in some cases caused an increase in the force, that the federal managers are largely the same men who were in charge of operation prior to federal control, and that no orders have been issued from Washington requiring these managers to employ more men than the needs of the service demand.

Arbitrary Changes in Rate Structure

There is more basis for the criticism that important changes in rate structure and practices have been arbitrarily made, and that there has been over-centralization of authority. The incidents which gave rise to this complaint, however, very largely occurred in the inception of the new mode of administration and under stress of war conditions. Under the policy which has prevailed since the signing of the armistice it will hardly be claimed that the Director General has been guilty of arbitrary

action. And even if he had been, or if there has been undue centralization of authority, the fault is not one which is incapable of remedy.

I have gone into this phase of the matter at this length because of the prominence which this unfounded impression as to the efficiency of operation under federal control has assumed in the ordinary discussion of the railroad problem. Hasty and superficial conclusions have been drawn without adequate consideration or conception of all the factors which have entered into the situation, and even without apparent thought of comparing the rates and service of the railroads under the pressure of war and post-war conditions with the prices and service of ordinary industrial enterprises during the same period. Summing up the situation, there are grounds for criticism of operation and policy since the beginning of federal control. Most of these were products of the times in which we have been living and could not have been avoided. For some the Railroad Administration may properly be held responsible. But none of them justifies the conclusion that national operation is unsound in principle or that it ought to be abandoned.

To the distrust of "socialistic" experiments little weight need be attached. "Socialistic" is a catchword loosely used as a means of discredit in default of argument or thought. It has long been recognized that transportation by rail is a *public business* which the government might properly carry on, and it is no more "socialistic" to do so than to provide and care for schools, highways, water supply, postal facilities, irrigation, fire protection, and any number of other activities now publicly administered. The question is one of practical expediency rather than of political theory, and the fear that national operation of this public business will prove an "entering wedge" for the nationalization of what is more strictly *private* industry is not warranted.

THE GOVERNMENT AS A BUSINESS ENTERPRISER

Nor need we hesitate to adopt the policy of national operation because of the fear, so frequently expressed, that the government is unsuited to carry on a business enterprise. It may be granted that as a nation we have often been guilty of wasteful, dilatory and unbusinesslike practices in the conduct of our public affairs,

although I have little doubt that a critical examination of our record in irrigation, the forestry service, the geological survey, the construction of the Panama Canal, and the activities of the Agricultural and other departments, would disclose many instances to the contrary. But such an admission of shortcomings is far from saying that the problem of securing efficient administration of public business is beyond the capacity of American ingenuity, determination and public spirit. It might as well be argued that the obvious mismanagement of many railroad corporations in the past is proof that "private initiative" cannot produce good management. The truth is that very little attention has been given to the solution of this problem.

After some experience in both state and federal employ, I am confident that no greater opportunity for useful, genuinely creative and hence enjoyable work anywhere exists than in the public service, and that the great body of employes are faithful, loyal and willing to work. I feel sure, also, that American voters have no desire to see graft, waste or "politics" enter into railroad management, and that any national administration guilty of fathering such management would be equally guilty of the most short-sighted political judgment. Nor is it possible to believe that able men would be less willing to accept railroad positions of power and eminence where their work would be primarily for the general welfare rather than for private gain. There is no sound reason to believe that the problem of efficiency is hopeless, or one that cannot be solved if constructive thought is devoted to it in sufficient measure. A little later I shall offer certain suggestions in this connection.

PARTICIPATION OF RAILWAY LABOR

At present the labor question is a most important phase of the railroad problem. Industrial warfare upon the railroads spells ruin. It is more than a question of strikes. Every one knows that the country cannot long endure a stoppage in its transportation arteries, but not every one realizes how closely the furnishing of good service at reasonable rates is bound up with loyal coöperation between the men and the management. It is but one aspect of the question which is agitating the whole world at the present time, how to secure whole-hearted, willing work and increase production.

Labor is fast coming to realize that increases in wages may not of themselves achieve desired results. Events in this country in recent months are significant of that fact. Indeed there are probably only two ways in which workingmen can permanently better their condition. One is to reduce excessive profits and place the burden of taxation where it can most easily be borne; the other, and the more important in its direct results, is to increase per capita production and thus lower the cost of production and bring down prices.

One of the great obstacles to achieving this most desirable end has been the suspicion of labor that any added zeal in work would merely redound to the benefit of private capital. Another has been the fact that the laborer has too often been regarded as a mere tool of production rather than as a human partner in the enterprise, and has lacked personal interest in his work. No doubt this situation, so far as it exists upon the railroads, may be improved by changes in methods under private ownership; but it may more readily be remedied under national operation.

With national operation the return of capital will be fixed or limited, and there will no longer be foundation for the fear that heightened effort will but add to the direct or indirect profits of private owners. Moreover, with all the roads under a single governmental control, the policy of giving labor a voice and personal interest in the conduct of the business can more easily be adopted and carried into uniform and successful practice.

The very fact that the railroad employes themselves favor the nationalization of the roads will simplify the task. I realize that there are many who fear that this will result in a formidable political alliance between the employes and the government; but let those who hold this fear recognize the fact that even under private ownership the government is bound to be the ultimate, deciding factor in any critical labor controversy. It has been so in the past and it will be so in the future, for the concern of the entire country in any such controversy is too great to be ignored. The government can, I believe, deal with the problem with a surer and firmer hand if it deals directly than if it deals indirectly; and the saving factor in the situation is the truth that the real interests of the employes are identical with the interests of the country.

SUGGESTIONS FOR PERFECTING GOVERNMENT OPERATION

As to the form which national operation ought to take, it is generally agreed that private operation has had many defects in the past and much thought is being spent upon possible means of curing these defects. The mistake lies in assuming that flaws in private operation are less vital and easier of remedy than flaws in public operation. Most of the plans for a return to private operation are highly complex and involve so large an element of public control that exercise of "private initiative" will at best be circumscribed, the ultimate responsibility for good service and reasonable rates will rest with the government, and much energy will be lost in costly processes of regulation, duplicating, in many respects, the processes of management. There are so many patent elements of strength, simplicity and power in national operation, at a time when these advantages are sorely needed, that the thought of the country may well be directed to the perfecting of federal control, rather than to its abolition. In this connection I venture to make the following general suggestions:

(1) Too much power has been granted, particularly over rates. This has resulted at times in arbitrary action which has led to the fear that such action may be more frequent in the future. The present rate structure is far from perfect; but our industries have been built upon it and it ought not to be too suddenly or too violently disturbed. No important change should be made without opportunity for full hearing before some disinterested tribunal. The Interstate Commerce Commission has been dealing with rates for years and is well organized for the purpose. It should have the same power over rates under national as it has had under private operation.

The Commission should, I think, also retain its control over accounts and its powers of research and investigation. The state commissions should be permitted to retain similar powers and to exercise much of the authority over service which they now possess. These local tribunals, easily accessible and independent of the federal government, can be of great public benefit. The more opportunity there is for intelligent and informed criticism from independent sources, the better national operation will be.

(2) There has been over-centralization of authority. The roads nationally operated should, I think, be divided into regional or other systems, and these should have a large measure of autonomy or "home rule," so that all minor policies and some of greater moment can be determined on the spot. By instituting comparisons between these systems, rivalry can be stimulated and benefit derived.

(3) While the federal government should retain ultimate control, the suggestions which have been made that independent interests be given direct representation in the management are well worthy of consideration. Such representation would no doubt offer a valuable check against the political and business evils of public operation which so many fear. In this connection, the business men who use the roads have an obvious self-interest which, as I have indicated, is less divided than that of private stockholders. The reasons for giving the employes representation in the management have already been stated, but that representation should not, as is now being urged, be either superior or even equal to that of the government in behalf of the entire public.

These are only general suggestions and I have not attempted to develop them in any detail. The problem is largely one of organization and the important thing at the moment, if Congress could see it in that light, is to turn attention in this direction. If this were done, without doubt the Director General and his aids, representatives of shippers and employes, and many others could give valuable help in devising ways and means for improving the organization and supervision of national operation so that it may better accomplish the purposes which all desire. It is a question which could be dealt with without haste, and the same may be said of the still more difficult question as to the compensation finally to be paid to the owners of the roads if the policy of national operation should be permanently adopted. Probably this latter question could more wisely be determined in the light of the valuation which is now in process, but the suggestion is well worthy of consideration that a trade might be made, giving to present railroad security holders government bonds yielding a return equivalent—government credit being considered—to the return received in the past under normal conditions. In the meantime all that is needed is to continue federal control

in its present form for an appropriate period of time, so that uncertainty as to the immediate future may be ended and sufficient time gained for the deliberate and constructive consideration of the form which national operation should finally take.

Summing up the situation, having in mind the conditions by which the country is now faced, it is my firm conviction that it is unwise to return the railroads to the uncertainties of private financing, and the confusion bound to ensue upon the inauguration of new schemes of public regulation, the raising of rates, and attempts at mergers and the pooling of interests, not to speak of labor complications. The nation will better conserve its strength and resources if federal control is continued and if all who are interested in efficient and economical operation will unite their energies to achieve that end under such control. If supported without prejudice, rancor or partisanship, this policy can be made to promote national pride and unity and add to the power of the country.

Proposed Plans for Railroad Legislation

By Richard Waterman

Secretary of the Railroad Committee of the Chamber of Commerce of the United States

THE President has announced that he will return the railroads to their owners at the end of the present calendar year and has asked Congress to enact the necessary legislation before that time. Congress is making an earnest effort to comply with this request. The Senate and House Committees on Interstate Commerce have held railroad hearings lasting for many months and now have before them more than thirty different plans for railroad legislation that have been proposed by members of Congress, by the Interstate Commerce Commission and the state commissioners, by railroad presidents and railroad employes, by shippers and stockholders, bankers and business men, national organizations and individuals prominently identified with railroad matters.

Plans Proposed

Out of these thirty different plans seven may, perhaps, be regarded as typical:

The Senate Committee plan proposed in the Cummins bill, S. 2906, presenting the recommendations of the Special Subcommittee appointed by the Senate Committee on Interstate Commerce.

The Commerce Commission plan proposed in the Esch-Pomerene bill, H. R. 4378, presenting the views endorsed by nearly all of the members of the Interstate Commerce Commission.

The Railway Executives' plan proposed in the tentative draft of a bill laid before the House Committee on Interstate and Foreign Commerce by T. D. Cuyler, President of the Association of Railway Executives.

The Transportation Conference plan proposed in the Frelinghuysen bill, S. 2998, presenting the program of railroad legislation adopted by the National Transportation Conference held under the auspices of the Chamber of Commerce of the United States.

The Warfield plan proposed in the tentative draft of a bill laid

before the House Committee on Interstate and Foreign Commerce by S. Davies Warfield, President of the National Association of Owners of Railroad Securities.

The Amster plan proposed in the Lenroot bill, S. 2889, presenting the plan supported by the Citizens' National Railroads League.

The Plumb plan outlined in the Sims bill, H. R. 8157, presenting the plan proposed by Glenn E. Plumb, General Counsel of the Railroad Brotherhoods.

DISCUSSION OF PLANS

Ownership and Operation. Six of these plans favor the return of the railroads to their owners as soon as the necessary legislation can be enacted; and also favor corporate ownership and operation as a permanent railroad policy. The seventh—the Plumb plan—proposes that all of the railroads in the country shall be owned by the United States Government and shall be leased for a hundred years to an operating corporation composed in the main of the railroad executives and employes.

Consolidation and Competition. Five of the plans provide for either permissive or compulsory consolidation of existing railroad companies into strong competitive systems whenever the federal authorities may declare such consolidations to be in the public interest. The Amster and the Plumb plans provide for the complete consolidation of all railroads into a single national system thus putting an end to all competition.

Federal Incorporation. Five of the plans provide for either permissive or compulsory incorporation of all interstate carriers; while two—the Warfield and the Commerce Commission plans—oppose federal incorporation on the ground that it is a complicated, unnecessary and probably unconstitutional method of asserting the right of the Federal Government to regulate interstate commerce.

The Transportation Conference plan provides that all existing interstate railroads and all new consolidated companies shall be required to incorporate under a federal charter; and that each railroad company shall be managed by twelve directors of whom eight shall be elected to represent the stockholders, two to represent the employes and two to represent the principal interests in

the territory served by the system. The Amster plan provides for a board of eleven directors, including, one representing the Interstate Commerce Commission, one the state commissioners, two the employes, two commerce and industry, two the farmers, and three the stockholders. The Senate Committee plan calls for a board of directors including two representatives of classified employes and two representatives of the government.

Security Issues and Capital Expenditures. The plans all provide for exclusive Federal regulation of the issuance of railroad securities; and also for Federal regulation of the expenditure of the proceeds. The Senate Committee, Commerce Commission, Warfield and Amster plans assign this duty to the Interstate Commerce Commission; the Transportation Conference and the Railway Executives' plans entrust it to the Federal Transportation Board, and the Plumb plan provides that all railroad securities shall be retired and replaced by government bonds, and that all capital expenditures for railroad purposes shall be made by either the national or the local governmental authorities.

Regulation of Rates. Each of the seven plans provides for the regulation of rates affecting interstate commerce by the Interstate Commerce Commission; and five of them define statutory rules of rate-making intended to guide the Commission in fixing rates that shall be not only reasonable and non-discriminatory, but also adequate. The rules proposed by the several plans are as follows:

1. *Senate Committee Plan.*—The Commission shall divide the country into rate districts and the carriers into rate groups for rate making purposes. . . . . In making rates for each rate group the Commission shall take into consideration the interest of the public, the shippers, the wages of labor, the cost of maintenance and operation (including taxes), a fair return upon the value of the property used for transportation service, and the requirements for additional capital in order to enable the carriers to adequately perform their duties to the public.

2. *Railway Executives' Plan.*—The level of rates shall provide revenue sufficient to pay wages and other expenses of operation and a fair return on the value of the property used in the public service, and to establish and maintain a credit sufficient to attract the new capital necessary to meet the public need for transportation facilities. The Federal Transportation Board is also required to certify to the Interstate Commerce Commission the amount of operating revenues needed by the carriers to enable them to perform their functions.

3. *Transportation Conference Plan.*—The Commission shall determine . . . . such number of traffic sections as it may deem desirable for rate making purposes. . . . . The rate schedules shall be designed to produce a net aggregate annual railway operating income in each traffic section after provision has been made for renewals and depreciation, equal to not less than 6 per cent per annum upon the fair value of all the property in each traffic section devoted to the public use by all state and national railroad companies therein.

4. *Warfield Plan.*—The Commission shall divide continental United States into rate making districts . . . . and shall, as nearly as may be, establish and maintain, freight and passenger rates or levels of rates or charges in each rate making district that will enable the carriers as a whole allocated to each district to earn, after proper allowance has been made for renewals and depreciation, an aggregate annual net railway operating income equal to not less than 6 per cent upon their combined property investment accounts.

5. *Amster Plan.*—The corporation may from time to time initiate such schedules of rates as will be at least adequate to produce revenues sufficient to pay all proper operating expenses, taxes, rentals, depreciation, and maintenance charges, interest on bonds and other fixed charges, and all other proper expenses and charges, and to pay maximum dividends on all outstanding stock and stock receipts, and, in addition, to produce, in so far as the commission may deem necessary and proper, a sum not exceeding 2 per cent of the par value of all outstanding stock; and the Commission shall approve schedules of rates so initiated, which will, in its judgment, produce such revenues.

The Commerce Commission plan does not propose a definite rule of rate making, but suggests that the period of suspension of rates be shortened, and that the Interstate Commerce Commission be authorized to determine the division of rates between carriers, to consider the cost of service principle in fixing rates, and to exercise other broad functions affecting the general rate structure.

The Plumb plan provides that the Interstate Commerce Commission shall regulate all rates; and that if the rates fixed by the Commission do not produce a revenue sufficient to pay expenses, the United States Government shall pay the deficit out of the United States Treasury, and if they produce a surplus it shall be divided equally between the employes and the government.

Adequate Revenues. Analysis of the proposed rules of rate making shows that five of the proposed plans recognize the fact that if the roads are to remain solvent they must be allowed to earn revenues sufficient to enable them to pay all necessary expenses and a fair return on the capital already invested, and in addition to attract new capital in amounts sufficient to provide

for all necessary improvements and extensions of facilities and service. Various methods of accomplishing this purpose are proposed. *The Amster plan* provides for a direct government guarantee of a four per cent dividend on all stock issued by the corporation, and permits the payment of a six per cent dividend if earned. *The Transportation Conference plan* provides for a net return of six per cent on the aggregate fair value of the roads in each traffic section of the country; *the Warfield plan* for a return of six per cent on the aggregate property investment account in each of the three classification territories; and *the Senate Committee and Railway Executives' plans* for a fair return on the value of the property. *The Commerce Commission plan* places on the Commission no responsibility for providing adequate revenues for the railroads of the country as a whole; and *the Plumb plan* leaves the government free to either fix rates high enough to pay all expenses, or else supplement the revenue from rates and fares by an appropriation from funds raised by general taxation.

Excess Earnings. Several of the plans make definite provisions for limiting the amount of the earnings that any individual road shall be allowed to retain. Under uniform rates one road may earn a very high percentage return on its property investment, and another may be unable to pay dividends of more than one or two per cent. Nearly all of the plans make a definite effort to solve this problem of the strong and the weak roads. *The Transportation Conference plan* defines excess earnings in terms that are entirely fair to all of the roads, large and small earners alike; and provides that excess earnings shall be used for the creation of two contingent funds—an individual contingent fund created by each road to support its own credit, and a general contingent fund maintained by contributions from all prosperous roads to support the credit of the railroads of the country as a whole. This plan does not propose, as some have feared, to take from the rich and give to the poor, but rather to use railroad revenues as a whole in such a way as to help each road to help itself. *The Warfield plan* provides for the distribution of the excess earnings of each road, one third to the road and two thirds to be divided equally between labor and the public; and the Amster plan distributes all earnings in excess of six per cent—

forty per cent to labor, thirty per cent to the public for improvements, and retiring outstanding stock, and thirty per cent to the stock holders.

Wages and Working Conditions. Five of the seven plans provide for the creation of temporary or permanent boards for the adjustment of wages, hours of labor and other conditions of service of railroad employes; and two of them,—the Commerce Commission and the Railway Executives' plans—make no declaration in regard to the regulation of labor. *The Transportation Conference plan* provides for the adjustment of wages and other conditions of service of employes by boards consisting of equal numbers of representatives of employes and officers of the railroads with appeal in case of a deadlock to the Federal Transportation Board as referee. *The Senate Committee plan* provides for the creation of a Committee of Wages and Working Conditions composed of four employes and four representatives of the companies to settle all disputes between the roads and their employes, with appeal to the Railway Transportation Board in case of a deadlock; and also provides that the decisions of the Board, i.e., of the government, shall be final and that railroad strikes and lockouts shall be prohibited under penalty of fine or imprisonment or both. *The Warfield plan* authorizes the six Regional Commissions to act as boards of conciliation or arbitration in all controversies between carriers and employes in their respective regions, with appeal in case of a deadlock to the Interstate Commerce Commission. *The Amster plan* provides for the appointment from time to time of an advisory board composed of equal numbers of representatives of the employes and of the national railway corporation to investigate demands relating to wages, hours of labor or working conditions; and requires the boards to publish their findings and recommendations, which however shall not be binding on either party to the controversy. *The Plumb plan* provides for the determination of wages by the Board of Directors of the National Railways Operating Corporation; and for the adjustment of disputes between the officials and the men by boards to which the operating officials shall elect five members and the men five members, with appeal to the directors in case the board fails to reach an adjustment.

Federal Agencies of Regulation. The seven plans all provide

for the maintenance of the Interstate Commerce Commission as the sole federal agency for the regulation of interstate rates. In six of the plans the powers of the Commission are enlarged; but in the seventh—the Railway Executives' plan—and in the Senate Committee plan, certain administrative and executive functions now exercised by the Commission are transferred to the new Federal Transportation Board, the Commission, however, retaining its present powers of rate regulation and its valuation and accounting functions. One of the plans—the Warfield—creates six Regional Commissions to exercise concurrent jurisdiction with the Interstate Commerce Commission, and thus relieves the Commission, as far as possible, of a large amount of work that properly belongs to the Federal body, but can be delegated to the several Regional Commissions. Six of the plans also provide for the creation of a new federal agency of regulation to supplement the quasi-judicial work of the Interstate Commerce Commission by performing many important executive and administrative functions, of which some are transferred from the present list of duties of the Interstate Commerce Commission, but nearly all are new functions assumed by the federal government for the first time under the present legislation.

The Conference plan creates a Federal Transportation Board composed of five members appointed by the President whose general duty it shall be to promote the development of a national system of rail, water and highway transportation, to inquire into and propose measures for preventing abuses therein, to regulate capital expenditures and security issues, to determine the grouping or consolidation of railroads deemed to be in the public interest, and to carry out plans authorized by Congress for merging all roads engaged in interstate commerce into strong competing systems severally owned and operated by companies subject as corporations to the jurisdiction of the United States.

The Senate Committee plan creates a Railway Transportation Board with five members appointed by the President: to prepare and adopt a plan for the consolidation of the railway properties of the United States into not less than twenty, nor more than thirty-five systems; to make inquiry respecting the adequacy and efficiency of the transportation facilities and service of the whole country, and when and how they should be enlarged or

improved; to inquire into the state of credit of all common carriers subject to the Act to Regulate Commerce, and as to the new capital which the public interest may require the carriers to secure in order that adequate and efficient service and facilities may at all times be provided; and to exercise many of the functions and powers heretofore conferred upon the Interstate Commerce Commission, notably the administration of the Car Service Act, the Safety Appliance Acts, the Hours of Service Act, the Locomotive Inspection Act, and others of the same general character.

The Railway Executives' plan provides for a Federal Transportation Board composed of three commissioners appointed by the President and charged with the general oversight from the point of view of the public interest, of all transportation; and suggests that this board should be coordinate with the Interstate Commerce Commission and should relieve it of all its functions except rate regulation, valuation and accounting.

The Warfield plan provides for the creation of the National Railways Association operated without profit to the railroads and managed by the nine Interstate Commerce Commissioners and eight representatives of the railroads, to furnish an immediate means for assisting and financing the return of the roads to private operation; to be continued as a permanent means for mobilizing and purchasing equipment to be leased to the railroads; to provide a management or agency that will continue or put into effect the joint use of terminals, unification of facilities, re-routing of freight by pooling or otherwise, and such other methods of operation as have been found to be successful and expedient during Federal control; and to furnish a standing, trained and efficient means for immediate mobilization of the railroads for war purposes without additional legislation.

The Amster plan provides for the creation of an Efficiency and Economy Board of five members appointed by the President, four from a list submitted by the National engineering societies and one nominated by the employes, to study facilities and service and to devise and recommend improvements in physical equipment and in operating methods.

The Plumb plan provides for the creation of the Railway Board of Appraisement and Extension composed of the nine Interstate Commerce Commissioners and three other members selected by

the members of the corporation to determine the amount of compensation to be paid by the government to the present owners of the roads and the amount to be paid for new extensions and improvements.

TRANSPORTATION CONFERENCE PLAN

The most carefully worked out plan for railroad legislation that has been laid before the Committees of Congress during the hearings is that prepared by the National Transportation Conference held under the auspices of the Chamber of Commerce of the United States. This Conference included in its membership prominent men belonging to every important interest affected by transportation—commercial, industrial, agricultural, financial, labor, governmental, economic, civic and social. The fundamental features of this plan have been approved by a referendum vote of the business men of the country. Certain additional features which are grouped separately in the following summary are in harmony with the fundamental features, but have not yet been submitted to a referendum vote.

The Transportation Conference recommends:

1. Corporate ownership and operation of railroads.
2. Return of the roads to their owners as soon as the necessary legislation can be enacted.
3. Consolidation of existing roads in strong, competing systems.
4. Compulsory federal incorporation.
5. Federal regulation of capital expenditures and security issues.
6. Federal regulation of intrastate rates affecting interstate commerce.
7. Adoption of a statutory rule of rate making that will assure to the railroads revenue sufficient to enable them to furnish the public with adequate facilities and efficient and economical service.
8. Creation of a Federal Transportation Board to promote the development of a national system of rail, water and highway transportation.

The additional features recommended by the Conference but not yet submitted to a referendum vote, include:

9. Creation of a company contingent fund for each railroad

and a general contingent fund for all railroads, to be used in strengthening and stabilizing railroad credit.

10. Creation of a railroad reserve fund for use during the period of transition from government to corporate management.

11. Creation of boards consisting of equal numbers of representatives of employes and officers of the railroads for the adjustment of wages, hours of labor and other conditions of service of railroad employes.

12. Organization of the board of directors of each consolidated railroad company with twelve members two of whom shall be representatives of the employes of the system, and two shall be selected by the Federal Transportation Board to represent the principal interests involved in the territory served by the system.

Of the recommendations of the Transportation Conference listed above, nearly all have already been incorporated in one form or another in the Cummins bill.

SENATE COMMITTEE PLAN

The most definite and comprehensive plan for railroad legislation that is now before the Committees of Congress is that drafted by the Senate Sub-committee on Interstate Commerce and incorporated in the Cummins bill. The regulatory features of this bill have been summarized by Alfred P. Thom, General Counsel of the Association of Railway Executives, as follows:

> It controls the charges of the carriers, except those it leaves to the states to control:
>
> It determines the wages the carriers shall pay to labor:
>
> It provides for consolidations—at first voluntary, but after seven years compulsory—according to plans determined by he government:
>
> If the carriers consolidate voluntarily, it forces a readjustment of their capitalization, to values fixed by government agencies, although this capitalization has been adopted with the tacit concurrence of Congress, under the authority of state laws, and is outstanding in the hands of innocent purchasers for value:
>
> If there has been no complete consolidation at the end of seven years, the owners of these properties must submit to having them valued and taken away:
>
> It empowers the Government Board to distribute traffic which it considers congested, and to divert traffic, not routed by a shipper, from a carrier to which an originating or intermediate carrier may, for business reasons and with business advantage, desire to deliver it:

It throws the terminals, freight and passenger, and other facilities, of one carrier open to the use of another, or other carriers, at the Government's discretion:

It places upon the managing boards of all carriers representatives of labor and of the public:

It makes a Government Board the financial manager of the railroads, conferring upon this Government agency power to determine what capital expenditures and what financing is compatible with the public interest:

It prevents any extension of line or new construction unless specifically authorized by Government authority:

It confers upon a Government Board power to take the locomotives and cars of one company (without reference to that company's views of its own needs) and assign them for use on another road:

It confers upon a Government Board power to require the purchase or construction by a carrier of equipment and other facilities, not according to its own judgment, but in the discretion of the Board:

It confers power on a Government agency to require construction by the carriers of docks and the extension of rail lines to them without limit of distance:

It establishes a rigid long-and-short-haul clause, thus depriving the carriers of the economic advantage of competing for traffic which may move either by rail or water, or by shorter rail lines:

While it controls interstate rates, it does not control, except in some cases by the circuitous and unsatisfactory method of appeal, rates on state traffic, thus withholding a homogeneous system of regulation, and leaving the carrier subject to many conflicting policies and impossible rate situations:

The above outline of the proposed system of regulation (says the Counsel of the railway executives) is not intended as a criticism of, or an objection to, the assertion of some of the powers mentioned, for some of them are entirely justified; but the statement is made for the purpose of indicating the extent to which it is proposed to extend the power of regulation, and to call attention to how little is left to the carriers in the way of initiative, enterprise, real management, or control of financial results.

PRESENT STATUS OF RAILROAD LEGISLATION

The present status of railroad legislation (October, 1919) is as follows:

The Cummins bill drafted by a sub-committee consisting of Senators Cummins of Iowa, Kellogg of Minnesota, Pomerene of Ohio, Poindexter of Washington and Robinson of Arkansas, is now under consideration by the full Senate Committee on Interstate Commerce, and before this article is published in the *Annals* the Committee will probably have completed its labors

and reported the bill to the Senate. The hearings on the Esch-Pomerene bill before the House Committee on Interstate and Foreign Commerce have been completed, and a sub-committee consisting of Representatives Esch of Wisconsin, Sims of Tennessee, Hamilton of Michigan, Winslow of Massachusetts, and Barkley of Kentucky, has been appointed to draft a committee bill that will be substituted for the Esch-Pomerene bill and will probably be reported to the House before November first. These two bills will probably be debated—briefly in the House and at considerable length in the Senate—and will then be passed and sent to conference. They will undoubtedly differ in many important points. As soon as the conference committee reaches an agreement the compromise bill will be reported back to the House and the Senate for passage. When it is finally enacted it will go to the President for his approval, and when he signs it the government will, for the first time, be in a position to return the roads to their owners without courting financial disaster. Without doubt, however, the roads will be handed back to their owners and the country will return to the policy of corporate ownership and operation.

Our Railroad Problem[1]

How to Settle it Effectually in the Public Interest

By Samuel Rea

President, The Pennsylvania Railroad Company

FIVE months ago, in addressing the United States Chamber of Commerce, in the City of St. Louis, I suggested a solution of the railroad problem. Since then the Senate and House Committees have had hearings and the benefit of about fifty or more plans on this subject. As a result I now hope we can soon close our talking season, by Congress adopting constructive railroad legislation that will re-create railroad credit. Today railroad credit is based not solely on railroad earnings but directly on the Treasury of the United States, which is bad for the nation's finances and business, and a burden which increases its taxation.

Railway Executives' Plan

To assist in the problem of restoring railroad credit the essence of the plan presented by the Association of Railway Executives, representing stock and other security holders and managers of roads earning about 93 per cent of the operating revenues of the country, was:—

1. Terminate Federal control as soon as necessary legislation is enacted. The Interstate Commerce Commission to immediately adjust rates to restore the roads to a self-sustaining basis. Pending such adjustment the Federal Government to continue the compensation to carriers under the Federal Control Act.

2. Fund indebtedness to the Government arising out of transactions during Federal Control.

3. Exclusive Federal regulation of all rates, in order to terminate state controversies and confusing regulation, and enable the Interstate Commerce Commission and the suggested Transportation Board to squarely meet the entire responsibility of adequate revenues required to sustain railroad credit. The Executives did not recommend the abolition of state commissions. They felt

[1] Address delivered before the Savings Bank Section of the American Bankers' Association, St. Louis, Mo., October 1st, 1919.

that the state commissions would still have a very large and extensive field to cover in the regulation of purely local and intrastate utilities, such as gas, power and water companies, urban and interurban transit lines, etc. In addition they might be made of great help in the constitution and the workings of the regional commissions also recommended.

4. Establishment of a Department or Board of Transportation to look after the transportation needs and facilities of the country in general, so that new capital might be attracted for future additions and betterments and new equipment. The Board to make recommendations to the Interstate Commerce Commission as to rate increases and adjustments and as to the condition of railroad credit. The administrative functions of the Interstate Commerce Commission to be transferred to the Transportation Board.

5. The Interstate Commerce Commission to be charged with the determination of reasonable and adequate railroad rates, as well as railroad valuation and accounting. Regional Commissions to be appointed on which every State would be represented, thereby avoiding the inconvenience and expense of concentrating practically all transportation questions at Washington. The Interstate Commerce Commission to have power to fix minimum as well as maximum rates. The suspension power for final rate approval to be reduced from ten months to about 60 days. The pooling of cars and traffic and the joint use of facilities to be authorized subject to governmental approval.

6. A wage board to be established for the prevention or adjustment of labor controversies, on which the public should be represented.

7. Exclusive Federal supervision of the issue of railroad securities and of all capital expenditures.

8. Broad powers of consolidation and merger of carriers to be conferred in order to eliminate unnecessary corporations. That Federal incorporation of State carriers be permitted if essential for the foregoing purposes.

9. Adequate rates to be made mandatory in order to sustain railroad credit and attract sufficient new capital. A statutory rule to be enacted by Congress requiring that railroad revenues shall be sufficient to pay operating expenses, including wages and

taxes, and give a proper return on the value of property used for railroad purposes, and be sufficient to attract new capital to improve and expand the transportation service.

Judging by conditions—past, present and looking to the future—we believed the foregoing requirements to be essential for any rational plan of strengthening railroad credit.

Dangers of Fixing Maximum Returns

As a result of close contact with the railroad problem here and abroad and with the results of past experience of the National and State Governments with public works and railroads before us, we felt that government ownership or a government guarantee was not desirable for the railroads of the country. In its last analysis a government guarantee means government operation, as, if the government is to supply the funds, it must have a controlling force in expenditures for railroad operations. The situation today is practically that of a government guarantee. Similarly, although we realized our plan was not perfect, we avoided fixing a maximum return to all the railroads on their property investment, and a division of profits by individual companies if they exceeded that maximum, believing that any attempt to confiscate surplus earnings of any individual company would surely eliminate initiative, restrict competition and injure credit. Interest rates are exceedingly high compared to the pre-war period, and with the capital necessities of the world far from satisfied, any suggested maximum like 6 per cent would be too low for a period when the credit of the government itself, if left free from bank and treasury support, is nearly 5 per cent. The railroads have to raise about a billion dollars annually of new capital for improvements and equipment, as well as provide for maturing notes and securities, and may find 6 per cent insufficient for several years. Further, the danger of maximum earnings may be illustrated by the experience of many of the street railways of the country and their franchises, where the five-cent maximum fare was regarded as providing a sufficient margin of profit to meet all conditions, but, when confronted with world-wide war conditions, the five-cent fare proved totally inadequate compared to costs and taxes, so that public utility companies are as bad a problem for the country to adjust as the railroads.

Many of us remember leases in which 60 per cent or 70 per cent of gross was considered an ample compensation to a lessee to operate a road but the lessees in most cases were later compelled to buy up the stocks of such roads and cancel the leases, because 60 per cent or 70 per cent of gross proved insufficient to pay operating expenses, while the rent of 40 per cent or 30 per cent of the gross paid to the lessor, as earnings increased, became a bonanza.

From a long experience I distrust arbitrary maximum returns unless all other factors such as income, taxes, interest, etc., are likewise fixed, because we cannot foresee or control future business and financial conditions. I have more sympathy with specifying a minimum return as a guide to our commissions of what is an unreasonably low transportation rate and an unfair return on the investment, instead of relying on the courts to save the common carriers from confiscation. I would consider a return of 6 per cent on the property investment a minimum return, especially now when money will cost the railroads even higher figures. Judging by past experience there did not seem to be the requisite authority or initiative in the commissions—federal and state—to make rates that would produce a return of even 6 per cent for a traffic district, or rate making group of railroads, except in years when the roads showed an unexpected expansion of business and when costs continued somewhat stationary, as in parts of the calendar years 1909 and 1916. I have been informed that a minimum would not be specified by Congress, unless it be an absurdly low return like 4 per cent, upon which even the government itself has not been able to borrow the moneys it required, and which would be absolutely too low to form a credit basis for the railroads. Well, neither a maximum nor a minimum is required, if Congress will take the responsibility of directing the Federal Commissions to enable the railroads to resume business on a self-sustaining credit basis, and attract the nesessary additional capital for improvements to properly serve the public. The railroads cannot serve the public if they continue on the "bread line." They are a menace to prosperity, while if prosperous they pay high taxes, improve and expand their facilities, give employment and make the industries prosperous. In good years they should be allowed to earn well above any minimum, so

that in lean years the public will not be asked to pay increased rates to offset large deficits.

Cummins' Bill

Now in response to all the testimony on the railroad question, and the various plans suggested, and the serious condition of railroad credit, a tentative Bill, Senate 2906, has been introduced by Senator Cummins to solve our problem. It is the first broad friendly legislative expression towards railroads in probably the last fifteen or more years. Therefore, I propose to briefly and, I trust, constructively, review some of its salient features that may interest Savings Banks' Executives, with the expectation that Senator Cummins will not consider the railroads and their owners ungrateful for the work he and his Committee have tried to do for the country, but with the sincere hope that he and his associates will endeavor to correct some features of the Bill, affecting the financial and investment aspect of the situation.

Beneficial Features—Cummins' Bill

Omitting criticisms of phraseology and detail, I consider some of the benefits sought to be promoted by the proposed measure are:

1. Return of the railroads to private ownership.

2. Funding of indebtedness of the roads to the government for capital expenditures made during Federal control—but certainly it ought to be for not less than ten years rather than five years, considering financial conditions generally, and the annual requirements for capital by the railroads, while, for general indebtedness, some security other than demand notes should be provided, otherwise credit will be imperiled rather than helped by such funding. This is equitable because the government assumed control, and should leave the railroads in at least as sound physical and financial condition as when they were taken over, and capable of carrying on the transportation business of the country. In the war period while the merchants, the industries, the farmers and others were protected by higher prices, and were given a basis on which to make profits consistent with the higher living costs, the railroads under government control were not placed in that position. Consequently, they should not be asked to pay the

large capital expenditures of the war period without assistance from the government to fund them for a long period and at low interest rates. These capital expenditures were made to assist in protecting the life of the Nation, and the roads should also have transportation rates sufficient to hereafter sustain them.

3. Exclusive Federal regulation of securities.

4. Reduction of rate suspension period from ten months to five months.

5. Creation of a Transportation Board charged with oversight of railroad physical conditions and administrative questions and general credit.

6. A more detailed definition of what elements shall be considered in deciding a reasonable rate.

7. Prevention of strikes that would interrupt interstate commerce.

8. Pooling of earnings and traffic.

9. Clothing the Interstate Commerce Commission with power to prescribe minimum as well as maximum rates.

Objectionable Features—Cummins' Bill

Some of the objectionable features are:

1. The Interstate Commerce Commission is not given effective authority over state rates. Without this authority how can the Commission and the Transportation Board fully protect railroad credit?

2. The provisions as to making compensatory rates and permitting a return sufficient to maintain railroad credit and provide adequate facilities are not sufficiently definite and mandatory to produce that result.

3. Labor provisions are too diffuse to be effective.

4. The purposes for which voluntary consolidations can be made are too restrictive in their scope and the provisions as to compulsory consolidations are fatal to railroad credit.

5. The commandeering of the so-called excess earnings of individual companies, and penalizing surplus earnings if used to provide better railroad facilities, is a decided blow to operating initiative and conservative financing.

6. Railroad valuation in its present form cannot be used for the various purposes proposed in the Bill, nor can it be completed

to enable the Commission or the carriers to promptly carry out the various provisions of this proposed law.

7. Confusion of authority for acquiring property and authorizing additions and betterments.

I will comment further on some of these objections.

Railroad Valuation and Its Uses

The valuation found by the Interstate Commerce Commission, under the present law, is claimed by the government to be a valuation only for rate making purposes, but this Bill requires the same valuation to be used for rate making, capitalization, consolidation, and the measure of a fair return, or as a selling price of the property, and apparently the Commission may change that valuation from time to time. To wait for the final valuation will cause great delay and any intention of its use for all of these purposes is bound to be disappointing. Therefore, rather than stop all progress in fixing reasonable rates, let the existing property investment be used pending final valuation, as it is the return on the property investment of a traffic district that is a guide to the Commission in rate making, and not of single companies, and so far in those districts the return has been found too low for sound railroad credit.

Authorization of Additions and Betterments

The Bill provides that the right of eminent domain cannot be exercised without a certificate of the Transportation Board and the Interstate Commerce Commission for acquisition, construction, maintenance or operation purposes, or any authorized extension or addition thereto, but authority to proceed with any new construction is divided between the State and the Federal Commissions. The construction of a new line of railroad or extension must be authorized by the Transportation Board, while the latter Board is specifically excluded from authorizing the construction of side tracks, spurs, industrial, team or switching tracks located wholly within one state—for that the railroads must apply for state authority. The question of branches and terminals does not seem to be very accurately defined. This serious question is further tied up by the approval of the issuance of securities to carry out such work being solely under Federal

authority. Therefore, I regard the provisions for carrying on improvement work and exercising eminent domain under such divided Federal and State authority as detrimental to business. Industries cannot defer the establishment or extension of their plants on such a divided and dilatory process to determine new branches, sidings, or station improvements. The entire responsibility for authorizing the acquisition of all additional right of way or terminal areas, as well as all new capital expenditure work, should at least be concentrated under one board, just as the issuance of securities is to be solely under the Interstate Commerce Commission. When improvements are so authorized, no public benefit is secured by requiring the consent of any governmental body to the exercise of the power of eminent domain. The requirement of such consent would mean delay and enhanced cost of property.

LABOR PROVISIONS—ARE THEY EFFECTIVE?

I have the following views on the labor provisions of the Bill:

Note that they primarily concern not only the management and investors but the welfare of 1,900,000 employes and affect the payment of $2,800,000,000 in wages. The final decision on railroad wages is given to the Transportation Board. No qualifications are stated for the members of this important Board, which is to deal with the operating and administrative questions of all the railroads, including wages. Subordinate to this Board is a Committee on Wages and Working Conditions, consisting of eight members, four of whom shall be selected from the persons nominated by the organized railroad working crafts on each railroad to represent labor, and four from among the persons nominated by all the railroad corporations, and I suppose the Transportation Board is expected to represent the public. Four years is the term of office and $4,000 each the compensation of the members of the Committee on Wages and Working Conditions. Unless this Committee is expected to pass all disputes to the Transportation Board, surely that short term and that salary are insignificant compared to the magnitude of this responsibility, which has tested the ability of the President and the Director General, and the Railroad Managers. For that task the best railroad managers who understand social questions as well as operating

questions are needed, and the labor members must be up to the same standard. Any suggestion as to standard wages that take no account of the varying living costs and conditions as between New York, Florida, California, Kansas and Maine is contrary to economic experience. No equitable plan for the avoidance of future disputes as to wages will be complete or protective against strikes, unless a sliding scale is adopted, whereby wages will be adjusted to living costs. Settlement of wages under pressure or as a compromise, is bound to produce dissatisfaction.

Labor Representation on Board of Directors

A further labor proviso is that on the Board of Directors of each carrier there shall be two labor directors and two government directors after June 30, 1920. The two labor directors shall be selected from the classified employes and nominated by the employes. The two government directors are to be appointed by the Transportation Board, and apparently whether satisfactory or unsatisfactory to each corporation. On all committees of the Corporations' Boards there shall be at least one labor director and one government director. These labor and government directors are to be compensated and their expenses paid by the corporation for attending board and committee meetings. There is nothing to show whether they are to be on the two thousand or more railroad boards of the country, or only on the boards of the operating carriers. Wages and working conditions are to be settled by the Committee on Wages and Working Conditions and by the Transportation Board in Washington so that no individual carrier corporation will have any responsibility for wages. Further, no carrier can prescribe the wages of its own employes independent of other railroads. Therefore, these labor and government directors on the Board of Directors of every carrier corporation seem to be like the fifth wheel of a wagon. They have no prescribed responsibilities or qualifications, and nothing is said as to the responsibility of the government for their votes. Looking for the results to be expected from the two government directors, the Bill does not permit railroad companies to make capital expenditures, to exercise the power of eminent domain, or to issue securities except upon government approval. What useful service, therefore, will these two govern-

ment directors render? If these four directors, instead of sitting on the carrier's Board of Directors, could be elected one-half by the carrier and one-half by the employes and work as subordinates to the Committee on Wages and Working Conditions, they might give a touch of home rule to the labor question, and form a thread of a labor organization starting from the local ground and ending with the Transportation Board which might be of some benefit. This is a suggestion and not a solution of the railroad labor question but indicates the necessity for careful revision. It would appear wiser to let the Transportation Board, which has final responsibility for wages and for governmental supervision of the railroads, direct how employes and corporations and the public shall be represented, and avoid prescribing elaborate machinery.

The Employes' Advisory Council

There is another labor provision, *i. e.*, an Employes' Advisory Council selected from each organized craft of railroad employes requesting representation, to administer a fund consisting of one-half of any excess earnings over a fair return, which any company guilty of that rare offense under a system of rates which must be reasonable and uniform, shall pay over to the Transportation Board. This duty might very easily be performed by the Committee on Wages and Working Conditions or the Transportation Board and dispense with this Advisory Council.

CONSOLIDATION OF ROADS

I am in favor of consolidation. The Bill declares it is the policy of the United States to divide the railroads into not less than 20 nor more than 35 separate and distinct systems—this division to be a division in ownership and for operating purposes. Each of the systems is to be owned and operated by a distinct corporation and, where practicable, the existing routes and channels of trade and commerce are to be maintained. The systems are to be so arranged and equalized as far as practicable, that uniform transportation costs, uniform rates and the same rate of return on value may be earned.

The Transportation Board shall devise and adopt the system plans, but may thereafter change the same. The Interstate Commerce Commission must also approve them. The govern-

ment will have no financial responsibility for their formation either in the voluntary consolidation plans, or in those regional companies to be mandatorily formed after seven years by order of the Transportation Board. The arresting of the laws of gravitation appears to be as easy to accomplish as to arrange and maintain these ideal systems, considering the divergent traffic, physical, financial and other conditions of the various roads in even a single traffic district. If anything is calculated to stop consolidations, and make them impossible to finance, it is a railroad alignment of this arbitrary character. The existing systems have been formed under a competitive system and follow the lines of the natural traffic routes, and are feeders and extensions of the original trunk lines, and in that way became attached to them as systems. Others might be formed gradually on similar lines, and as their organizations could be trained for the enlarged responsibilities.

The necessity for absorption, merger and consolidation of smaller corporations is apparent.

Analyzing the last complete Interstate Commerce Commission report for the year ending June 30, 1916, we find 1590 companies are divided into the following classes: class I, 189 railroads; class II, 276 railroads; class III, 431 railroads; switching and terminal companies, 227; lessor companies, 467. These 1590 companies do not include about 600 roads that are privately owned, or industrial lines not common carriers in the broad way, some of which report only to state commissions.

The 189 first class roads, together with their lessor companies, earned 97.4 per cent of the total operating revenues of the country. Now taking 162 of the chief operating companies which earned 94.6 per cent of the total operating revenues of the country, we find that they already constitute 86 systems. But only 18 systems during the test period earned over 6 per cent on their property investment, those systems being as follows: Bessemer & Lake Erie, Delaware & Hudson, Delaware, Lackawanna & Western, Elgin, Joliet & Eastern, Lehigh & New England, New York Central, Philadelphia & Reading, Atlantic Coast Line, Norfolk & Western, Alabama, New Orleans, Texas & Pacific Jct., Arizona & New Mexico, Bingham & Garfield, Chicago & Northwestern, Duluth & Iron Range, Duluth, Missabe

& Northern, El Paso & Southwestern, Great Northern, and Union Pacific.

Therefore, until earnings are increased, it is hard to see the basis on which the railroads can proceed with any wholesale plan of absorption or consolidation. The 86 systems existing can be reduced, not arbitrarily but as traffic and earnings justify. Indeed, as 23 systems already handle about 80 per cent of the total operating revenues, there seems to be no necessity or benefit to be obtained from constituting, valuing and financing new systems arbitrarily put together. These 23 systems were: Baltimore & Ohio, Boston & Maine, Delaware, Lackawanna & Western, Erie, Lehigh Valley, New York Central, New York, New Haven & Hartford, Pennsylvania, Philadelphia & Reading, Atlantic Coast Line, Chesapeake & Ohio, Illinois Central, Norfolk & Western, Southern, Atchison, Topeka & Santa Fe, Chicago & Northwestern, Chicago, Milwaukee & St. Paul, Chicago, Rock Island & Pacific, Great Northern, Northern Pacific, St. Louis & San Francisco, Southern Pacific, and Union Pacific.

What the railroads need is not an arbitrary division of the country into 20 nor more than 35 distinct and arbitrary systems formed by mandate of the Federal Government and the changing views of various boards or commissions; nor any attempts to tie the weak and the strong together, in the hope that in some way or other the few strong railroads of the country can support the weak lines, including lines that have thin traffic or should never have been constructed. The railroads want laws, that will permit the existing railway systems to absorb and eliminate the affiliated companies now owned, operated, leased or affiliated with their systems. Such further connecting roads may be added as may be required to round out these systems on a basis that would be approved by the Federal Commissions.

In the Pennsylvania System there are about 140 live companies, consisting of railroad companies, ferry companies, bridge companies, water companies and warehouse companies—all essential for transportation purposes. They are leased or operated, wholly owned, or owned in part by the parent company. Therefore, an absorption law to clear up the barriers in the existing charters and divergent state laws that prevent the absorption of such affiliated companies, to round out a single system and leave

the name and securities of the parent companies unchanged, seems desirable. No such absorption of small companies by the large systems can proceed on any large scale without reasonable earnings to enable that course to be pursued, and thereafter leave the system in a strong position to do its financing on reasonable terms.

The big systems have absorbed many weak lines, and are now supporting other weak lines, and they have about reached the limit in that respect.

State and Federal Regulation of Rates

At the conclusion of Federal control the Bill states that rates are to remain in effect until changed by competent authority. This means State as well as Federal. You can see what a hopeless state of confusion will be caused by throwing all the states into rate regulation again. The carriers are to file new schedules of rates, fares and charges with the Commission within thirty days after Federal control terminates, the same to become effective four months after they have been filed. During this period of readjustment, but for not exceeding five months, the compensation under the Federal Control Act is to be guaranteed. During the calendar year 1917 it took about seventy-five cents out of every dollar to pay operating expenses and taxes, and now it is costing over ninety cents out of every dollar. Certainly for this period of reconstruction, affecting the entire Nation, the United States Government should readjust all rates—State and Interstate—to meet the transportation costs, and properly establish railroad credit, by exercising the same control over rates as was done during Federal control. It is true that the Bill authorizes the Interstate Commerce Commission to coöperate with the State Commissions and remove any unreasonable discrimination against interstate and foreign commerce, but the Act specifically states that it does not amend or affect the existing state laws, or powers in relation to taxation or the lawful police powers of the several states, including the power to make and regulate intrastate rates except as in the Act otherwise provided. It will, therefore, be seen that such reservations will produce extensive proceedings or controversies so as to delay justice to the carriers, or to other states that may be affected by the rates made in a single state.

It also divides the responsibility as to the credit of the carriers. The declarations of policy and elements affecting reasonable rates should be made so mandatory that the Federal Commissions should have a positive duty to see that the rates, both state and interstate, are adequate to protect that credit.

The Cummins' Bill as it stands, gives us no definite or prompt assurance of adequate rates, nor does it get us away from conflicting state regulations. To make it a truly constructive measure it must be strengthened and amended in these fundamental particulars.

COMMANDEERING OF EARNINGS OVER A FAIR RETURN

The provisions relative to commandeering and using for other railroad companies and for railroad employes the so-called excess earnings of individual companies will throw many railroad investments again into a condition of uncertainty, because a fair return is not prescribed or defined, and what may be a fair return for one company, and for one year, may at the lapse of the next year be reversed by the Commission, or be varied for other companies. There will be no incentive to any carrier to earn any money in excess of the payment of an ordinary dividend, not only because of the confiscation of the so-called excess earnings, but the further provision that any surplus earnings invested in the property cannot be capitalized or used as a basis for increased returns. Both provisions in substance will force all future additions, betterments and improvements to be provided from the issue and sale of securities. Such provisions would terminate conservative financing, as under private ownership, the money for new improvements could be had only from the sale of bonds under these conditions, and at higher interest rates to accord with the risk of bad years. If this system is once established for the railroads, it will in time be applied to all public utility companies at the outset, and later to industrial and manufacturing concerns, because their products are just as essential for the daily life of the citizen as railroad transportation.

I desire to emphasize the fact that the conservative railroads which have successfully weathered the various panics, industrial and financial, here and in England, without wiping out or reducing their dividends, are those railroads which used their surplus

over reasonable dividends to provide additional facilities and equipment for the public use, instead of selling stocks or securities for that purpose.

The Pennsylvania System is a fair example. Its property cost and marketable securities, not including holdings of securities of companies forming part of the system, exceeds the total outstanding securities in the hands of the public to the extent of over $500,000,000. If the company instead of following that practice had distributed all its yearly surplus in dividends, and had sold securities for all additions and betterments to its property and equipment, it would now require $30,000,000 per annum of additional net income to pay its 6 per cent dividends, or the company's stock would have been reduced to a 4 per cent dividend, and its bonds would have had to carry a much higher rate of interest because of weaker credit. It would have been impossible for it to have sold its stock on the market, and that would have been to the detriment of the country and industry, as well as to the company's security holders and owners.

The company's surplus was not derived from excessive transportation charges. These charges have been materially below those authorized by its charter. The freight charges especially were materially reduced from the beginning of operation, about seventy years ago, to within recent years, and almost ruinous competition among the various roads had a great effect in reducing these charges. The surplus for improving the company's credit and property was obtained not only from moderate profits in the transportation business, but by paying low dividends on its stock for a long series of years, from selling its stock at premiums, and from profits realized on its investments. This surplus was invested in the property for the improvement of the same for the public use, when legitimately it might all have been disbursed in dividends to the stockholders.

Dangers in Restricting Investment of Surplus Earnings

This practice was also followed by other companies without any regulation or legal requirements, and the public has benefited. What I object to is: (1st) the reprehensible feature that what a company earns under fair and uniform rates through good management and efficient transportation can be taken from

it and given to others, thereby sapping the spirit of initiative and competition, and (2nd) Federal regulation that ultimately will create a situation in which no surplus earnings over a fair return can exist, and that absolutely penalizes the railroads if they invest any surplus earnings in the property for the benefit of the public. If these provisions are allowed to stand, then the least I can ask is that an allowance of some surplus over a fair return in good years should be made mandatory, and not permissive, to assist in lean years. Otherwise in bad years, rates would have to be increased when the shippers could least afford to pay them.

If The Pennsylvania Railroad Company after paying its fair dividends is not to have a surplus to sustain the credit and operations of weak roads in its system, then several hundred miles of railroads must stop operations and improvements, and communities must suffer.

The Pennsylvania System represents about 6.5 per cent of the whole track mileage of the country, about 13 per cent of the ton mileage, 13.5 per cent of the passenger mileage, and its track mileage is about one-half of that of Great Britain and Ireland, and it has invested for public use $1,800,000,000 in its road and equipment, approximately one-tenth of the whole railroad investment of this country. It has been opened for traffic sixty-seven years, and during that time its management has observed a sane and conservative financial and operating policy, and dealt as generously with labor in wages and welfare funds to the extent the earnings permitted. I have the honor of having served the company, with the exception of a few years, since 1871, and for over thirty years have been closely associated with the executive department, familiar with the construction of new lines and branches to serve the public and the financing, upbuilding and compacting of the system. Therefore, I can speak intelligently, and indeed feelingly, about the company's policy and affairs. So far as public regulation is concerned, for the last ten years the company has not been allowed sufficient revenues to earn 6 per cent on the cost of its property and equipment except in 1909 and 1916. Yet so far as the management is concerned, long before there was any regulation of the railroads, as we now understand it, The Pennsylvania Railroad Company did not distribute all of its net income in dividends, but judiciously applied a substantial

portion to promoting, helping and upbuilding its feeders and connecting lines, to eliminating grade crossings, and for other similar construction items. It was not alone in this policy. Other companies pursued the same course, and they could be depended upon to continue such policies, under proper regulation, without injustice to the public. Then why must Congress now propose, as a future National policy, to confiscate their so-called surplus earnings and stop incentive, and on the other hand fail to definitely order reasonable rates that must produce a fair return upon which railroads can live and make progress?

The Problem and the Remedy

The Railroad problem has not changed, nor is it shrouded in mystery. It is this: railroad earnings and credit must be created sufficient to support the existing railroad investment and attract the additional capital the transportation business requires in the public interest. New capital cannot be commandeered. Therefore, adequate rates made under public approval, with opportunity for competition, initiative and incentive, is the effective remedy for the whole problem in my opinion. If adequate rates had been granted in the past decade, there would not have been a railroad problem. I desire to see the Cummins' Bill amended to definitely accomplish that result. If that mandate is not positively forthcoming as the result of the new Congressional legislation, all the boards and machinery created for regulatory purposes will be useless. Extreme care must be exercised to insure sound credit, and not theorize about it. If public regulation does not allow earnings sufficient to sustain railroad credit, and provide necessary transportation facilities, the public will be forced to regard regulation as a huge waste of money, time and effort, and demand a simplification of the situation, and start with a new slate, or drive straight for government ownership with its train of higher costs, inefficiency, and political domination of the employes and of the industries depending on the railroads. National reconstruction cannot be accomplished while railroad investments and credit are left in an unsatisfactory condition. This should spur Congress, the commissions, the investors, the employes, railroad management, and the public to work together for an equitable and prompt solution of this great problem. To

that end the railroad executives are prepared to devote their whole time and attention, if the Congressional Committees so desire. Further delay is extremely dangerous to all concerned.

Should Railroad Income Be Guaranteed by the Government?

By S. Davies Warfield
President, National Association of Owners of Railroad Securities

GUARANTEED return on railroad investment by the government in its effect must be considered in respect to the form in which it is given. If the guarantee is to be a fixed amount or a fixed rate through the direct obligation of the government stamped on the security itself, that is one thing. If it is to be in the form of a guarantee of income on the investment in the railroad fixed by the government, that is another. Either one of these guarantees must eventually bring the railroads under such close operation by the government for the protection of its guaranty as to take on the aspect of federal ownership.

There is what is erroneously termed a guarantee, in a form of regulation by governmental agencies, which would stabilize railroad credit and securities. It is not a guarantee in fact, but an arrangement through the direction by Congress to the Interstate Commerce Commission, or such other regulatory body as it might establish, that railroad rates shall be made whereby the railroads shall receive on the investment in them, in the aggregate, not less than a fixed minimum primary percentage return, and a division of earnings above this minimum.

Railway income, defined as the gross profit remaining after paying the operating expenses and taxes, exclusive of fixed charges on bonds and other obligations and exclusive of any return to the stockholders, has been with certain limitations guaranteed by the U. S. Railroad Administration from January 1, 1918, when the government took possession of the railroads. The government then agreed to pay as a rental for these properties the average income received by the railroads for the three year period ending June 30 of the years 1915, 1916 and 1917. This average income was defined as the "Standard Return" and the government undertook to indemnify the railroads to this extent during government control and operation. The experience with this form of guarantee has not been such as to warrant its being accepted as a

permanent arrangement either by the government or the railroads. The government has not been able to manage these properties in a way to secure from operations sufficient income to pay the railroads this Standard Return and the deficit is a burden to be carried by taxation. In the light of this experience the public is not willing to perpetuate such a condition. The experience of the owners of the railroads with this arrangement is generally unsatisfactory. Under private ownership railroad managements would have looked ahead and directed the development of their properties to take care of and to stimulate the development of the territory they serve. Thus they were always building for the future certain planted equities from which there would be derived increases in income that would be cumulative. In many cases during the test period this development work was in progress and while a large portion of the investment cost was being carried in such periods, the income was still a thing of the future. These properties found that under the Standard Return this expected income could not be realized, but that they could not escape the additional fixed charges assumed to supply the capital for such development work. This led to numerous claims for additional compensation. In few instances have these claims been fully allowed and to the extent not fully allowed the enterprises of these railroads during private operation were penalized by being deprived of the revenue bought and paid for by large capital expenditures during the so-called test period.

Still another loss to the railroads resulted because under the unification process of government management the effectiveness of this development work and of expenditures therefor were unrealized, since the unification process involved in many cases the abandonment of the original purpose of this work. The restoration of these original plans is one of the serious problems facing the owners of railroads upon their return to private operation. This situation plainly demonstrates that government guarantee of railroad income is inseparable from government ownership, as the taking over of the railroads by the Administration has been really an experiment in government ownership at the cost of both the investor whose money was at stake and of the shipper and of the public whose service has been curtailed. The owners of railroad securities cannot be expected to furnish

the capital and relinquish the supervision of its use even under a government guarantee of income. This was recognized as a fundamental condition by the National Association of Owners of Railroad Securities when it undertook the preparation of a plan for the return of the railroads to private ownership.

This experiment in quasi government ownership has also demonstrated clearly to the public, who use the service of the railroads, that the loss of individual initiative and incentive, together with competitive conditions, is not a policy in which the future development of the agricultural, commercial and manufacturing interests of this country can safely be risked. Any plan for the return of the railroads must deal with the requirements of these interests. The progress of the development of each of these interests in every section of the country has followed the lead of the pioneer in railroad facilities and in transportation efficiency. In this great country of ours, so largely undeveloped, the loss of private ownership of the railroads is unthinkable. A referendum on the subject of government ownership or its equivalent, government guarantee on securities, would result in its rejection by enlightened business men. Therefore, the avenue for the solution of the railroad problem does not lie in such a direction.

The true solution is available in a simple and less revolutionary form. It is to be found in applying the elementary principles of merchandising to the sale of transportation service by permitting a profit. Since the government entirely controls the rate charged for this service, the problem is to direct the use of this power in such a way as to make the return sufficient to pay the cost of the use of the property employed. This means the use of both labor and capital. Heretofore the determination of just what would be allowed for this service has been in the uncontrolled discretion of the Interstate Commerce Commission. This body in determining any railroad rate was obliged to make such rate universal. It was not permitted to recognize the difference between a railroad in a sparsely settled or undeveloped country and a railroad traversing a developed section. Even though the Commission had such discretion, it would be commercially impracticable to give a higher rate in an undeveloped country and a lower rate in a developed section. The economic effect would be to divert production and service to the territory of the lower rate where the

more favorably situated carriers operate, so that railroads that were always carried entirely by private capital could not compete with either those that were carried through the pioneer period by government grant, or those territorially more favorably situated.

We have today a number of railroads whose origin would have been delayed, to the great loss of the country, had they been forced to look entirely to private capital. The effect of government or public aid in these instances has been to save the pioneer private investor from loss and to establish equities with the accompanying growth of business which have now assured large profits from their transportation service even under the standard operating conditions of the present period. The Association recognizing that the Interstate Commerce Commission could not deviate in its rate making powers to take care of the less favorably situated railroad without permitting the more favorably located road such excessive earnings as would be intolerable to the public, has as one of the fundamentals of the Plan for the Return to Private operation the principle of a statutory fixed rule for rate making with a leveling process to take care of the excess earnings. This rule provides that the railroad rate shall be sufficient to return 6 per cent upon the property values in the aggregate, and where there is an excess earned to divide this excess, preferably, into three parts; one to go to the railroad as a premium upon its ability to earn such excess, thus taking care of the equities of far sighted management; another third to be used for the benefit of labor; and the balance for the acquisition of additional facilities for universal use by all the railroads. This is somewhat analogous to the Federal Reserve System which left the individual bank to serve its community, but superimposed a regional bank whose earnings were limited to 6 per cent to the stockholders and the excess applied to creating facilities available for the use of each of the individual banks dealing with the public.

In this railroad plan there is no guarantee. If the service is not performed, even though the rate is profitable, the private ownership of the railroad receives no return upon such investment. Thus the incentive is preserved to make the division of earnings to the railroad as great as possible. The obligation of the individual railroad to serve the public in the most efficient way is left unchanged, but the control of the rate structure is

such that as service is rendered a profit is returned and the elementary principle of merchandising implanted in the sale of transportation. Under such an arrangement the doors of capital now closed to the railroads would be opened and investors would freely offer funds for railroad requirements just as every other business that has opportunity for profit finds capital and credit readily available.

The idea of government guarantee takes on many forms besides the one applied during government control. There is the suggestion that government securities of a low interest rate be exchanged for all the outstanding securities of the railroads. A little reflection is necessary to show how impracticable this proposition is. To attempt to exchange existing railroad securities with their varying priorities for a government issue would be a departure in national financing greatly to be deprecated even if possible of achievement. To condemn and pay cash for these railroad properties is equally impracticable.

The quest for the way out of the present difficulties has produced other propositions equally fallacious. There is a suggestion for compulsory federal incorporation. Eminent counsel have disposed of this on constitutional grounds. The private investor looks upon the surrender of charters, under which they made their original investments, protected by the sovereign power of the states whose people are directly concerned in the prosperity of such properties, as a venture upon a sea of a peril exposed to any radical upheaval in national politics.

The crux of the problem lies with Congress. It can safely follow the rule adopted in the creation of the Federal Reserve System. The life's blood of the Federal Reserve System is the note circulating power. The keystone to this power is the gold reserve. Congress did not leave to the uncontrolled discretion of the Federal Reserve Board the regulation of this gold reserve, but by a statutory rule directed in exact terms and figures the use of this power. The life's blood of the railroad system is the rate structure. The Interstate Commerce Commission is left to struggle with the interpretation of what this rate structure should be. By the Association Plan Congress is asked to instruct the Interstate Commerce Commission by a definite rule on this question. All else in the railroad problem is a matter of detail,

as the real heart of the problem requires neither government ownership nor government guarantee. It calls for no change in the corporate structure of the railroad properties in the country; it imposes no burden upon national finances such as suggested exchanges of securities for government bonds; it leaves undestroyed the outstanding securities of the corporations; it does not deal with the question of undercapitalization or overcapitalization; nor does it guarantee that overcapitalization shall obtain any advantage; it requires no complicated machinery for installation; it does not destroy the present railroad operating and financial structures, so necessary to the continued development of the country; its effect can be obtained immediately, and Congress can add such supplemental legislation as the future may direct. It is a solution of the problem, based upon common sense and devoid of the paternalistic idea of government guarantee.

The Elements of a Satisfactory Railway Policy

By Nathan L. Amster

President, Citizen's National Railroads League, Boston, Massachusetts

THE railroad policy in the United States up to the time of Federal control, was, to say the least, slip-shod and short-sighted. It was neither conceived nor carried out with a view to obtaining coöperation between the railroads, the employes, the shippers, communities served and the public. In fact the policy was such that no foundation was laid upon which to build a lasting and satisfactory business structure which could command the public confidence or adequately serve the nation. In consequence, the railroad industry as a whole became both unprofitable and unpopular. As was inevitable from the outset, the industry, as an institution, has gone the way of all other autocratic institutions.

Universal Relation Between Railroads and People

The people who, in the main, were responsible for both the policy and the form of railroad control of the past in their short-sightedness overlooked the fundamental fact that the railroad industry, intrinsically touches the very heart of, and indeed is, democracy. Its service comes nearer to being a part of the every-day life of the people, individually and collectively, than any other industry or institution in the country. Just how intimate is the relation between the railroads and the people is well illustrated by the fact that one-fifth of the population of the country have a direct or indirect proprietary interest in the railroads, either through ownership of stocks or bonds, or by reason of their ownership of life insurance policies or their deposits in savings banks. Then, when one considers the millions of railroad employes, the millions engaged in the manufacture and production of the fuel and supplies used by the railroads, it can be estimated that no less than one-third of our entire population is most vitally interested in the railroads, either as owners or by dependence.

Control of Railroads in the Past

Yet, anomalous though it may be in a country essentially democratic, the control and management of the railroads—the virtual

dictation of the policy of government of an institution so close to the life of so many millions of people—has been held by a score of powerful financiers or their nominees. In other words, the life and destiny of the greatest industry in our country has remained absolutely in the control of masters whose power has been as vast and autocratic as that exercised by the Hohenzollern and Hapsburg families over the life and destiny of the German and Austro-Hungarian peoples.

OBJECTIVES IN A RAILROAD POLICY

This autocratic control, self-seeking and self-created, of the basic American industry must be overthrown and dispossessed as European autocracy has been dispossessed. The interests of the railroad business and of the nation, demand it. The dispossession of financial autocracy in the railroad world must form one of the essential elements of the transportation policy for the future. If this is not accomplished there must follow deterioration in railroad service, depreciation in railroad securities, and dissipation of railroad credit. In short, in determining a railroad policy for the future, we must democratize the industry by radical reform of the system of management and control, reëstablish railroad credit and fix once and for all time an invigorating rate policy. I am convinced that no satisfactory policy can be framed which does not assure:

1. Adequate transportation facilities.
2. Economical operation, with proper and ample provision for improvements in service.
3. A fair return on capital honestly invested.
4. A sound and scientific rate-making policy.
5. A better understanding and a closer relationship between the railroads and their employes.

In order that these fundamental reforms may be assured, I have come to the conclusion that we must, first of all, provide a means of accomplishing the following:

(a) The approximate valuation of the railroads in public service.
(b) Efficient management independent of the financial interests that controlled the roads in the past.
(c) Definite and statutory rate-making laws;
(d) Control of management and operation by the different interests concerned.

Until we arrive at the real value of the railroads in public service, we cannot find a basis for establishing what shall be a fair return on investment. Nor can we define a scientific, equitable rate-making policy without provision for a fair return and adequate freight rates. Until we can provide for the democratization of railroad management, we cannot expect transportation to be adequate or efficient nor can we look for the reëstablishment of railroad credit and public confidence.

My conclusion, therefore, is that the valuation now in progress under the direction of the Interstate Commerce Commission should be expedited and that the valuation must take into consideration, not alone the physical value of the railroads, but all other elements of values.

REFORMS OF MANAGEMENT PROPOSED

As for the reform of management, which I have said is essential, I am of the belief that it can be obtained only after the roads have been consolidated. That there is a growing belief on the part of the people that such changes as I have indicated are desirable and absolutely necessary, is evidenced by the fact that virtually all of the plans thus far presented to committees of Congress dealing with the railroad problem (and there have been a great many presented) aim at the accomplishment of these reforms to a greater or lesser degree. Most of them however fall short of the mark and, I regret to say, many of the plans obviously are insincere.

The one bill, or plan, which in my personal opinion comes closest to covering the points I have enunciated is the one introduced in the senate by Senator Irvine L. Lenroot of Wisconsin. I do not make this statement because the Lenroot bill happens to embody many of the suggestions which I have offered to the Interstate Committees of both the House and the Senate, but because I believe that the Lenroot bill is predicated upon principles which are sound and practical, and which would result in a transportation system built upon the only elements which can assure complete satisfaction to all concerned.

OUTSTANDING FEATURES OF THE LENROOT BILL

1. *Ownership.*—A National Railroad Corporation is created by Act of Congress to acquire, own and operate all interstate rail-

ways, the securities of the corporation to be privately owned.

2. *Management.*—The controlling power, subject to the supervision of the Interstate Commerce Commission, is held by a board of eleven directors selected by the President, by and with the advice and consent of the Senate, out of a limited number of names proposed to him by the various classes interested, as follows: two from the employes, by the Brotherhoods; two from the shipping, commercial and industrial groups represented by the United States Chamber of Commerce; two from the agricultural interests as represented by recognized farm organizations; three from the stockholders after a ballot, by mail, by all stockholders upon names proposed by a nominating committee named by the Interstate Commerce Commission; one from the members of the Interstate Commerce Commission and one from the members of the State Railway Commissions as nominated by the National Association of Railway Commissions. The directors shall name a director general who will be the operation head of the corporation, and the country will be divided into operating divisions or regions as may be deemed advisable. Each director will hold office for ten years. The problem of improving service and attaining efficiency will be dealt with by an advisory board selected from names proposed by the four great engineering societies of the country.

3. *Rates and Dividends.*—Dividends not exceeding six per centum per year will be paid on all issued stock. The Federal Government will guarantee minimum dividends of four per centum. The Act provides that the Interstate Commerce Commission, which will control rates, must fix rates sufficient to pay all operating expenses, depreciation and maintenance charges, and full dividends on the stock. In case rates so fixed yield a surplus above such amount of more than 2 per centum on all stock, rates forthwith shall be reduced. The surplus over dividends of six per centum will be divided as follows: 40 per cent to labor, 30 per cent to stockholders, 30 per cent to the public. The money paid to the public shall accumulate as a reserve of half a billion to be used to pay dividends in off years, and then to limit extensions which cannot be capitalized or to buy stock in at par and thus to reduce rates.

4. *Organization.*—The proposed corporation shall be formed by

exchanging stock in the new corporation for stock in existing companies on a basis determined by the valuation of the Interstate Commerce Commission. The value shall be arrived at by taking into consideration the original cost and the reproductive cost, using as a corrective the earnings over a period of ten years, capitalized at five per centum. The National Corporation shall have a working capital of $500,000,000 and power to buy or sell directly railroad securities of all kinds, and also the right to condemn.

These are the essential elements in the Lenroot bill which I believe would give us a lasting and satisfactory transportation policy. To my mind, the provision for complete unification and for a managing and controlling board composed of representatives democratically selected as I have outlined, would protect the country against graft and profiteering, manipulation and financial exploitation, in the conduct of the transportation business. I believe that, if some policy such as that provided in the Lenroot bill, is adopted and made the law of the land, we can achieve harmony and unity in the transportation world, and that distrust and antagonism will be eliminated and made impossible of recurrence.

In conclusion, the supreme duty of Congress is to fix upon a policy that will assure adequate and efficient transportation service at the lowest cost consistent with that service, and that will give labor representation in common with other interests, and the right to participation in profits which its efficiency makes possible. These things, in my opinion, would be assured by the enactment of the Lenroot bill.

Invested Earnings

Their Social Significance in Public Utility Financing

By Charles Reitell, Ph. D.
School of Economics, University of Pittsburgh

CONTENTS

I. Introduction

THE earnings of public utility companies which are invested "back into plant," flow into two kinds of property. First, there is that form of investment which is necessary to keep the property intact—expenditures for repairs, maintenance, and general up-keep. And second, there is that form of investment which increases property value. This form of investment covers earnings put into additions and betterments, or as sometimes termed —extensions and improvements.

The first of these, the general up-keep and maintenance charges, has never been severely questioned as being just charges that should be met from earnings. A long line of court rulings show conclusively that in considering what is to be a just rate or charge to the consumer or user of public utility service, all expenditures for keeping the corporation property up to its original value, must be taken care of. The Knoxville Case[1] which has been broadly cited as the leading case in this matter, holds:

> Before coming to the question of profit at all, the company is entitled to earn a sufficient sum annually to provide, not only for the current repairs, but for making good the depreciation and replacing the parts of the property when they come to the end of their life. It is entitled to see that from earnings the value of the property invested is kept unimpaired so that at the end of any given term of years the original investment remains as it was at the beginning.

[1] *Knoxville* v. *Knoxville Water Co.* (212 U. S. 1).

The second group of investments, however,—those earnings which go into increasing the capital value of a utility company by adding to and improving the property, brings forth a problem of no mean importance in public utility financing and public utility regulation. It is to be remembered that by far the larger portion of the earnings of public service corporations come from rates paid by the public. If such rates are sufficient not only to cover operating costs, maintain complete up-keep of property and pay a fair return on the investment, but in addition to provide a sufficient fund for extending and improving the plant and equipment, there is involved a problem of far reaching public and social import.

We realize this importance when we observe that earnings once invested in extensions and betterments generally connote an increased capitalization of plant—an added amount returned to the owners—which in turn calls for more earnings for dividend paying purposes. These additional earnings, made necessary by increased investment, may come from an increase in patrons, or they may be met by an increase in rates. In either case property value has been enhanced out of rates; an enhancement which amounts to an added return to the owners, provided dividend payments have been made.

Before calling attention to the different issues involved in this problem, it might be well to consider some of the facts of invested earnings in order to grasp clearly the nature and extent of this form of investment.

II. FACTS OF INVESTED EARNINGS

The following statement is compiled from the condensed balance sheets of all steam railroads in the United States as of June 30th, 1916. It shows the disposition that has been made of the corporate surplus. Inasmuch as the corporate surplus is built in the main from past earnings, the statement portrays the avenues into which a considerable amount of the surplus earnings of our railroads has gone.

DISPOSITION OF THE CORPORATE SURPLUS
All Steam Railroads as of June 30, 1916
(Statistics of Railways in the U. S.)
1916

Type of Carrier	Additions to the Property through Income and Surplus	Funded Debt Retired by Income and Surplus	Invested in Reserves from Surplus
Class 1 Carriers	$503,647,000	$58,702,000	$118,355,000
Class 2 Carriers	5,720,000	1,967,000	1,430,000
Class 3 Carriers	1,232,000	262,000	261,000
Non-operating Carriers	29,847,000	25,874,000	14,420,000
Switching and Terminal Lines	7,601,000	2,473,000	2,575,000
Totals	$548,047,000	$89,278,000	$137,041,000

(NOTE: In addition to the above totals there is an item of $85,082,000 of surplus which has not been specifically invested.)

It should be noted that from a total credit to corporate surplus of over eight hundred and fifty millions of dollars approximately five hundred and fifty millions has been put into additions to property. In addition to this building of property from earnings all but ninety millions has been used from the surplus in order to retire the funded debt—bonds, notes, etc.

During the five year period 1912–1916 the additions to property of the railroads from income and surplus show a very rapid growth—almost a complete doubling. The increase in these years for the Class 1 roads alone was approximately a quarter of a billion dollars. The total credits for each year, as they appear on the condensed balance sheet of the Class 1 roads, follows:

Status of the Account
ADDITIONS TO PROPERTY FROM INCOME AND SURPLUS
Class 1 Roads
(Figures show total appropriation as appearing on condensed balance sheets)
(Statistics of Railways in U. S. 1912 to 1916)

1912	$257,833,000
1913	387,764,000
1914	424,052,000
1915	412,266,000
1916	503,647,000

Invested earnings and the surplus problem made up a considerable part of the testimony and opinion both in the Eastern and Western rate cases[2] argued before the Interstate Commerce Commission. From these two cases several instances may be taken which show how earnings have been put into property.

The President of the Pennsylvania Company testified that since 1887 his company has put into the Pennsylvania lines east of Pittsburgh $262,000,000 from earnings. During all that time this company also paid its stockholders attractive dividends. This sum according to the statistical report of the Pennsylvania Railroad Company to the Commission for the year ending June 30, 1910, equals two-thirds of the total construction of the 2,123 miles owned by that company at that time.[3]

The financing of the Hudson River Tunnell gives another illustration. Quoting from the *London Statist:*[4]

> At the end of 1909 the total cost of the tunnel extension including real estate not permanently required for its use was $102,496,000, of which $35,000,000 has been charged against surplus income.

The Interstate Commerce Commission Reports cite another instance where regular dividends, never less than 6%, were paid the owners and in addition earnings were sufficient to enable the purchase of competing roads:[5]

> The Lake Shore and Michigan Southern on June 30, 1901, owned a majority of the capital stock of its competitor, the New York Central, Chicago & St. Louis Railroad Co. A majority of the stock of its connection, the Pittsburgh & Lake Erie Railroad, almost one-half of the capital stock of the Lake Erie & Western and over eleven million of the capital stock of the Cleveland, Cincinnati, Chicago & St. Louis Railroad Co. were purchased. Besides these it had bought up considerable holdings in other companies. All this ownership had been acquired in addition to dividends, never less than 6%, out of net earnings. In 1902 the railroads made a single purchase out of surplus of $4,728,000 of the capital stock of the Indiana, Illinois and Iowa Railroad Co. The entire capital being $5,000,000.

In municipal utilities we also find the existence of property building out of earnings. Three illustrations are taken from cases which have come before public service commissions.

[2] *I. C. C. Reports.* Vol. XX.
[3] *I. C. C. Reports.* Vol. XX, p. 269.
[4] *The London Statist,* Dec. 17, 1910.
[5] *I. C. C. Reports.* Vol. IX, p. 382.

The Haverhill Gas and Light Co. was organized under a special charter in February, 1853, and later in that year began the supply of gas in Haverhill. Its capital stock was originally $45,000, which was increased in 1871 to $75,000. It has enjoyed the exclusive privilege of supplying gas to the city and people of Haverhill. Its management appears to have been exceptionally careful and conservative so that, in addition to the payment of an average dividend of 8%, it has accumulated a surplus of earnings invested in its plant estimated to represent approximately $300,000.[6]

A revealing of the facts of the Bridgeport Natural Gas and Oil Company also shows a high percentage of their capital value as flowing from earnings. The investment in the plant as of December 31, 1915, shows

Capital Stock (From Owners)	$11,010.00
Additions and Betterments (Built from Earnings)	35,891.26
Funded Debt	4,000.00
Total	$50,901.26

The net return in 1915 as dividends was $6,800 which on a basis of total capital value including invested earnings, shows a profit of 13⅓%. If this return is considered in terms of the cash investment made by the owners it gives a profit of 61¾%.[7]

Again in the case of the Kansas Natural Gas Co., of the $16,000,000 capital over $3,500,000 came out of earnings. This company always paid regular dividends on its stock.

Sufficient instances have been given it is hoped to show the existence of the method of increasing property by investing earnings. The method is not rare. It is such a common experience in public utility financing that any number of illustrations might be brought to our attention if time and space would permit.

III. Advantages and Disadvantages of Invested Earnings

Many beneficial and advantageous results come from the investing of earnings in property.

(a) For instance such a method of investment may be the only

[6] *Repts. The Board of Gas and Electric Light Commissioners.* Mass., 1915.
[7] *In re Bridgeport Nat. Gas & Oil Co. P. U. R.* 1916, p. 253.

available means of securing funds to extend and improve the property. Where improvements are made which do not result in increasing the revenue, such as the building of terminals, constructing tunnels or removing grade crossings, it may prove, in fact it has proven, that it is easier to make these improvements from earnings than it is to go out in the market and sell securities in order to finance the undertaking.

(b) Again the existence of a large surplus invested in plant forms the basis of securing good credit. The existence of such a surplus, as was shown in the Eastern Rate Case, does much to make the floating of loans, etc., an easy undertaking.

Under this benefit might be considered the advantage that comes in having a surplus to carry a company over "the seven years of lean." The maintenance of a funded reservoir which may be drawn upon in times of famine is certain to give stability to the financial condition of the utility company. The Montreal street railway franchise, which will be noted at length later, provides for the establishment of a surplus for just such a purpose. One per cent of the gross earnings is put annually into this fund until it reaches $500,000. It is built to take care of unexpected happenings that may tend to embarrass the finances of the company.

(c) The maintenance of a surplus also ties in with efficient operation. A company running on a hand to mouth existence can do little in the way of experimentation or the trying out of new policies. The existence of the surplus allows the company's policy to become flexible and thereby permits excursions into new practices which may or may not prove successful.

All the advantages that accrue with having a surplus do not mean that the surplus must be capitalized. The opposite is more likely to be advantageous. And right here it is important that attention is called to the distinction. As soon as a corporate surplus is capitalized, it loses its advantages as a flexible fund or as a balance wheel for the company's finance. Once capitalized it goes out as a decided advantage to the stockholders, but ever after becomes invested capital calling for dividend payments on the part of the company. That is, capitalization means more dividends to be paid.

It is surplus capitalized which brings up the real problem in

which the public is concerned, as it then represents a direct payment to the stockholders of the corporate surplus created from rates.

The disadvantages of invested earnings may be grouped under four heads:

(a) The first disadvantage is the danger of higher charges being made on account of the investment of surplus earnings. A rate large enough to pay all costs including dividends, and sufficient to build extensions and improvements, is to the public a direct over-charge. As was quoted in the Western Rate Case:

In 1899 the unappropriated surplus in all railroads was $194,000,000, whereas in 1909 it was $800,000,000. In ten years with an increase in rate of dividends and increasing maintenance charges and a vastly increased fixed charge for interest, these carriers had accumulated a surplus of $606,000,000 or an increase of 312% over 1899.[8]

(b) Another disadvantage where the policy of investing earnings is pursued is the danger of emphasis being placed upon expenditures for extension and improvements at the expense of service and daily operation. The public should realize that the reward is too attractive to keep the company from placing earnings in investments rather than in service. The former is a real and permanent gain, the latter a direct expense. This was the situation which led the courts in the Monroe Ind. Tel. Co. Case[9] to hold:

It has been the practice in the past for this company to build as many extensions as possible out of earnings. This has had the effect of increasing the size of the property at the expense of the service, and of the property already in existence. In other words, a more extensive plant has been built than can be maintained at present rates. The time has come when this practice must cease. Additions and betterments must be provided hereafter out of new capital secured out of the sale of stock.

(c) The greatest disadvantage in the policy of investing earnings is the effect it has on rate making. If a property valuation is allowed to be built from earnings and that valuation becomes the basis for the establishment of rates, the possibility of preventing rate increases is very small indeed. Rates are almost bound to

[8] *20 I. C. C. Report*, p. 332.
[9] *P. U. R.* 1915, p. 57.

have a spiral tendency ever moving upwards. The company in addition to paying dividends can well improve and extend its plant at will; and it can rest assured that these additions and improvements will be handed over to the owners, and their valuation form a basis for requesting added revenue. Such a policy, therefore, readily puts padlocks on hopes for rate reductions. How can lower rates be expected when added valuation is shown?

(d) The fourth disadvantage that should be noted, and which is further considered under Invested Earnings under the Régime of Regulation, is the relation that exists between invested earnings and speculation in public utility financing. Those interested in placing utility investment upon a sound basis feel that a policy of enhancing property from rates creates a basis for much speculative activity, which should be discouraged. And it is, therefore, further held that all additions and improvements should come from the sale of securities.

IV. THE ATTITUDE OF COURTS AND PUBLIC SERVICE COMMISSIONS

As an established rule, the courts have held that the invested earnings of a public utility company are the property of the stockholders. A careful survey of all the court decisions point to this ruling. In *Bryner* v. *Butler Water Co.*,[10] Judge Williams held:

> In determining the amount of the investment by the stockholders it can make no difference that money earned by the corporation and in a position to be distributed by a dividend among its stockholders, was used to pay for improvements and stock issued in lieu of cash to the stockholders.

The decision of the Supreme Court of New Jersey in the oft-quoted Passaic Gas Case[11] conveys the same opinion as the Butler Case. The opinion affirmed by the Supreme Court reads:

> If, in the past, this gas company, out of rates exacted from consumers, had met its operating expenses and depreciation, and in addition thereto had obtained enough to pay returns to investors, and to build an actual structure used in this business, would this structure aforesaid be the lawful property of the company? The answer, it seems to us, must be in the affirmative. If the company had paid out, in addition to other payments to investors, dividends equal to the cost of building this structure, and then had issued additional stock in

[10] *Bryner* v. *Butler Water Co.* (1897) 174, p. 231.

[11] *In re Opinion of N. J. Board of Public Utility Commission in the Passaic Gas Case* (1913) Vol. 1, p. 470 and 84 N. J. 463.

value, equal to the cost of this structure in order to repossess itself of the money required to build it, there can be no doubt that the structure built out of the proceeds of the additional securities thus sold would be the lawful property of the company. It would be none the less the company's lawful property if built out of current earnings without the issue of additional securities.

Other court decisions substantiating the above rulings will be found in:

San Joaquin C. v. *Stanislous Co.*, 233 U. S. 459.
Murray v. *Pub. Utility Com.*, 150 Pac. 147.
Fall River Gas Case, 214 Mass. 531.
Grafton County Electric Light & Power Co. v. *State*, 94 Atl. 193.

A court ruling which suggests that patrons have some indirect rights to invested earnings is the findings of the Supreme Court in the Yellow Pine Case, in which it upheld the Interstate Commerce Commission's decision.[12] The Commission found that the carriers had charged as a part of their operating expenses large sums which had, in fact, been devoted to the purchase of additions, new equipment, and to the making of permanent improvements to their roading and structures, and held that those items were not properly chargeable as operating expenses, for the reason that the shipper of today could not be properly required to pay the entire cost of an improvement or addition which was to be of permanent use. The case is one in re rate advances and definitely holds that the patrons of a railroad will not be compelled to pay a rate so large as both to pay dividends and to build up a surplus to be invested in extensions or improvements. This case, however, is a rate case and not one dealing with the question of ownership. Up to the present time the courts have unanimously held that surplus belongs to stockholders and the Yellow Pine Case does not conflict with this general holding.

The rulings of the Courts have constantly held that invested earnings belong to the stockholders. The Public Service Commissions in contrast have taken divergent stands on matters of rights of ownership to surplus; also on whether invested earnings may or may not be capitalized; and on the question of invested earnings as being considered a factor in determining

[12] *Central Yellow Pine Assoc.* v. *I. C. R. R. Co.* 10 I. C. C. Rep. 505. *I. C. R. R. Co.* v. *I. C. C.* 206 U. S. 441.

rates. These different rulings might be grouped under three headings:

First. Rulings of the Commissions determining to whom Invested Surplus shall belong.

Second. Rulings of the Commissions regarding the right to Capitalize Surplus.

Third. Rulings of the Commissions regarding the Surplus as a Rate Making Factor.

Each of these groups will be considered in turn:

(a) *Rulings of Commissions determining to whom Surplus shall belong.*

The most recent case coming before a State Commission as regards the right of ownership of earnings is the Indianapolis Water Company Case.[13] In this case the Indiana Commission held that surplus earnings invested in the plant must be included in determining the amount of the investment made by the stockholders, since such surplus is the property of the stockholders; and when invested in the plant, they are entitled to earnings thereon. This company's accounts showed a corporate surplus of $3,500,000 that would have been in the treasury of the company if it had not been invested in the property or elsewhere. The Commission stated:

> This represents the actual corporate savings from income and was the property of the stockholders.

A dissenting opinion by Commissioner Corr is enlightening in that it clearly outlines an opposite point of view. Part of Commissioner Corr's opinion is as follows:

> If the Indianapolis Water Company has earned reasonable rates on the value of its property and distributed the same to its stockholders as dividends, and, in addition has paid fixed charges and operating expenses, and provided a proper depreciation fund, then that is all it is entitled to, and any exactions from consumers in excess of this is unlawful. So that, if this surplus which has been reinvested, was so unlawfully collected, over and above just rates, it in equity belongs to the patrons of this company, and cannot be recapitalized against the public.
>
> While the legal and technical title of this accumulated surplus may be in the company, it was unlawfully accumulated, and in equity belongs to those from whom it has been involuntarily exacted. This Commission may have no legal right to order the return of the money thus unlawfully accumulated, and yet it

[13] *P. U. R.* 1917 E., p. 557.

does have the power to, and should prevent the recapitalization of these unlawful exactions, extorted from the public by unlawful rates, against the present and future water consumers of this water company.

The Wisconsin Railroad Commission in *Charlesworth* v. *Omro Electric Light Co.*[14] very clearly held that invested earnings belong to the stockholders. The Commission ruled as follows:

It is quite clear, also, that property paid for out of earnings is as much the property of the respondent as though paid for by new capital. Such earnings might have been first distributed among the stockholders as dividends, and later returned for investment.[15]

The Interstate Commerce Commission suggests that the surplus should perform the function of being a public fund held by the Railroad Company and used for the production of better service. Quoting from the Commission on this point:

There is much persuasiveness in the argument that a surplus shall be permitted to accumulate which shall be in a sense a public fund out of which the carrier may create facilities which will produce more efficient and satisfactory service without adding to the liability of the road and without creating an additional value in the road which may call for a greater return in rates. This suggestion has much that is fundamental in it. It looks toward an adjustment between the public and the carriers that will be fair and profitable to both. It is an expression of the appreciation by the public service corporation of the philosophy upon which public regulation of carriers is based. Moreover some method must be found under which a carrier by its own efficiency and management shall profit. . . . . Society should not take from the wisely-managed railroad the benefits which flow from the foresight, skill and planned coöperation of its working forces.

It would appear that one of the problems of the future in railroad regulation is to discover the machinery by which the railroad may justly take to itself a return for the investment which its stockholders have made, and share with the community the advantages of the surplus which it creates.

. . . . Any attempt on the part of the Commission to declare and carry out such a policy would, we take it, be subjected immediately to successful attack before the courts. Since we cannot declare that accumulated surplus shall not be capitalized, the adoption of such a plan rests entirely with the carrier, and the volume of such surplus as a public trust fund depends entirely upon their own policy and good faith.

The Interstate Commerce Commission has well summed up the control that public service commissions can have as regards the ownership of surplus:

[14] *P. U. R.* 1915 B., p. 1.

[15] *In the Western Railroad Case. I. C. C. Reports*, Vol. 20, pp. 333–34.

Any considerations we have given and any suggestions we have made regarding the rights of ownership of surplus earnings are manifestly addressed to a body having legislative power; and until either by legislative enactment or by a generous attitude of the utility company, the surplus is treated either in whole or in part as a public fund, the matter of ownership will unquestionably rest with the private company.

(b) *Rulings of Commissions Regarding the Right to Capitalize Surplus.*

Two public service bodies—the West Virginia Public Service Commission and the Oregon Public Service Commission—have upheld the right to capitalize or invest earnings. The West Virginia holding is in the Bridgeport National Gas and Oil Company Case.[16] The facts of this case were quoted above.

With so large a proportion as 70% of the investment being built from earnings, the Commission nevertheless held:

In determining a fair return on the amount of capital honestly and prudently invested and having in view the value of the service to the consumer, extensions and betterments paid for out of moneys otherwise available for dividends may be capitalized where the amounts available for such purposes were at no time exorbitant, and in many instances far below a fair return on the investment.

The Oregon Commission in the Portland Railway Light and Power Company Case[17] ruled:

The source from which the money was obtained—whether by original contribution through stocks or bonds, or from corporate surplus—is immaterial in the findings under this head.

In seeming contradiction to these views two commissions—the Illinois and Nebraska Commissions—portray the following:

In re application Citizens' Mutual Telephone Company,[18] the Illinois Commission held:

The subscribers of the telephone utility should not be required to contribute any amount in the form of increased rates or otherwise, toward increasing the capitalizing of the plant, since only the stockholders can share in the return on such increased capitalization.

The Nebraska Commission in the Monroe Independent Telephone Company Case,[19] stated:

[16] *P. U. R.* 1916–C, p. 253.
[17] *P. U. R.* 1916–D, p. 1012.
[18] *P. U. R.* 1915–C, p. 103.
[19] *P. U. R.* 1915–E, p. 57.

It has been the practice in the past to build as many extensions as possible out of earnings. This has had the effect of increasing the size of the property at the expense of the service, and of the proper maintenance of the property already in existence. In other words, more plant has been built than can be maintained on the present earnings. The time has come when this practice must cease. Additions and betterments must be provided for hereafter out of new capital secured through the sale of stock.

It is further ordered that any surplus remaining out of the earnings, after all operating, maintenance and depreciation expenses, and a dividend equal to 7 per cent on the outstanding capital stock, have been paid, shall be applied to the improvement of the service and the maintenance of the existing property; and, unless the approval of this Commission is first secured, none of such surplus shall be expended for the building of new lines or for any additions and betterments.

(c) *Rulings of Commissions Regarding Invested Earnings as a Factor in Rate Making.*

When it comes to a consideration of invested earnings as forming a basis for rate determination, public service commissions have in general held that investments from earnings are not entitled to be considered on the same basis as new investments made from the sale of stocks or bonds. In the Bay State Rate Case[20] the Massachusetts Commission ruled:

Additions and betterments paid out of earnings have no part in the investment to be taken as the basis for rate making.

The same attitude was upheld by the Connecticut Commission in re Stoddard, Gilbert & Company Case.[21] After going into the facts of this case the Commission held that the revenues beyond a return of 8%, for a surplus to be used in extending and building up facilities needed properly to handle business, should not be allowed in the proceeding to determine the reasonableness of street railway freight rates. The Wisconsin Railroad Commission[22] has stated:

In fixing the rates of the municipal utility for municipal and general service it is equitable that consideration should be given to the fact that in addition to paying interest on the funded and floating debt, the commercial consumers have contributed materially to paying off the bonds and enlarging the plant.

[20] *P. U. R.* 1916–F, p. 222.

[21] *Re Stoddard, Gilbert & Co. Case P. U. R.* 1918–A, p. 610.

[22] *Wisc. R. R. Comm. Skogmo* v. *River Falls, P. U. R.* 1917–E, p. 964.

The Oregon Commission In Re Tualatin Valley Electric Company[22] ruled:

The Commission does not believe that the present customers should be forced to share an undue burden of increased rates because of the neglect of the operators of the utility to provide sufficient capital for a reasonable extension and development of the business which they control.

Possibly the clearest cut attitude as regards the regulation of rates where the company has an invested surplus is stated by the Nebraska State Railway Commission in the Farmers' and Merchants' Telephone Company Case decided April 15, 1918, and not yet annotated. In this case it was agreed that the present value of the company's plant was paid for originally out of the Company's revenues, and in addition thereto most of the rural lines were paid for by subscribers. The Commission took these facts into consideration when the Company applied for an increase in its telephone rates. So important is this case in portraying a newer attitude toward the surplus that it would be well to quote at length part of their decision:

What was and is a reasonable charge for public utility service is such a rate as will produce sufficient revenue to operate and maintain property in a good, serviceable condition, pay taxes, losses and damages, and yield a fair return on the capital contributed by the stockholders which has been honestly and prudently expended for the purpose of furnishing the service. It is evident, therefore, that if the rates collected during the life of the Company produces a revenue in excess of these requirements, the surplus belongs by right to the patrons of the utility and may be recovered for their benefit. If distributed as dividends, an assessment of stockholders will lie or the right of stockholders to earn future dividends suspended until the surplus is restored to the Company's treasury. If invested in additions to the plant, the stockholders may not earn a return upon it or capitalize it, and, per contra, if the revenues in the past have not met the requirements as to operation, maintenance, taxes, losses, damages and return, and assuming that the utility has been providently and efficiently conducted, the patrons are indebted to the utility and rates should be increased sufficiently to discharge the obligation within a reasonable time.

The Interstate Commerce Commission has also considered the matter of invested earnings in its relation to rates. In the Eastern Rate Case, it was held:

It would appear, therefore, that both the court and the Commission are committed to the proposition that in fixing a fair return upon railroad property for the purpose of determining whether a given advance is reasonable the railway

[22] *P. U. R.* 1918–A, p. 596.

ought not to treat as a part of its operating expenses the cost of permanent improvements or extensions, and this must of necessity mean that the rates should not be sufficient to allow both the payment of dividends to stockholders and interest to bondholders, and an additional sum for the purpose of improving and increasing the value of the property.

In scanning the cases before the different public service commissions involving the problem of invested earnings, one is impressed with this important fact: there is a broad and far extended awakening to the issues attached to earnings which are turned into property. Commissions are finding that their existence demands a different kind of consideration than does that form of property which is purchased through stock or bond sales. In the establishment of a fair rate of return the commissions are beginning to see that invested earnings carry a responsibility to the consumers and to the public which must not be over-looked.

V. INVESTED EARNINGS UNDER A RÉGIME OF PUBLIC REGULATION

The surplus earnings of public utility companies which find their way into extending and improving property value must be viewed differently under a régime of public regulation than they were wont to be considered in the days of little or no public control.

When only a very small amount of ineffective regulation was in existence, the public assumed no responsibility in seeing that a fair and just return was paid the investor. Risks were assumed by the investors in which these investors played the game of getting all they could and in turn they were supposed to stand ready, to carry any losses involved. By the very nature of things they played the speculative game which to some meant very large returns—real, colossal fortunes—to others, serious losses. Stock watering, bribing of legislation, controlling appropriations, falsifying accounts, hiding and camouflaging large earnings, all came into prominence as profitable activities. If the rates seemed to be too high, the fact could be readily concealed by putting surplus earnings into betterments and additions and thus increase capital investment without taxing the holders of securities. Public utilities under such a period of financing created the most likely and most natural result—a hatred, a suspicion, and a spirit of revenge in the public mind. And from that condition

was born the era of regulation as a controlling influence over public service corporations.

The main purposes of regulation are to see that service is provided the public, and that fair and equitable relations are maintained among the public, the patrons and the owners. In establishing fair relations a control over rates is necessary. Public authority steps in and determines what it considers a just return. And this form of public regulation, as it further and further develops, places our problem of invested earnings in a new and different light.

As the public assumes this greater control over utilities, the public, rather than the private company, must be prepared to meet the losses, and share in the benefits that such control entails. The public must pay for utility service at cost whatever that cost may be. If there are any uncertain or speculative features, the public must in turn carry the burden. As far as the investors are concerned, the speculative element is on the wain and an era of sound investment is coming to the fore.

Seeing this change in public utility financing, the surplus and invested earnings take on a greater social significance. If, through the effects of regulation, the public stands willing to pay the costs of service, which costs cover a fair return on the investment, then any surplus created is a fund in which the public in equity at least have certain rights; and if the surplus is invested and capitalized, still further rights are involved.

The control by the public naturally brings up the question as to what constitutes a reasonable charge for utility service. It seems reasonable that a rate to be fair and just, should cover:

(a) All operating expenses, including payments of damages, etc.

(b) All maintenance, up-keep and depreciation charges.

(c) Taxes.

(d) A fair return on the investment, made by the stock and bond holders.

Therefore, if we accept these costs as fair and reasonable, then any further revenue in excess of these charges is a fund overcharged the patrons and which belongs by right to them. And here is the real gist of the invested earnings problem. *As we change from an era of little or no public control to an era of regulation and public responsibility, the corporate surplus built from earnings,*

whether invested or not, becomes a factor in public utility financing in which the patrons have a direct interest.

The Supreme Court's findings in the Yellow Pine Case[24] bear witness to the same thought, when it ruled that the patrons of a railroad should not be compelled to pay a rate so large as both to pay dividends and to build up a surplus to be invested in extensions and improvements.

Let us not lose sight of the fact that as regulation grows in scope and influence it almost automatically changes unsecured, speculative risk takers into sound, secured investors. And as this change takes place, corresponding changes present themselves as regards the rights to surplus and invested earnings.

A more practical view is obtained when we consider the attempts that are being made to put the corporate surplus in a place where the patrons and public share in its benefits. This brings us to a consideration of the efforts and opinions of those in actual control and responsibility, who are trying to gain a greater socialization of the corporate surplus.

VI. SOCIALIZING THE CORPORATE SURPLUS

Mr. Walter D. Hines, Director General of the Railroad Administration, realizes the importance that surplus created out of railroad rates should not be capitalized but should be shared with the public. This socialization of the surplus is suggested when he advocates:

> There ought to be a prescribed rate of return to which the railroads are entitled and that ought to be assured by some mandatory or statutory provision. The rate must be so fixed as to produce that return and beyond that, I think it ought to be provided that if an additional return shall be yielded from those rates, a sum to be determined for that purpose is to be put back into the property for improving the property in order to keep pace with the increase in demands for business, and that the money thus put into property out of earnings shall not be capitalized so as to further add to the value of the property. That would provide that the earnings made in excess of what was necessary to operate this property upon a standard return would be put back into property without being capitalized. This would lead to the public getting the improvements and they would not have to pay for this exploitation without any limitation of the public having the benefit thereof.[25]

---

[24] 206 U. S. 441.

[25] *Address before the Philadelphia Chamber of Commerce*, June 20, 1919. Quoted in the *Phila. Public Ledger*, June 21, 1919.

The Association of Railway Security Owners in their proposed railroad plan shows a disposition to socialize the corporate surplus and to a certain extent prevent the capitalization of earnings. The earnings in excess of a fixed reasonable return are to be distributed among the employes, the railroads earning them, and *for certain improvements not to be capitalized in rate making.*

Again Mr. Paul Warburg and Mr. Victor Morawetz in their respective railroad plans suggest methods whereby the surplus earnings shall be divided between the owners and the government and possibly with labor.

Mr. Warburg would have all returns between 6% and 7% divided with the government and perhaps with labor. The earnings over 7% would go to the government in their entirety. Mr. Morawetz suggests a government guaranteed dividend of 2½% while any returns netting in excess of 4% shall be divided with the government.

That the public is entitled to share in the surplus earnings is the attitude expressed by the directors of the American Telephone & Telegraph Co.[26] These directors have evidently accepted the conclusion that the surplus shall constitute a trust to be administered in the public interest. They express the view that "ample reserves should be provided to meet not only probable happenings but possible happenings, and that such reserves should be so invested that whatever increment or revenue is to be derived from the amounts unexpended will go to the public in reduction of charges or in improvement of service."

The method or machinery for putting surplus earnings into the hands of the public is best and most definitely seen in the franchise stipulations of the Montreal Street Railways. This franchise marks the dawn of a new day in utility financing and heralds an era of greater coöperation between the public and their public service corporations. It is decidedly worth our while to consider carefully some of the important stipulations of this franchise.

(a) *A valuation on the property* was made by the Public Commission and fixed at $36,000,000.

(b) *A guarantee fund* of $500,000 is created by the owners, which is to be used to meet any excess operating expenses over the amount allowed by the Commission.

---

[26] *Report of Board of Directors*, March, 1912.

(c) The franchise calls for the following regulations regarding gross earnings:

1st. That the Commission fixes *the standard of service*, and grants operating allowance per car-mile, both for motors and for trailers. The allowance is based on a six months' period.

2nd. If the Company keeps within this allowance, plus 2½% leeway, they are then allowed ⅛ of 1% *additional profit on the valuation.*

3rd. If the Company spends more than the allowance, then *the excess comes from the guarantee fund.* This fund to be kept up by the owners to $500,000.

4th. If unforeseen and extraordinary conditions call for an increase in operating expenses, *the Company may get a special grant from the commission*, which will offset the rulings above.

(d) *Depreciation.* The property is to be maintained at high efficiency, and to accomplish this a certain number of cents per car-mile are to build up a depreciation reserve of $500,000. The Commission reserves the right in the franchise to pass upon all expenditures.

(e) *An allowance of 6% on the capital valuation is allowed*, and during the period of the war this has been increased to 7%.

(f) A sum of $181,000 per year is set aside into *a fund to be used to cover discount necessary to obtain new capital.* This fund, therefore, is a preventive of any water getting into the capitalization.

(g) *The Contingent Reserve.* 1% of the gross earnings is put annually into a contingent reserve which is used to meet any extraordinary expenses. This is to be kept up to $500,000.

(h) *The Surplus.* After all expenses, costs, dividends and interests have been met, the remaining amount of net earnings is thrown into surplus. This amount is divided annually upon the following basis:

30% to go to the City.
20% to go to the stockholders.
50% to go into a fund termed "The Tolls Reduction Fund."

When this Tolls Reduction Fund reaches $1,000,000, the City may, or when it reaches $2,500,000 the City must, reduce the fares. If, on the other hand, the earnings are so low as to use up the Contingent Reserve, then fares must be increased.

(i) *If the Contingent Reserve of $500,000 falls to $300,000*, then the Tolls Reduction Fund may be called upon to replenish the Reserve, bringing it back to $500,000.

This Montreal franchise is the best instance of a contractual relation between the private companies and the public, which has removed public utility financing from the field of speculation and has placed it upon a sound investment basis. Owners, patrons and the City, each share in the surplus; and a board of control is provided to which each has the right to appeal.

Perhaps the most salient feature is the regulation regarding management. The speculative element is removed and at the

same time there is provided an incentive for efficient management by allowing an additional operating profit and also a company's share in any surplus that may be created. It likewise places upon the management a penalty for inefficiency of operation. By the Public Commission's placing limitations on operating expenses that may be made, the management finds it necessary to keep within these bounds or else finds that the company is forced to make up excess costs. It is well to note that this plan thus removes the "cost-plus system"—which system passes the burdens of inefficiency on to the consumer.

This franchise has been in effect only a little over a year—too short a time for determining its permanent value as a means of financing public utility corporations. Its importance at present consists in calling to our attention the fact that definite attempts are being made to put into effect a financial method which shares the surplus earnings with the public, and which has eliminated the evils that go with the old form of speculative finance.

The problem of gaining complete coöperation between the public and the private utilities has in no ways been fully achieved. Possibly any final solution, where real coöperation exists, is impossible under private ownership, and the outcome will be nothing short of public ownership and public operation. Most certainly the railroad situation points that way.

But only as the financing of public utilities is redeemed from the speculative régime and placed upon a scientific and sound basis of investment, can real progress be made in public regulation and security of investment.

Such a basis of investment must make the public pay for the costs of all the service rendered, including a fair return on investment; and such a basis must also make the dangerous event of the public paying more than these costs an absolute impossibility.

DISCUSSION

By H. M. BEARDSLEY

It seems almost invidious to start this discussion with a criticism but personally I wish that Dr. Reitell had been more explicit and definite in Section II "Facts of Invested Earnings." Perhaps the railroads and gas companies have shared with the public more of the surplus earnings than really appears on the face of the figures set forth. For instance the President of the Pennsylvania Railroad is quoted as testifying that since 1887 his road had appropriated $262,000,000 from earnings to use in improvements and betterments. If he made that statement in 1917 the period covered was 30 years and the amount equalled $8,733,333 per year—not so much if it paid for all the grade crossing elimination which took place during that period. Surely the public received its dividends on that in increased safety, and the rate of fare charged by the Railroad was not increased.

Again a look at some of the cars and locomotives now running on branch lines which used to run on through trains on the main line and which have replaced still smaller cars now relegated to the scrap heap will illustrate another way in which surplus funds have been invested for the benefit of the public as well as of the owners. In the case of the Haverhill Gas and Light Co. also, a little more information might show that although $300,000 had been invested in the plant from surplus earnings for the benefit of stockholders from 1853 to 1915 (only $4,838 per year) enough of the earnings had been socialized to be of distinct advantage to the public. In the one matter of rates for instance, my information goes to show that in 1853 gas companies generally charged from $2.50 to $3.00 per 1,000 cu. ft. for gas, whereas in 1915 the companies charging as much as $2.00 per thousand were in the minority and the average rate in cities the size of Haverhill, and located as Haverhill is with reference to coal market, would more likely have been $1.50 or perhaps even less.

Surely in this case the "advances in the art" and the growth of population which forced the company to make a larger investment (on which it received 8 per cent) brought equally as great advantages to the public in reduced rates. I freely admit that I am dealing only with suppositions as to the actual amount of

rate reductions but that there were substantial reductions I firmly believe.

Under Dr. Reitell's third caption he carefully sets out the advantages and disadvantages of investing earnings. Surely no one could take exception to his clear, complete and eminently fair exposition of those advantages and disadvantages. There is absolutely no question but that the charging of rates by any public utility corporation, which are high enough to provide for upkeep, interest on the investment *and* the development of the property by the extension of its lines is a distinct social disadvantage. Such charges should not be permitted.

The question is, just where shall the line be drawn? And if the line is drawn carefully and satisfactorily in one case, it is by no means certain that a rule can be built up on that line which will be equitably usable in all cases.

It may be readily conceded that all extensions and additions to the property of a utility corporation should be paid for by money acquired through additions to the capital account. Perhaps the line can be drawn just there, and to prevent the capital account from becoming unwieldy (thus calling for a larger depreciation reserve also tending to keep up rates) it might be provided that improvements to existing plant should be paid for out of the rates received and rates kept up accordingly. I refer to such matters as changing 40 pound rails to 70 pound rails and 70 pound rails again to 100 pound rails; the changing from earth ballast to rock ballast; the changing of horse cars to cable cars and the cable cars to electric cars; the changing from belting and counter shaft to direct connection and from that again to the turbine unit and so on almost indefinitely. I have no doubt that under former practices many corporations capitalized each one of such changes as it was made so that in the end the public was paying dividends on all the equipment ever in use, many years after some of it was sold for scrap. Most Public Service Commissions now allow of course the capitalization of only the excess value of the new over the old or the equivalent of that. Perhaps, as suggested above, it would be better to capitalize only definite additions to and extensions of the plant, but let the present public which is enjoying improvements of existing plant pay for them.

As to the attitude of courts and commissions,—this changes and will continue to change with growing appreciation by both of the facts involved. Such facts for instance as are set forth so clearly in Dr. Reitell's paper. I cannot leave this point without commenting on the quotation from Commissioner Corr's dissenting opinion in the Indianapolis Water Company Case. His mention of "unlawful exactions" "unlawfully collected" seems to conflict with his admission of "the legal and technical title." It is for Commissioners to take the forward stand (the fact that we have Public Service Commissioners is a forward step) that such rates are improper and not consistent with public welfare and when the public has a reasonable basis for its acts and a good understanding of the equities involved (instead of an unreasoning hatred of all things corporate) public opinion and the court decisions will soon fall in line with the views of the most advanced Public Service Commissioner who is performing his duties with due regard to his oath of office. The Interstate Commerce Commission well says in the passage quoted: "Moreover some method must be found under which a carrier by its own efficiency and management shall profit—Society should not take from the wisely managed railroad the benefits which flow from the foresight, skill and planned coöperation of its working forces. It would appear that one of the problems of the future in railroad regulation is to discover the machinery by which the railroad may justly take to itself a return for the investment which its stockholders have made, and share with the community the surplus which *it* creates."

This brings us logically to the final section of Dr. Reitell's paper "Socializing the Corporate Surplus," in which he shows how some of the best operating and financial men are beginning to look at the problem. The Montreal Street Railway franchise seems most decidedly a step in the right direction and it would seem that greater publicity for this plan would be most helpful. The rate of return on the capital invested seems adequate and large enough to bring out more funds when necessary. The guaranty fund put up by the owners and the contingent reserve fund taken from the earnings are sufficiently large to warrant the public to expect the best of service and of equipment. It will be interesting to learn just what will happen to the fund of

$181,000 per year set aside from earnings as discount on new capital if capital is obtained at par.

Such a contract seems to be almost ideal in scope and aim and certainly is a middle ground worth trying out by both the exponents of private enterprise and those holding for municipal ownership pure and simple. The latter may be correct theoretically, but it would seem that until municipalities learn to run their police departments, their fire departments and their street departments without the scandals of the past it would be wiser for them to refrain from too great excursions into the departments of finance and operation involved in the operation of our Public Utilities.

How Freight Rates Should Be Made

By Robert W. Woolley
Member of the Interstate Commerce Commission

WHEN I appeared before the Interstate Commerce Committee of the United States Senate in January, 1919, and urged that the government retain control of the railroads taken over on December 28, 1917, for a definite period of five years following the proclamation of peace in order, among other things, that the method of fixing freight charges might be simplified and made uniform, or at least approximately so, the average professional traffic expert and conventionally-minded economist protested that I was a radical neophyte, an unsound experimentalist. This protest was echoed in the columns of the newspapers and of the periodical press generally.

There was never a more striking example of the fallibility of the human memory. Not only was I able to summon to my support in my condemnation of the existing so-called rate structure, the late Justice Harlan of the United States Supreme Court, Secretary Lane, formerly a member of the Interstate Commerce Commission, and the membership of the entire Interstate Commerce Commission as it was constituted in 1911, but I might have quoted in like vein from the testimony of a dozen or more traffic and shipping experts, and also not a few business men, who testified before the Cullom Committee in 1886, when the present Act to Regulate Commerce was being formulated. These witnesses strikingly set forth many cruel injustices wrought through freight rates as prescribed and manipulated by the carriers under state control or no control at all. Indeed, it could hardly be called a stretch of the imagination to say that the achievement of a simple and uniform method of freight rate making, fair to the weak and strong alike, was largely the underlying thought of the framers of this legislation. It was because of the gross inequalities everywhere evident, of high handed practices on the part of many of the carriers and favored shippers that the Act to Regulate Commerce became a national necessity. Yet Congress, with a maximum of caution, gave to the newly created Interstate Commerce Com-

mission a law to administer which, until 1906, restricted the Commission's power to censure and advise. The result was that no matter how militantly inclined, how public spirited the early members of the Commission might have been, their ability effectively to help the public was practically negligible. So dominant carriers on the one hand and powerful shippers on the other, through a series of actions before the Commission, wrought a firmer foundation for the rate specializations which had been the very object of attack and builded thereon a mountain of rate blankets, primary markets and other preferential situations which have been perpetuated, with the result that the freight rate today, instead of being fixed and administered in the interest of all for the unit of service rendered, is the very Gibraltar of monopoly. This may appear to the average reader or even the average economist to be an extreme statement, but I propose in this article to show that the freight rate, notwithstanding the administration of it under the Act to Regulate Commerce, is still in the hands of those who seek to equalize commercial conditions at the expense of the consuming public and I propose to state what I think is the way to right the wrong done. The freight rate as it is today is more potential than a protective tariff.

I quote from my supplementary statement of February 10, 1919, to the Senate Committee on Interstate Commerce as follows:

> With reference to the recommendation, made by me, that the period of federal control be extended to five years following the date of the President's proclamation of peace, in order, among other reasons, that a standard rate structure based upon a uniform mileage rate plus terminal charges might be substituted for the numerous rate-making plans now in effect, I beg to say that the premises for the proposed rate structure lie within the political and economic principles upon which rest the commerce clauses of the Constitution, namely:
>
> Art. 1, Sec. 8: "but all Duties, Imposts and Excises shall be uniform throughout the United States."
>
> Sec. 9: "No Preference shall be given by any Regulation of Commerce or Revenue to the Ports of one State over those of another."
>
> "No Tax or Duty shall be laid on Articles exported from any State."
>
> Sec. 10: "Prohibiting any State from laying imposts or duties on imports or exports."
>
> The simple meaning of these tenets, which have withstood years of judicial interpretation, is that, in a natural sense, there shall be a freedom of commerce

between States, unhampered by artificial burdens which may bear heavily upon some localities and yield preferences to others. Natural advantages are left open alike to all, and they shall not be enlarged or diminished by artificial means. That is to say, New York City is justly entitled to retain its natural advantages; but that city should not be given still greater advantages by exemption from the burdens of commerce that fall upon other cities and states. Conversely, the geographical and commercial status of other cities should not, by a similar means, be equalized with those of New York. This doctrine, which applies between individuals as well as between localities, is clearly and nicely enunciated in *Interstate Commerce Commission* v. *Diffenbaugh*, 222 U. S., 42, 46, where Justice Holmes, speaking of the law in its generic sense, stated that it "does not attempt to equalize fortune, opportunities, or abilities." Unless the act to regulate commerce is construed and administered in conformity with these principles we are confronted with the anomaly of a special statute eating at the structure of the Constitution. That statute, however, was enacted to preserve these very principles; and it must be construed and administered as meaning that *it is not the function of transportation agencies to "equalize fortune, opportunities, or abilities."* Nevertheless, we find a modified doctrine at present running through the many reported decisions in rate complaints, namely, that rates cannot be based *alone* upon commercial considerations. When the application of this doctrine is analyzed we find that it sustains railroad practices of:

(a) Grouping together, under a common rate, many cities within a radius of as much as 500 miles (yellow pine blanket) in order to equalize commercial advantages between such cities.

(b) Charging lower rates to more distant points than to less distant intermediate points, intended to meet competition, but with the obvious effect of building up certain communities at the expense of others.

(c) Absorbing terminal charges or giving free terminal services at some localities, and levying charges at others.

Points are grouped under common rates on grain, grain products, coal, oil, forest products, meats, cattle, sugar, minerals, packing house and dairy products, fruits, vegetables, and other staples; and the considerations controlling these groupings are largely to "equalize commercial conditions," rather than to permit, as should be the case, the greatest development of natural resources and the widest distribution of raw products and manufactured articles where needed.

Like a tax or duty the freight rate attaches to the article of commerce and ultimately is borne indirectly by the consumer in the retail purchase price. It is only one of the many items of expense that enter into the total cost of production, manufacture and sale. The vendor and shipper, under trade practices, often sell their goods at a delivered price, and when this is done we are led to believe that the vendor, and not the vendee, bears the freight. But this is not true, since in all such transactions the selling price is always more than the total expenses, including

freight charges, incurred by the vendor in producing, selling and delivering, the article. For example, the Chicago coal dealer may purchase coal from mine operators in the Pennsylvania coal producing sections at say *$10.00* per ton delivered. This price, of course, must be sufficiently high to compensate the mine operator for the cost to him, including freight charges at a rate of *$3.90* per ton, of laying the coal down in Chicago, plus a reasonable profit; and in turn the dealer must retail the coal at something more than *$10.00* if his carrying, selling and delivery costs are to be met and a fair profit earned. And clearly the result is no different if the dealer bought his coal f. o. b., the mine and himself paid the freight charges. The freight rate on coal is a substantial part of the retail selling price, amounting in some instances to more than 200 per cent where the haul from the mine to the market is long. But this by no means is the stopping place. The coal thus purchased may be used to generate steam in the warehouse and office buildings of a firm like Sears-Roebuck; thus the cost of producing this necessary heat, which includes the freight rate on the coal, is spread over and attaches to every article shipped from the mail order house, together with the freight charges that may have been paid on the materials entering into the manufacture of those articles. And even this is not all, since, in addition, the selling price must include the freight charges on the finished article.

Another illustration is the proportion of freight charges that is included in the price of iron and steel articles. The cost of producing a ton of pig iron at the furnace includes freight charges paid on the inbound raw materials, consisting of coal, ore and limestone. The freight rate on each of these is a substantial proportion of the selling price at the mines. Bars, billets and blooms are turned from the pig iron, and when these are shipped to a manufacturer additional freight charges are paid, which attach to the price of the finished article. When the finished articles are shipped forward to the wholesaler in carload lots a further freight charge is incurred, and this too attaches to the price of the article. Even here the end is not reached, since still a further transportation charge is encountered, which becomes a part of the selling price to the consumer, when the wholesaler distributes to the retailers in less than carload lots.

Fat cattle start on their journey from Texas to market. From the carcass at the slaughter house many products issue. Each product has attached to it a share of the transportation charge paid on the live cattle. The dressed beef ultimately finds its way to the domestic table, and the price paid includes not only the freight charges on the dressed beef, but also a part of the freight charges paid on the live cattle. The hide is shipped to the tannery, and thence goes forward to the shoe manufacturer in the form of leather. The price of the leather includes freight charges on the live cattle, the hide, the coal, bark, and other materials used at the tannery. Finally shoes are produced, and the price of these, aside from including the cost of their own transportation, includes in part the cost of transporting the live cattle, the hide, the coal, bark and other materials used at the tannery, and in addition the transportation charges on coal and other materials and supplies used in manufacturing the shoes.

These simple, and perhaps unnecessary, illustrations might be multiplied. Those presented, however, are sufficient to hold in view two fundamental facts: first, that the retail purchaser, or consumer, actually bears the full burden of transportation charges paid in the first instance by producers, manufacturers, and dealers, whom we shall call, collectively, the shipper; second, that this charge, even if fairly spread over the retail units, is an important factor in the prices paid for the necessities and comforts of life, and is thus impressed with a public interest far superior to the selfish interests of individual shippers.

But is there a fair spreading of this burden over the retail units? As will be seen from the foregoing illustrations, the retail prices of iron and steel articles are affected not alone by an increase in the transportation rates on those particular articles. They are affected as well by increases in the rates on coal, ore and limestone. The dealer in each of these materials increases his price at least to the extent of the measure of the increases in rates. The dealer in iron and steel articles does likewise. So that in the end, through a compounding process, a general increase in freight rates has a tendency, like the imposition of taxes, unduly to inflate retail prices. It affords an opportunity and excuse for the retailer to add arbitrary amounts to his prices, usually much greater than is justified by the increases in rates. This is often done.

Notwithstanding the fact that the consumer, and not the shipper, bears the transportation charges, we seldom hear of anyone except the shipper attacking a freight rate as too high, unduly prejudicial, or otherwise unlawful. The reason is not a mystery. The consumer does not pay the freight charges as such. They are hidden from his view in the retail prices, just as are the indirect taxes and duties levied upon articles of commerce. On the other hand, the freight rate is in clear view of the shipper. He pays the freight charges in the first instance, and even though he passes them along later in the price of his goods, he still is interested in their measure, since such charges constitute an expense that enlarges the ultimate selling price. That price must be kept within, if not below, the range of competitors' prices. A freight rate available to a shipper in one community higher than contemporaneously available to a competing shipper in another community, when both are seeking the same market, gives to one an advantage over the other in the cost of production, manufacture, or selling. Hence, each shipper is interested in securing a transportation rate as low as that available to his competitors, and if possible one that is still lower. If he has the lower rate his interest is to keep his competitor from getting one that is as low. The controlling considerations in such matters are the location of the shipper's business establishment in reference to the markets he seeks to enter and the location of his competitors. The volume of the freight rate, in cents per 100 pounds, increases with distances. It costs more to carry freight 500 miles than to carry it 100 miles and it is to be expected that the freight rate would be correspondingly more. By the measure of this difference, whatever it may be, the shipper at the point nearest to market has a trade advantage over his competitor at the more distant point; and the competitor at the more distant point, finding himself at a disadvantage, seeks to overcome it by having the railroads equalize the rates as between the two widely separated shipping points irrespective of the differences in distances and transportation costs. What they mean by equalization is in reality a discrimination, since it contemplates giving to some shippers a greater measure of service than is given to others for the same rate. In result it takes away from some shippers their natural advantages and gives artificial advantages to others.

Stated in another way, the shipper seems to proceed upon the theory that it is, and properly should be, the function of the carriers to bear the cost of eliminating commercial trade disadvantages of location. To some extent the carriers, in their pursuit of tonnage, and particularly where they are in competition with each other from a transportation standpoint, have encouraged this idea.

These artificial forces account in a large measure for the rather extended scheme of group rate making which at present prevails, examples of which are the so-called "yellow pine blanket" of the south; the "Texas common-point group," 500 miles long and 450 miles wide, before it was recently broken; the grouping of the blast furnaces in the Pittsburgh district; the grouping of coal mines in the several coal districts; the grouping of the apple, potato and grain growing sections; and many others that might be mentioned. The scheme contemplates that all points in each group, irrespective of distances and transportation costs, will have a common rate to each of the several markets, or, conversely, that all of the markets in a given group will have a common rate from each of the several shipping points. A point of importance to mark here, however, is that the real interest of the shipper is not in the measure of his rate in cents per 100 pounds, but in the relation of that rate to the rates available to his competitors. This is what he constantly fights for as distinguished from the more superior interest of the consumer in the volume of the charge. It is not exaggeration to say that more than 90 per cent of the complaints brought by shippers before rate regulating bodies rest upon dissatisfaction with the relation between rates rather than upon the measure of the rates. Illuminating examples are the *Intermountain Rate Cases*,[1] where Reno, Odgen, Spokane and other intermountain cities were seeking rates at least not higher than those contemporaneously applicable from the east to the more distant Pacific coast cities; the *Interior Iowa Cases*,[2] where the Iowa shippers sought a fair prorate of the rates between the Missouri River and points east of the Indiana-Illinois state line; the *Mississippi River Cases*,[3] where the shippers

[1] 15 I. C. C. 376; 19 I. C. C. 162, 238, 257; 21 I. C. C. 329, 400; 23 I. C. C. 454, 456; 32 I. C. C. 611; 34 I. C. C. 13; 40 I. C. C. 35; 46 I. C. C. 236.

[2] 28 I. C. C. 64; 29 I. C. C. 536; 46 I. C. C. 39.

[3] 28 I. C. C. 47; 29 I. C. C. 47; 46 I. C. C. 20.

located in the upper river cities asked to be placed upon a rate parity with the shippers in the lower river cities. Many other large cases of similar importance and thousands of smaller ones might be cited.

In attacking rates from this standpoint, under rate regulating statutes, a rather interesting field of occupation is provided for a group of persons that have become known as traffic experts. Usually they are graduates from the traffic departments of the railroads. They watch freight rate fluctuations like the broker watches the stock market, and largely by comparison of one rate or set of rates with another, find a basis for making a complaint. It is their business also to endeavor to secure advantages in freight rates over competitive shippers and communities wherever there is the remotest ground for urging that location, transportation conditions, or some other circumstance, will justify such an advantage. These experts are comparatively well paid and there are thousands of them at work throughout the country. In addition there is a group of lawyers who receive good fees in specializing in this practice. But the end is not yet. There are about 48 state railroad commissions or boards, also the Interstate Commerce Commission, each of which, apart from its own membership, employs a corps of trained experts who are constantly engaged in hearing the complaints brought by the traffic expert. Incident to such hearings, and in addition to the salary item, there is a substantial expenditure in the nature of traveling expenses, per diem, short-hand reporters and printing.

No statistics showing the aggregate amount expended annually by shippers, the states and the federal government, for rate regulation appear to have been compiled, but whatever the amount, at least in the millions, it falls indirectly upon the consumer in the retail prices he pays for living. The point for emphasis here is that in the process of regulation the rates go up or down as a result of orders entered by the regulating bodies in particular situations. And contemporaneously with the announcement of such orders hundreds of minds are comparing the rates so fixed with other rates to see if there is not some basis for attacking the rates in which they, or their clients, are interested. An order entered requiring the reduction in a particular rate, or a set of rates, may throw out of just relationship many other rates not

then before the regulating bodies for consideration. Thus it happens that from year to year there is a constant tinkering, largely in piece-meal fashion, with the many rate adjustments. The unintentional result is that rate regulation itself, in the form we have it, actually breeds complaints and indirectly lays a burdensome expense upon the consumer that is incurred, not for his benefit, but for the selfish interest of particular shippers.

There is still another angle to the situation. If a shipper who, in the price of his goods, has passed along to the public the freight charges he has paid in the first instance, is able to convince the rate regulating body that the freight rate he paid and passed along was unreasonable, he, *and not the consumer*, becomes entitled to an award of damages measured by the amount of the overpayment, and thus comes into possession of what in homely language we sometimes call "velvet." This "velvet" operates to reduce the carrier's net revenue, and if upon analysis it is found that the net revenue is inadequate an increase in rates is authorized. The increase is spread over many articles of commerce and a part of it is used to provide shippers with "velvet" whenever they are able to convince a rate regulating body that the rate they paid, *and passed along to the consumer*, was unreasonable. This may seem a peculiar law, but our highest tribunal has said that it is the law.[4]

We may now pass to the interest of the carrier, which clearly is to obtain through the assessment of rates a sufficient amount of gross income to pay all of its operating expenses, taxes, interest charges, and still have left a fair return upon the investment.[5] The ratio of railroad operating expenses to gross revenue in the more normal period of years preceding federal control averaged approximately *70 per cent.* It will thus be seen that the out-of-pocket cost to the carriers of performing the service eats up by far the greater part of the freight rate. Cost of conducting transportation, therefore, should be a controlling consideration in the fixing of freight rates.

Freight service is conducted largely in units of car-miles. That

[4] *Southern Pac. Co.* v. *Darnell Taenzer Co.*, 245 U. S. 531.

[5] Purposely there is left out of consideration the question of over-capitalization, returns on watered stocks, and kindred matters, since it is generally conceded that the return of the carriers should be calculated upon the actual money invested in the property.

is to say, the power and the cars are the movable facilities and the cost of moving them increases with distance. The average weight of the empty car hauled by the locomotive is little less than the average weight of the freight contained in the cars. Commodities which load heavy are, of course, exceptions. So that the major portion of the transportation cost is incurred in moving the car, and this cost is the same whether the car contains clothes pins, canned goods or automobile tires. The volume of weight in the car may place slight added burden upon the hauling power of the locomotive and to that extent the heavier load may be a little more expensive per car-mile to handle. Perishable commodities, which load light, and require special protection, are more costly to handle than non-perishable freight. And there are some other distinctions that might be made, such as the cost of transporting cattle. But as a whole the average cost per car-mile is the most reliable unit that can be used. At the terminals, in picking up and delivering loads, the car is the unit, irrespective of its contents. It costs no more to switch a carload of nails than it does to switch a carload of coal; nor does it cost any more to switch a carload of hardware than it does to switch a carload of lumber. Nevertheless, under the chaotic and unscientific system which has grown up, a relic of ages, we have thousands of different rates on different articles of commerce on which the transportation cost for a like measure of service is the same. The explanation is that the risk on the higher valued articles is greater, and that some articles can bear a higher transportation charge than others. In reality the risk is merely a matter of insurance premium, and who will suggest that on the classes of traffic moving in the greatest volume the insurance premium for the period of transportation, reduced to cents per hundred pounds, would appreciably enlarge the volume of the freight rate even to the extent of one cent a hundred pounds! The other explanation, that some articles can bear a higher transportation charge than others, suggests that the railroads are at liberty to disregard transportation costs and impose what in their judgment would be a fair transportation tax on certain articles of commerce, depending upon the value of the transportation to the dealer, the profit he makes, the necessity for transportation, and other strategical considerations that have no relation

to the cost of conducting the service. This, indeed, is a questionable policy, and one that certainly is not in the interest of the consumer who ultimately bears the freight charges.

To begin with, the rate structure rests upon three principal freight classifications. This is where the railroads begin to differentiate between the rates that are to be paid on the different articles of commerce, without reference to the fact that most of them are transported for a given distance at the same cost. In the western classification there are five numbered and five lettered classes; in the official classification six numbered classes, and in the southern classification six numbered and six lettered classes. But beyond being mere symbols for defined groups of articles these classification ratings have no meaning in so far as the level or the relationship of the rates are concerned. They do not mean, for example, that 2nd class, or any of the lower classes are fixed and definite percentages of 1st class. Selecting the class scales applicable west, north and south from Chicago, it will be found that the lower classes are related to 1st class by about as many different percentages as there are class scales. A more comprehensive idea of these classification ratings will be found in the recent *Consolidated Classification Case*, 54 I. C. C. 1. Apart from these ratings, however, there are hundreds of exceptions, commodity rates and special commodity rates, which were established under pressure of both transportation and commercial competition, and with little reference to transportation costs. Here again the railroads, whether intentionally or not, are indirectly engaged in creating artificial commercial advantages in the form of freight rates and in like form imposing unjust burdens and inequalities. These are the very evils that legislation providing for rate regulation intended to eliminate, but I venture the suggestion that they never will be eliminated until we have established a uniform rate structure universally applicable.

There should be a very clear understanding of what is meant by uniformity in rates. From many quarters there is indication that people have different ideas about it. Obviously it does not mean that shippers throughout the country should have a postage stamp freight rate; that is, the same rate in cents per hundred pounds on a given commodity irrespective of distance or the measure of service. This would not mean uniformity, but a

scheme under which the railroad freight rate would be used, *even more extensively than it now is*, as a means of interfering with natural opportunities in the sense that, *by operation of law*, artificial burdens would continue to be laid on some and artificial advantages given to others. Clearly this is antagonistic to and not the object of the law. The framers of our Constitution thoughtfully sought to avoid any such result. Taxes could not be levied in that way. No one familiar with our organic law would suggest imposing a tax or duty upon an article of commerce unless it was made universal and uniformly applicable both as to the measure of the tax rate and the commercial or trade unit to which that rate was intended to apply; it would be so much on a fixed unit of value, or so much on a fixed unit of quantity expressed in weight or measure. The tax is levied by the government; the freight rate by the railroads under government regulation. Both attach to the article of commerce as a part of the expense of production, manufacture, distribution and sale; both reach the consumer indirectly in the retail prices he pays for living; both affect the shipper the same way. Why then should not both be controlled by the same principle of law?

When we speak of uniformity in freight rates there should be in mind only that same uniformity which the law requires to be observed in the assessment of taxes; that is, for a fixed unit of service on a given commodity the rates should be universally the same. The service, as before stated, is performed in units of car-miles; hence the foundation for a uniform system of freight rates should be so many cents per car-mile, with a separate charge for terminal services. Additional charges should be made for special services, such as reconsignment, storage, transit privileges, loading and unloading carload freight, "trap" or "ferry" car services, drayage, lighterage, refrigeration, wharfage, and others of similar nature. Such an adjustment would do away with the discriminatory practices of absorbing switching charges for some shippers on given traffic at certain places and levying charges against others. Rates thus made would be *per se* free from unjust discrimination and undue preference. There would no longer be a question about rate relations between shippers and the numerous complaints that spring from such situations would cease. Instead there would enter that stability and cer-

tainty in rate making that the thoughtful business man has long been seeking. The annual expenditure for rate regulation would be very much less, since the rate expert's aid no longer would be needed. The only regulation which would then be necessary would be in the interest of the public as a whole (the consumer) and not as it is now, largely in the interest of the private shipper, from which the public gets little benefit. Such regulation would keep the rates at a proper level—the public would know how to figure them—and the dealer would not have as much opportunity unduly to inflate prices under the excuse that the freight rate compelled it. Although presumed to act in the public interest the rate regulating bodies, under our present system, seldom hear the public side of the rate question; they hear only the parties with a selfish interest, namely, the shipper and the carrier.

These suggestions doubtless will give rise to countless questions and a generous share of criticism. Space will not permit me here to answer many questions which readily may be anticipated. The critic will ask, how can coal pay the same rate per car-mile for 100 miles that it pays for 1000 miles, and the same question will arise in respect of hundreds of other commodities. We will be told that the inflexible car-mile rate, plus a terminal charge, will "bottle-up" certain producing sections, stop or diminish production, drive many long established enterprises out of business. In short, by some, particularly those less thoughtful or with a pronounced selfish viewpoint, the anticipated result will be pictured as a great calamity that would stop the wheels of industry. That such would not be the result I believe is susceptible of mathematical demonstration, and I invite those with any such view in mind to disprove it themselves by use of the pencil and paper. I shall be glad to assist them if that be necessary. And when they go to work on the problem let me suggest also that they keep in mind the extent to which each shipper, in meeting commercial trade competition, must himself, without the assistance of the railroads or the freight rate, bear or overcome in some form of ingenious economy, the disadvantages in cost of production, manufacture, sale, and distribution, that do not spring from the transportation problem. A few illustrations are sufficient. The wage scale, hours of labor and child labor laws, are not

uniform throughout the country. Adjoining fields of production and manufacture, in sharp competition, each must in some way take care of the differences in cost to them arising out of disadvantages in local labor situations.

The tax laws, police regulations, and property values are not the same in all states, some being less burdensome than others. The shipper who, in such particulars, is compelled to bear the heavier burden gets no help from the railroads or any other source, and unless he can economize in some other direction must take less net profit than his more fortunate competitor if he is to meet that competitor's prices. The off-track shippers in a single industrial center, competing with each other, must themselves take care of any difference in cost to them of trucking freight to and from the carrier's depot. One shipper may be three miles from the depot, and employ auto trucks, while his competitor may have a business establishment abutting the carrier's right of way. Would anyone suggest that it would be economically sound and in the interest of the public to adjust the freight rate so as to relieve the uptown shipper, three miles from the depot, of his auto truck expense so that he would be upon an equality with his competitor located adjacent to the carrier's right of way? I hardly think so. Nevertheless, this is exactly what the carriers do when they charge for a 1000-mile haul the same rate that they charge for a 700-mile haul. Think closely, too, of the idea behind this. It is to enable the competitors to meet each other's prices at the same cost to them; but also may it not, and does it not, permit them *to hold prices at a fixed level*, unaffected by competition? Are the carriers to continue helping the already crafty shipper in that direction?

The suggestion of uniformity in the form of a car-mile rate plus a terminal charge is merely the suggestion of a basic standard, and I have not undertaken here to enter upon a discussion of the detail and refinement incident to putting it into operation. Suffice to say that no practical difficulty stands in the way. With a basic standard once adopted, predicated upon the carload movement, it would be comparatively simple to work from it an acceptable uniform less-than-carload scale. The level of these scales would be fixed by the amount of gross revenue required by the carriers to yield a fair return upon their investment.

Financial Needs of the Railways

By JULIUS H. PARMELEE
Statistician, Bureau of Railway Economics, Washington, D. C.

ANY attempt to forecast railway finances is a hazardous proceeding at the present time, owing to the uncertainty that surrounds the future of the American railway system. In what follows, the underlying assumptions are that the President will adhere to his decision to return the railways to their owners at the close of the present year; that they will thereupon continue under private management and ownership, with such modified provisions for regulation and rate-making as may be imposed by Congress; finally, that these modifications will almost certainly be such as to have a bearing on railway credit and, therefore, on the ability of the railways to finance their needs.

The problem of railway financial needs may be studied under three principal heads: First, the physical needs of the railways; second, the cost of such physical needs; third, how such cost is to be financed.

PHYSICAL NEEDS

In a sense the present article is a companion to one by the writer in *The Annals* for March, 1918, which endeavored to reach an estimate of the physical needs of the railways while under federal control. It was estimated that the railways of the United States, during the period of federal control, would be under the necessity of putting not less than $500,000,000 a year into their property in the form of additions and improvements to plant. This estimate was based on an annual addition of 500 miles of main line, 2,500 miles of other tracks, 2,000 new locomotives, 50,000 new freight cars, and various terminal and other facilities. By "new" locomotives and cars is meant *net* additions, over and above replacement needs. The record for 1918, which of course was not available at the time that article was written, shows that there were added to railway equipment during 1918 about 1,000 new locomotives, no freight cars, and no passenger cars. In fact, the number of freight and passenger cars built during 1918 was probably insufficient to replace those retired for various causes.

The conclusion is inevitable that the railways will face a heavy improvement program when they regain control of their properties.

To arrive at an idea of future financial needs, one must also have some knowledge of physical needs, and that in turn depends on an estimate, or guess, as to what the demands of traffic will be. Growth of traffic has been very unusual during the past few years. In discussing this,[1] I have shown that whereas for several years up to 1915 the annual increase in ton-mileage was about 4 per cent, and in passenger-mileage about 2 per cent, the increase from 1915 to 1917 was at the rate of about 20 per cent a year for ton-miles and nearly 7 per cent for passenger-miles. Bringing the statistics down to a later date, we find that the results thus far recorded for 1919 show traffic increases over the corresponding period of 1915 approximating 30 per cent, or an annual average of about 7 per cent over a four-year period. Freight traffic during the first eight months of 1919 was less by about one-seventh than during the corresponding months of 1918 and 1917. Even so, the annual rate of increase since 1915 has been much greater than during the period just preceding 1915. This unusual recent growth in traffic may be ascribed in part to the war, which undoubtedly had a very definite influence; on the other hand, the year 1919 has been for the United States a time of comparative peace. Again, the next few years will doubtless see a large amount of traffic due solely to the necessities of the reconstruction period. We are reasonably safe, therefore, in counting on a growing demand for transportation for some years to come. That means increased physical needs, and at the greatly increased prices now prevailing, as compared with those of the pre-war period, the conclusion is again inevitable that the future need of the railways for new money will be very great.

Another point in this connection is that there was a necessary slackening of railway improvement work during the war, which was not in any sense obviated thereby, but was for the most part merely *deferred* to a later date.

When improvements are deferred who is it that suffers? Chiefly the public, who must pay unnecessarily high rates for service

[1] See article already referred to, *Annals*, March, 1918, especially pages 43 and 44, where the growth of traffic from 1915 to 1917 is described.

that is below standard. When the roads are returned to private management, will they not look back over a period when railway improvements did not keep up with the growth of traffic? If so, it will take an unusual amount of financing to carry them through the period of readjustment. Examples of how the railways were bending every energy to make improvements demanded by the public (before government control) have come to light with the filing by numerous railways of applications with the Railroad Administration for a larger income guarantee than the standard return shown by their annual reports for the three-year test period. These applications for an increased guarantee are based for the most part on the unusually heavy expenditures for additions and betterments just prior to and during the test period. Railway managements during this period were trying to keep their plants up to the requirements of the growing territory served, and if they were meeting with difficulty then, how much greater will be the problem in the future? All signs, then, point to heavy financial burdens for the railways in the future. Traffic growth will continue to demand new railway facilities, and in addition there is the slack of the past two years that must be taken up.

FINANCIAL NEEDS

As an essay in prophecy, let us assume that the traffic in 1920 and succeeding years will be one-third greater than in 1916 (1919 having been nearly one-third greater than 1915), and that it cannot be efficiently handled without at least a ten per cent increase in equipment and other facilities. I take 1916 rather than 1915 as a basis of comparison because it was the best traffic year in the history of the American railways, up to our entry into the war. This would mean that as soon as practicable after the first of January, 1920, railway investment should be increased to such an extent as to be greater than in 1916 by from $2,000,000,000 to $2,500,000,000.[2] As a matter of fact, less than $1,500,000,000

[2] Railway investment was about $17,500,000,000 on June 30, 1916. A 10 per cent increase in facilities, assuming price levels to remain constant, would mean an addition to investment of $1,750,000,000. But prices having increased from 50 to 100 per cent since 1916, it does not seem unreasonable to estimate that $2,500,000,000 may be more nearly the present cost of the needed 10 per cent increase in facilities than $1,750,000,000. This 10 per cent estimate of needs, considering the tremendous jump in traffic since 1916, seems to me very moderate.

will have been invested by the close of the present year. In other words, the railways have fallen perhaps $1,000,000,000, or more than a year's needs, behind their normal program during the past three or four years. This gives some indication—although it is only approximate—of the extent of slackening in improvement work. In addition, the roads should have not less than $500,000,000 a year to keep up with the growing needs of the country. In fact, the amount ought probably to be stated as above $600,000,000, or (if allowance be made for the extent to which the railways must catch up on their improvement program) as high as $750,000,000. This annual addition of from $500,000,000 to $750,000,000 is predicated in part on the normal pre-war expenditure of $468,000,000 a year (which was the average of the years 1913 to 1917), with an allowance for increased prices, in part on the estimate for the period of federal control already referred to, and in part on the record actually made by the United States Railroad Administration. The Railroad Administration naturally made only the most needed additions and improvements, leaving to the period of renewed private control the less necessitous demands for additional facilities. Yet with all this, the capital expenditures authorized by the Railroad Administration in 1918 amounted to $851,000,000. This was not necessarily a one-year program, it is true, yet with the authorizations made in 1919 the annual average promises to be well over $500,000,000. This is in spite of the fact that authorizations in 1919 were pared to the bone, due probably as much to the impoverished condition of the Railroad Administration treasury as to the fact that the fighting was over and the return of the roads to their owners was looming on the horizon. Director General Hines' statement to the House Sub-committee on Appropriations in June (Hearings, page 144) on this point is as follows: "Our definite policy is that we are not going to make any capital expenditures for the year 1919 for these companies unless they finance them themselves *or unless they are of such an urgent character that we must go ahead with them in advance of arranging the financing.*" (Italics mine.)

Whether the annual needs prove to be half a billion, or three quarters of a billion, the amounts seem like enormous sums, and they are. But we are dealing with a gigantic industry whose invested capital is already nearing twenty billions of dollars, and whose needs are constantly growing.

FINANCING THE NEEDS

Before taking up the question of financing, let us glance for a moment at the distinction between cost of maintenance and cost of improvements. To maintain the railway properties in such shape as to keep them fit to function properly and adequately calls for an annual expenditure running into many hundreds of millions. In 1918 it cost the United States Railroad Administration $1,737,000,000 for maintenance. This expenditure is, however, a *current expense*, normally met out of operating revenues. For the purposes of the present discussion, it will be assumed that rates will continue to be so adjusted as to cover maintenance costs. No special question of financing therefore arises in that connection.

Improvement costs fall into a wholly different category. Improvements are of two general types—either they consist of extensions of railway lines into new territory, or they represent the betterment of railway property already under operation, including both the stationary plant and the equipment. The latter type, denominated for the most part by the Interstate Commerce Commission as "additions and betterments," is far more important than the former, inasmuch as the amount of new railway construction has been very small in recent years. Both types are *capital* improvements, their primary cost has but little relation to operating expenses, and the money investment they represent must appear in the railway balance sheet as part of the property assets.

The cost of improvements can be financed in only two ways—either it is met out of surplus accumulations from the earnings of the current or former years and specifically appropriated by railway boards of directors for the purpose, or it must be financed through the issue and sale of new securities. During the calendar year 1917 railways of Classes I and II (which own or operate about 99 per cent of the total railway investment) added to their property investment about $572,000,000. It is difficult to ascertain with exactitude how this $572,000,000 was financed, but we know from a general study of the comparative balance sheets at the beginning and close of the year, and the income and profits and loss accounts for the year, that considerably less than a fifth of the amount came from earnings. It follows that a large pro-

portion of any railway financing must be done through the sale of securities, while only a fraction can be provided for out of surplus earnings.

If the American railways are to need from a half to three-quarters of a billion dollars a year, it is a vital question how the financing is to be carried out. In the past, the railways and their bankers have had no great difficulty, on the whole, in convincing the investor as to the integrity of railway securities. Of late the task has grown continually more difficult, and the tendency of capital to flow into industrial rather than railway channels has been marked. In the future, much will depend on the form that railway organization will take, and particularly on the extent to which the government becomes a partner, if at all, in railway responsibilities. If the government should go to the extent of guaranteeing future issues of railway securities, interest or principal or both, the problem would be much simplified. This seems hardly probable. If the number of railway corporations is much reduced, as appears more likely, the problem will be simplified in a different way, in that railway credit will depend on the *average* results of a considerable number of railway units combined in a single large unit. But the complications involved in uniting these smaller units, so as to preserve their properties intact and maintain the priorities of the mortgage rights involved, are so great that the whole question of enforced consolidations still seems to me an open one. In any case, this is not the place to enter upon that discussion.

While it is difficult, almost to the point of impracticability, to indicate how railway financing will be done in the future, it may not be amiss to point out that recent tendencies in the field of railway credit ought not to continue. With a few notable exceptions there have been no new issues of railway stock for the past five or six years. Capital stock has replaced bonds in the process of reorganizing some railway companies, but the amount of new stock issued and sold for cash in the open market has been relatively very small. Even in the case of railway bonds, there has been growing difficulty in placing new issues, and many of the less prosperous roads have been forced to the costly expedient of issuing short-term notes, selling them frequently below par and at high rates of interest. As a result of this process of financing

through bonds rather than stock, railway security holders are becoming *creditors* of the railways, rather than *owners*. Railway bonds today constitute 60 per cent of total railway securities outstanding in the hands of the public. Fixed charges are growing, and the present tendency unless checked will at the same time increase the annual burdens of the railway companies and decrease their ability to finance their future needs.

This note of warning is not uttered in a pessimistic spirit, but merely in the hope that those who are responsible for the future of the American railways will make it possible for them to secure the capital needed for their growth on a basis equitable both to the investor and the companies, and that a large proportion of the new capital will be stock, reasonably assured of a fair rate of dividends.

There is one phase of this question which I have thus far passed over as being merely incidental, although in itself it is an important matter. I refer to the amounts which the Railroad Administration will have advanced and expended on behalf of the railways for new equipment and improvements, a large proportion of which will not have been repaid by the railways when they are returned to their owners. In part, these amounts will probably be funded under some form of long-term agreement by which the principal will be reduced by annual installments paid by the railways to the government; in part, it is proposed to fund the $400,000,000 expended for new equipment by a joint equipment trust, in which the government and the railways will participate, also payable by annual reduction of principal and interest. While the final details remain to be worked out as this is written, it is inconceivable that the railways will not be allotted reasonable time and means to meet the obligations to the government which the war conditions virtually forced on them. The principal bearing of this phase of the question on the larger problem of future railway financing will, therefore, relate largely to the effect which these debts to the government will tend to have on general railway credit.

In short, there are so many uncertainties in the future of the American railways, dependent on the outcome of the legislation now pending or to be proposed, that no detailed discussion can be undertaken here as to the manner in which the financial needs of

the railways are likely to be met. The amounts needed annually will unquestionably be large. If the government limits the profits of railways in the future, the amount they may devote out of surplus to new improvements will be relatively small, the great bulk coming from the sale of securities. If railway securities are in any way supported by the government, the difficulty of placing them in the hands of investors will be greatly lessened. Even if the government has nothing directly to do with the integrity of railway securities, it might provide such assurances of adequate railway income as would bring virtually the same result, although in a different manner. Whatever the method, the problem is bound to be both difficult and complicated. My own feeling is that the problem as outlined above has been conservatively stated. For example, the physical needs are quite likely to be greater than those described: 500 miles of new line are a pitifully small addition to our railway system each year, for it could easily be 5,000 without approaching the saturation point in railway construction for a long time. Again, the terminal facilities needed by the railways may alone exceed, in annual cost, the amount included in the estimate for other facilities than new mileage and new equipment. Still further, the allowance made for the increased cost of everything that goes into railway improvements, and especially for increased labor costs, is moderate. All things considered, the financial needs would appear likely to be closer to the upper than the lower of the two limits tentatively taken as a standard.

The Unification of Terminals at New York

By Calvin Tomkins
Formerly Dock Commissioner of New York City

NEW YORK is not an organized port in the technical sense of that term, but rather a congeries of many unrelated private sub-ports which do not function together. Much of the waterfront of New York has been acquired by the public authorities, especially at Manhattan and South Brooklyn and this has been improved by the construction of docks which have been leased for long terms to private steamship and railroad interests. As a consequence of this practice there is no adequate public control exercised over the port as a whole. The separate leases are in effect monopoly franchises which are operated without relation to each other or to any general port policy.

The basic principle of port organization is that a port should be developed as a unit, under public dictation of the terms on which private carriers, shippers and consignees shall be served. The port being once conceived as an organic whole, administered by the city for the benefit of all, there can be no thought of remaining in, or returning to, the chaos of jarring private rivalry and mutual obstruction from which we suffer; or of final dependence on the makeshift policy of separate sub-ports constructed by great private corporations—no matter how perfect each may be in itself or how welcome they may be as coöperators in a city system.

The fundamental basis for port organization at New York is provision for railroad tunnel connections between New Jersey and Long Island under the Hudson and East Rivers and Manhattan Island. Such a railroad tunnel system will bring together into one general organization the New York Central Lines, terminating in Manhattan; the New England systems with their Canadian connections, terminating on Long Island; and the transcontinental systems of New Jersey.

We are accustomed to consider this break in continuous railroad transportation and the immense and costly lighterage transfer which it entails as a local defect of the port, and until recently

I held this view. Wider experience, however, incidental to the consolidation of the country's railways by federal authority discloses the fact that this problem is essentially a matter of national concern and that the dislocation of the railway communications of the country between Albany and New York, due to the Hudson River barrier, may perhaps be considered to be the major physical defect of the transportation system of the country.

With the exception of one insufficient bridge at Poughkeepsie, there are no all-rail river crossings south of Albany and as a consequence there is added to the immense local floating movement between the east and west sides of the harbor, a large and constantly increasing lighterage transfer of through freight between New Jersey and New England transportation lines, which tends still further to congest our intensively used waterfront and necessitates the diversion of docks from normal marine uses to terminal railroad requirements. If New York can ever put its railroad terminals in their proper places inshore, the city will not immediately be obliged to go to the expense of building new docks for ships, since it can then utilize the relinquished railroad docks for this urgent need.

This Port defect can only be cured by the Railroad Administration, or by the city and state of New York coöperating with the federal government to substitute an all-rail movement by tunnels for the present intermittent lighterage movement of freight. Whenever this shall be done the railroads will find it more economical and far more convenient to remove their terminals from expensive waterfront locations to inshore sites cheaper and more available for use; and the change will automatically be made. There will then be no inducement to hold on to expensive waterfront property, ill adapted for railroad uses, and the expense incident to the water transfer will be largely eliminated. Of course, lighterage is flexible, and undoubtedly will continue to be utilized at many places around the port, but the city will not be obliged to rely so exclusively upon it.

The interference with harbor transportation by ice in the winter of 1917–18 and by the strike in 1919 shows how vulnerable is the terminal situation at this port. The nicely adjusted and complex transfer of freight by lighterage includes an equipment and organization which can easily be thrown out of gear at any time at

the instigation of labor leaders. The city and the general government cannot afford to stand out against a quick settlement of such strikes however unjust they may be in view of the immense loss and inconvenience which would otherwise result. There is no more reason why railroad terminals should be located at the waterfront in New York than in any other city. Tunnels are cheap to build and their practicability has been demonstrated by the Pennsylvania and McAdoo passenger tunnels. The saving which would be effected in handling freight by an all-rail movement as contrasted with the present intermittent lighterage movement, if capitalized, would be far more than sufficient to construct such tunnels and their necessary inshore terminals.

A new and most serious danger threatens the port in the possible withdrawal of the free lighterage transfer, which has heretofore been accorded the city of New York by the federal government. It is by no means certain that the government will hereafter permit the railroads to absorb the cost of lighterage. The Railroad Administration is looking about in all directions to increase the revenue of the roads, and the imposition of additional terminal charges and their separation from haulage charges affords one of the most promising opportunities for accomplishing this end.

In this connection the recent statements by Interstate Commerce Commissioner Robert W. Wooley, are pertinent and interesting. I quote as follows:

> There is only one solution of the rate problem and that is through a per mile charge for the line haul plus a terminal charge. The charge for transportation of a consignment over the railroad between the point of origin and the point of destination should be kept distinct from the charge for handling this consignment at the two terminals, because experience, investigation and long observation have proven that there is approximate uniformity of cost in most parts of the country so far as one is concerned, but that costs of the other differ widely and are not the same at practically any two points. In an investigation incident to the 5 per cent case a few years ago, the Interstate Commerce Commission, through one of its ablest examiners, went into this subject of terminal costs at four cities. At New York it was found that the expense of handling a car from the time it landed within the terminal limits of Jersey City until it was delivered to destination in Brooklyn or Manhattan, including lighterage, was approximately $35. At Chicago, where there is no lighterage, it was found that the cost of handling the same car within the terminal limits was $10.35. At Binghamton, N. Y., a city of between fifty and sixty thousand population, the cost

was $1.80, and at Salamanca, N. Y., which has a population of between five and eight thousand and is a railroad division point, the terminal cost was $3.80.

There is no difficulty about ascertaining and segregating these line-haul and terminal costs. According to the reports of the carriers themselves, made to the Interstate Commerce Commission, approximately 75 per cent of the gross receipts annually are from freight traffic and 25 per cent from passenger traffic. These reports also show, that of the total cost of operation one-third is terminal and two-thirds line haul.

From what I have just said the thought might suggest itself that New York in particular and other great cities in a lesser degree would never be able to compete with small cities and towns where only the actual terminal costs are charged. I am not so sure of that. San Francisco has municipally controlled terminals, and a flat charge of $2.50 per car for handling all cars within the terminal limits is made. New Orleans has a publicly owned belt and makes a low uniform charge. At New York—the terminal sore spot of the nation—the utter injustice of taking care of $35 per car in the line-haul rate—in other words, of making the innocent consumer over much of our land stand a tax that New York may continue to grow and monopolize the export and import business of the country—is impressing many of the big-minded citizens of our metropolis.

If the absorption of port lighterage by the railroads shall be permanently prohibited by the government, in what an unsatisfactory position will it leave the New York side of the port. This contingency should now be anticipated by promptly appealing to the Director General of Railroads to construct harbor tunnels as a necessary part of the country's railroad system, in order to correct a radical defect of the system itself. If this request shall be refused, as is probable, the city and the state of New York will then be in a better position to resist the possible action of the government in eliminating free lighterage, on the ground that the government itself is responsible for the defect in the railroad system which makes lighterage necessary. A demand can then be made with greater insistence for federal coöperation with the two states and the several cities to promote this enterprise which is so vital to the prosperity of the port.

Expensive and unnecessary lighterage is not the only danger in sight. The port is already handicapped by the following impositions or physical disabilities placed upon it by unsympathetic super-authorities:

1. The freight differential in favor of southern ports.

2. The unwillingness of the Railroad Administration to prorate freely with private canal service.

3. The apparent purposes of federal authorities to deflect freight from the port of New York to other ports, in order to avoid local congestion.

4. The deflection of traffic by the New Jersey roads to the New Jersey side of the port, in order to avoid the cost of lighterage, while at the same time collecting the fee for the service which they do not render.

5. Lack of sufficient marine facilities at the port for the pressing needs of commerce and the provision of such facilities by the federal government as a war time measure at other ports.

6. Entirely inadequate and disproportionate government appropriations for channel improvements to accommodate deep draft vessels.

New York should not passively await the breaking of the impending storm, but following the recent example of Chicago, should without delay submit its difficulties to the Director General of Railroads and demand relief. Three-quarters of the port problem everywhere is involved in reorganization and modernization of railroad terminals, which are now under federal control.

When railroad tunnel connections shall have been established between the opposite sides of the port, the separation of the port into two parts will be ended. The expensive, complicated and congested floating movement of freight between the two sides of the harbor will stop. There will be no more ice blockades or strike blockades. Freight will move directly across the Hudson as passengers now do in the Pennsylvania tubes, and the prosperity of the New York side of the port will no longer be threatened by an additional charge due to the probable action of the Railroad Administration in separating terminal charges from railroad haulage charges. Commerce and industry can then anticipate the essential factor of what should be the port's plan and policy, and the way will be opened up for private initiative to coöperate with public authorities in developing terminal facilities for the nation's commerce and the industrial needs of the communities surrounding the harbor waters, all the way from Sandy Hook to Jamaica Bay. In short the physical connection between New Jersey and New York is not a detail of the comprehensive plan, but is nine-tenths of the whole thing; and a clear statement of this simple fact should no longer be delayed.

The details of port planning and policy are complicated and when stated will necessarily arouse differences of local opinion, which it may be well to avoid at this time. But who will have the temerity to dispute the main fact, that the Hudson River separates the port into two unrelated parts and that as a consequence of this separation New York has acquired the unenviable distinction of fundamentally differing from every other great port in the world; and is in truth the most expensive great port through which to pass commodities?

One great railroad company has heretofore enjoyed a monopoly of the best opportunities on Manhattan, another on Long Island, another in the Bronx, and another on Staten Island, but the war has brought them all together into one general terminal system, the several parts of which, however, are still physically separated. Why not perfect this system while the opportunity offers by making it correspond to the essential feature of terminal unity elsewhere?

The construction of a vehicular tunnel between New Jersey and Manhattan will still leave the principal railroad terminals in New Jersey unconnected with the Long Island and Manhattan systems. Motor truck haulage will then be only less expensive than lighterage. Why not grasp the opportunity which is now presented by the liberal mindedness of the New Jersey authorities and embody in the proposed interstate treaty itself, or in a concurrent stipulation, provisions for physically connecting the railway systems of New Jersey, Manhattan and Long Island by tunnels, and by so doing end once and for all the insular disabilities of New York City by making it an integral part of the port of New York? The problem is essentially interstate in character, and the coöperation of the federal government, which is in control of the railroads, must be secured. This coöperation should be sought without delay by joint application on the part of both states to the Railroad Administration at Washington.

The good will and financial backing of New Jersey are necessary to the enterprise, and for obvious reasons can more readily be obtained now than after the vehicular tunnel shall have been constructed. The most effective way to incite New Jersey to retain exclusive terminal control of the Port by declining to coöperate to extend the rail heads to New York will be to build

vehicular tunnels before jointly agreeing to build the railroad tunnels.

The Society of Terminal Engineers on January 22, 1919, adopted the following resolution in favor of the construction of railroad freight terminals:

WHEREAS, The port of New York is the only great port in the world the two sides of which are separated by so wide a body of water as to make lighterage necessary for all freight passing from one side to the other, and

WHEREAS, The expense and inconvenience due to this separation is daily becoming more onerous and apparent, as instanced by the present harbor strike and coal famine, therefore be it

Resolved, That the cities and states of New York and New Jersey co-operate without delay to overcome the bad effects of this separation by the construction of tunnels or a bridge, or both.

The New York Board of Trade at its meeting on June 11, 1919, adopted a similar resolution as follows:

Resolved, That the Federal Railroad Administration be requested promptly to connect the New York and New England Railroad systems by all-rail tunnel service under the Hudson River, Manhattan Island and the East River, with the Railroad systems terminating in New Jersey and Staten Island, since by so doing the route will be shortened, the cost of transportation between New England and Canadian points and points to the South and West will be cheapened, and the facilities of the Port of New York will be made to better serve the national commerce passing through the Port.

The report goes on to say:

The Hudson River is a barrier between the Western and Southern Railway systems and their New England and Canadian connections. The waterfront on the New York and New Jersey sides of the Harbor, because of the floating transfer of freight, is intensively used for railroad purposes to the partial exclusion of marine commerce, and dock improvements have not been and cannot be made with sufficient celerity to keep up with the continually expanding national and local demands for both rail and water requirements.

Whatever may be the future railway policy of the United States, it is generally conceded that terminal integration will go forward and not backward; and that the railroad terminals at each city will more and more come to be administered jointly. As a consequence of this change terminal rivalries will be eliminated, and it will be much easier than heretofore and especially at New York to adopt modern methods. Railroad rivalries have till now been the principal obstructing influences to port improvement.

Under what kind of authority and form of organization the port of New York shall ultimately be organized and administered is not yet clear. The Dock Commissioner's authority under the Mayor failed. The Board of Estimate authority is too cumbersome and irresponsible. It also will break down. Both fail to provide initiative and continuity of plan and policy, which in view of the great and rapidly developing economic and international responsibilities of New York, as the world's principal port of exchange, can no longer be neglected. State control at Boston, New Orleans and San Francisco has worked well, as is evidenced by the superior organization of these ports, but I question its applicability at New York. National control at Montreal has been highly successful and the federal government here, through the Department of Commerce, can at least advantageously examine into, and give publicity to, the greatest port organization problem of the world, and so direct public attention towards a better understanding of it.

At New York and at other ports, the federal government, through its control of railroad terminals will hereafter exercise a great, if not a dominating, influence over future development. By adopting the principle in vogue at South African ports, of administering the docks, railway terminals and trans-shipment sheds at each port as an integral part of the unified railway, highway, and water system of the country, I believe that we shall obtain the best results.

The query naturally arises, since port organization has made such progress elsewhere than at New York, why has it been delayed so long here? The answer is that from the beginning of railroading, the port has been regarded as if it were to be permanently separated into two parts by the Hudson River, and on this supposition immense vested interests in terminal properties and in floating equipment have been predicated. This enormous investment will in part be prejudiced by any comprehensive organization of the port on modern lines, which will coördinate the several factors involved. For instance, a large part of the floating equipment will be unnecessary—expensive railroad location at waterfront terminals will be in large part needless since the railroads can transfer their terminals to cheaper back lands—substitution of inshore railroad terminals for railroad waterfront

terminals will result in the establishment of public terminal markets and will tend to destroy the present inefficient, wasteful, monopoly distribution of food—real estate speculations and private terminal developments about the harbor will, in some cases, be prejudiced since a connected system of railway terminals will tend to make one part of the harbor as good as another for the general purposes of commerce and manufacture. In other words and as a consequence of terminal integration, an unprecedented opportunity for port development will be opened up to private enterprise all the way from Sandy Hook, through the Hudson Valley, up and down the East River and along Long Island Sound to Jamaica Bay. In short, the effect of modernizing the port will have a far-reaching influence on waterfront values comparable to that of the new subways upon real estate values in the interior of the city. It is this prospective dislocation of values and the consequent temporary disarrangement of business which has for years retarded port development in the public interest at New York. It is necessary to overcome these natural but reactionary influences, and in no other way can the much needed change be accomplished. The recent consolidation of the railroad systems makes this revolutionary process possible. In fact, it will compel the change to be made in spite of all local restraining influences—the most obstructive of which has been the smothering of popular discussion.

The pressure for additional docks for steamships has already resulted in the presentation of plans for new docks and the actual construction of some of those planned. In too many instances, however, the proposed docks are of the narrow, one story type, entirely unsuited for modern requirements which demand wide docks, with sheds two stories in height, adequate rail approach, mechanical equipment for loading and unloading, and adjacent facilities for temporary and permanent storage. It will not be easy to construct such docks at the congested center of the port, but if the railway terminal system of the port shall be coördinated with the docks, they can with equal advantage be located almost anywhere about the harbor waters.

It is so manifest that all parts of the port will be advantaged by connection with each other and with all land and water carriers, that if the New York and New Jersey Harbor Improvement Com-

mission shall make this issue the essential part of their program, they will speedily attract public support and overcome interested private opposition to port development at New York. Physical unification of the terminal railway system of this port is the only programme for which general assent can be obtained and all other policies and proposed treaties urged in advance of this will stimulate discord and delay port improvement.

Facilities of the Port of New Orleans

By WALTER PARKER
General Manager, New Orleans Association of Commerce

NEW ORLEANS, seeking to become in fact as well as in theory, the port market of lowest resistance for the Mississippi Valley, has, in ten years, done the following constructive things:

Destroyed 250,000 open cisterns in order that the stegomyia fasciata, or yellow fever transmitting mosquito, can have no place there to breed. In this way the danger of yellow fever epidemics has been completely removed. Expense involved, about $12,000,000.

Rat proofed 150,000 buildings so rats can find no breeding places. Without rats there can be no rat epizoötic and no rat fleas to transmit the disease to human beings in the form of bubonic plague. Expense involved about $9,000,000.

Caused the operation of quarantine regulations along the Gulf Coast to pass from the jurisdiction of the several states to the federal government. In this way, varying and irregular regulations against the bringing in of disease from tropical countries have been replaced by constant and wise regulations of a completely uniform character.

Built five miles of steel covered wharves along the harbor front at a cost of about $5,000,000.

Built the world's largest and most efficiently equipped cotton warehouse and terminal at a cost of about $3,500,000, exclusive of the land. It has a storage capacity of 425,000 bales, and an annual handling capacity of 2,000,000 bales. It is now being enlarged.

Built the world's most efficient grain elevator at a cost of $2,000,000; capacity, 2,250,000 bushels. It can load or unload four ships at one time. Handling capacity, 96,000 bushels per hour.

Built and equipped a complete municipal belt railroad which connects and serves all railroads entering the city, all wharves, landings, warehouses and industries. Investment, about $1,500,000.

Installed a complete and modern system of sewerage, drainage and pure water supply. Investment made and to be finished, about $40,000,000.

Abandoned the councilmanic form of municipal government, and adopted the commission form which functions as a board of directors with the mayor as presiding officer and in effect municipal manager.

Has almost finished the building of an Industrial Canal and Inner Harbor for private enterprise. This cost about $12,000,000; ultimately will cost about $25,000,000.

Caused amendments to the state constitution which exempt money on deposit, mortgage notes and steamships domiciled in a Louisiana port from all forms of taxation.

Has begun highway construction on a large scale and is now building two highway outlets to the city across many miles of wet prairies at a cost of about $50,000 a mile.

Led the people of the valley in a successful effort to bring about revived commercial use of the Mississippi River.

Spent ten years in scientific study of its industrial, commercial and port problems and sent engineers and economists all over the world to make investigations and to apply the information to the local situation.

In addition a general commodity warehouse and river-rail-ocean terminal of 1,500,000 square feet of storage space has been completed by the United States Army Quartermaster for supplying the Canal Zone. Cost, $13,000,000 exclusive of land.

Other projects under way or in process of development include:

The opening of a deep ship channel direct from the gulf through Lake Pontchartrain to the harbor, thus creating a slack water channel thirty feet deep at low tide and shortening the distance to Key West by about one hundred miles.

The piping of natural gas to the city from the newly discovered gas field at Houma, La., fifty miles away.

The completion of the Inter-Coastal Canal, extending from Florida to Brownsville, Tex., by building a section beginning at New Orleans and extending westward about fifty miles. Much of the work has been finished.

With this record of accomplishment and projects pending as a guarantee of good faith, New Orleans in January, 1919, invited the people of the Mississippi Valley to organize an association for the purpose of capitalizing a valley-wide opportunity, that of reëstablishing the north and south trade channels of low natural resistance, and the opening up of new foreign markets of great promise in Mexico, Central America, South America, Australia, the Philippines and the Orient. The association was formed at a meeting in New Orleans, and through it the people of the Missis-

sippi Valley now are coöperating for the development of their foreign trade through greater use of waterways, their easy grade railways and their port of easiest access in reaching the Panama Canal and the world's new markets of great promise.

NEW ORLEANS' VISION

The close of the world war brings squarely before the people of all nations many new problems. Of one sure effect of the war no man need entertain any doubt. The whole world will be more efficient in the generations to come. The burden of national debt and the tax on enterprise will force the permanent reduction of waste, lost motion and unnecessary service. The wealth accumulating ability of the privileged few will be curtailed, while the wealth acquiring ability of the many—the workers and toilers—will be increased.

Old trade routes will lose importance because old markets have lost purchasing power. New trade routes will be established because unexploited regions where natural resources exist must be developed.

New Orleans men, in their study of New Orleans' problem, gained a comprehensive knowledge of ultimate trade route changes which they were actively discounting in their development of the port of New Orleans. The great war has brought these changes earlier than New Orleans expected. Nevertheless, the work of preparation done by the city discounts them just the same. In the last analysis, the entire problem incident to the world's new trade economy hinges on economy of transportation.

SOME INTERESTING HISTORY

New Orleans was founded in 1718 by the French, who have long encouraged community endeavor. They expected the new world city at the mouth of the Mississippi River to become one of the greatest of ports. So they dedicated the entire harbor frontage, forty-one miles, to public ownership; and the Louisiana Purchase treaty of 1803 fixed this as a permanent condition which cannot legally be changed.

When New Orleans became a part of the United States in 1803 it came under the domination of the English school of commercial thought and practice. This school is the reverse of the French

school. It does not believe in communal endeavor but pins its faith to private enterprise.

Thus a serious conflict of commerce schools occurred on the harbor front of New Orleans. The conflict attracted nobody's attention because in 1803 there were neither steamboats nor steam trains and, as the flat boat and sailing ship were the only means of merchandise transportation, and labor was the lowest cost element in the city's life, nobody gave a thought to the creation of port equipment.

Later, when the steamboats came and the need arose for harbor front warehouses and commodity handling facilities the spirit of the French school of development had subsided, and the spirit of the English school, which business men of the United States were following, could find no expression because the condition of public ownership prevented private enterprise building warehouses and terminal facilities there.

At first this handicap did not matter so much because the river and the boat lines enjoyed a complete monopoly of Mississippi Valley commerce. Costs were high because facilities were lacking, and the loss from weather damage was great. But shippers in the valley had no recourse until the railroads came.

Here again the problem arose. There was no commerce except at the river towns. The drift of that commerce was up and down the rivers, and shippers knew no port market other than New Orleans.

The railroads in competition with the boats tapped all the river towns, and sought an outlet at New Orleans which valley shippers had always been accustomed to use. But they encountered the same difficulty which the boats had encountered in getting access to the harbor front and in creating the facilities they required. Years later some of the great railroad systems succeeded in a measure, but doubt, delay and lack of equipment at New Orleans during the formative period of railroad development were in a large measure responsible for a complete reshaping of the valley's drift of commerce.

At every other port the railroads received not only a welcome but an opportunity to obtain harbor frontage and create all the facilities required to coördinate the rail and ship lines.

Meanwhile the boats in the Mississippi Valley trade suffered

in other directions. First, they were passenger boats, and their cargo space was limited. Expense of operating was high. Boat owners seemed unable to throw off the ground-in conviction that the trade belonged to them by old time monopolistic right, and that through bills of lading, regular schedules, conveniences of all kinds and business management developed by the railroads were innovations that should not be adopted by the boat lines.

In other words, economic railroad transportation fought uneconomic boat transportation for control, and won.

In the natural course of events, the railroads then succeeded in changing the drift of Mississippi Valley commerce from the north and south water ways and easy grade railroads to artificial east and west routes over mountain ranges.

Because of this change in the drift of commerce, under way when the Civil War began, New Orleans' commanding position in the Mississippi Valley became affected. When the Civil War ended New Orleans experienced great difficulty in readjusting her affairs and reëstablishing her commerce under the new order.

During the succeeding years natural advantage of position remained New Orleans' only great asset. More and more Mississippi Valley commerce moved by way of the Atlantic seaboard. Western Europe, nearer New York than New Orleans, was America's principal market, a fact which greatly assisted the east and west railroads in developing valley commerce in spite of the mountain grades.

With this changed drift came, of course, an east and west cast to commercial and financial thought. Even the telegraph as well as the mail system became largely an east and west affair, and in time the telegraphic news services maintained by the newspapers became largely influenced by east and west interests, and news matter possessing a north and south cast, or an interest for people occupying a region possessing common economic problems, encountered difficulty in gaining full attention and circulation.

THE AWAKENING

In 1892 New Orleans began to fret under the loss of commerce. In 1898 New Orleans began to think; in 1905 to act, and in 1910 to understand her problems and their solution. Since then her program of accomplishment has been carried forward in the face

of obstacles of which the world war, with its high cost, difficulties of finance, scarcity of labor and drain on material, was only one.

Today New Orleans has progressed so far on the road to completion that her citizens recently responded to the call of their mayor, Honorable Martin Behrman, for $105,000 in cash with which to tell the people of the country, through the advertising columns of national magazines, that New Orleans is now ready to serve the valley more efficiently and at less cost than other ports, and that the port and city are now ready to begin the growth so long predicted and so long delayed.

FINE POINTS OF ECONOMY

The facilities which New Orleans has established and is establishing are publicly owned and operated without profit. These facilities rest on publicly owned land, and represent an enormous value because of their strategic location. In calculating the cost of her facilities, New Orleans does not take the value of the land, or harbor frontage, into consideration; consequently the necessary earning power of each facility is predicated on the cost of construction only. These properties pay no taxes, and the money used in their creation is obtained from the sale of 5 per cent forty-year public improvement bonds sold as a rule above par. The credit of the state of Louisiana is the underlying security, though the earning power of the facility itself is ample to take care of bond interest, amortization, upkeep and operation, with a margin of safety.

The port and its harbor front facilities are under the control and jurisdiction of the Board of Commissioners of the Port of New Orleans, commonly called the Dock Board, composed of five men named by the governor, who serve without pay.

The municipal Belt Railroad is operated by a Board, a majority of the members of which are nominated by the commercial exchanges of the city. The mayor is chairman of the Board.

This body, as well as the Dock Board, was created in spite of active opposition from private corporate interests. The fight for a public terminal belt began over 20 years ago. In 1900 the first ordinance establishing the Public Belt Commission was passed, and four years later the first two miles of track had been laid by a shrewd bargain with one of the very railroads fighting it.

Today it owns 60 miles of track which can accommodate nearly 2,500 cars; and by means of its spurs any industry which needs to reach river or rail terminals can do so. Freight entering or leaving the city over any railroad may be switched to the docks or to any other rail terminal at a fixed low charge for switching. It has also been extended to the banks of the Industrial Canal. Its capital stock was a municipal due bill for half a million dollars and the right to use public property as a right of way. Today it possesses a borrowing and financing power of its own, and expects to invest millions in a bridge over or a tunnel under the Mississippi River. It recently spent $50,000 to determine whether a bridge or a tunnel would serve the city's interests best.

Because of public ownership of the land along the forty-one miles of harbor front, land worth probably $10,000 an acre on the average, some remarkable aids to commerce and industry are effected.

THE COTTON WAREHOUSE

This facility represents a cash outlay of $3,500,000. It stands on 100 acres of river front. Most of this land was created by pumping silt from the river and building up the low banks above high water mark. The warehouse and terminal are equipped with every practical device for the saving of time and money. It has three great extra density compresses through which the compressed bales from the interior pass and by which the bales are reduced to about half the size of the ordinary compressed bale, or to about one quarter the size of the ordinary plantation bale of commerce. In this way a great saving in ocean freight rates is effected, amounting sometimes to as much as $3 a bale.

All of the trucking is done by electric trucks. In this way one man can move ten and even twenty bales to or from any part of the warehouse. With hand trucks, the ordinary way, one man can move only one bale.

The warehouse is divided into air-tight, fireproof, sprinkler equipped compartments, each of a capacity of 1,600 bales, or 800 bales to the tier. Through the use of a simple device called a "bale puller," which is operated by the conveyor operator above, any bale anywhere in the pile can be extracted in a few moments without injury and without disturbing the pile. In this way the

great economy of piled storage and the great efficiency of single bale storage are gained.

In ordinary warehouses a piling and unpiling fee of twelve cents a bale is charged. This fee is saved in the New Orleans warehouse.

Warehouse receipts against cotton stored in the New Orleans warehouses are issued by the state. The New Orleans Cotton Exchange Inspection Bureau, which maintains a large cash guaranty fund, inspects the cotton and issues a certificate showing grade, staple, weight, class and condition. These two pieces of paper outstanding against a world-used, hedged commodity stored at rail-boat-ship side at a strategic point of primary distribution and export, forms the highest character of bankable collateral. With it cotton handlers are now able to obtain very low cost money on either demand or time loans. Ultimately, when New Orleans system is more completely developed, large handlers of this collateral should be able to use it as collateral against call loans derived from surplus monies lying idle in any part of the country or the world.

The same relative degree of efficiency in the handling and financing of grain has been provided and soon will be provided for coffee, sugar, lumber, rice, coal and general commodities.

INDUSTRIAL CANAL AND INNER HARBOR

Because public ownership of the harbor front prevents free play on the water front to private enterprise, auxiliary water frontage had to be created to encourage private capital to invest in great industries, warehouses and other enterprises in New Orleans requiring water front sites where railroads, boats and ships can be brought into close coördination with production and storage.

The problem presented was a large one. Years were spent in study, other years in securing an amendment to the state constitution, still other years in engineering surveys and research.

In February, 1918, the time to finance and begin work on the canal came, and the New Orleans Association of Commerce called an executive conference of financiers, city officials, state officials and engineers. One month later, plans for the financing of the project had so far matured that the New Orleans banks offered to advance the money needed for construction, their

reimbursement to come when the bond issues could be prepared and sold.

Meanwhile, in anticipation of this outcome, several of the world's largest dredges had been obtained and held in readiness, and within one week after the completion of the preliminary financial arrangements four giant dredges were at work.

General George W. Goethals, builder of the Panama Canal, is building New Orleans' Industrial Canal and Inner Harbor. The project will be completed within a year.

Dimensions of the canal are: Length, 5¾ miles; width, 300 feet; depth in extreme low water, 30 feet. The great lock at the Mississippi River end of the canal will accommodate a ship 74 feet wide, 700 feet in length, and drawing 30 feet at extreme low water. Ninety-nine per cent of the time there will be 35 feet of water on the sill.

An industrial strip of land 1,000 feet in width on either side of the canal and extending its entire length is owned by the public. Under the law this can be leased to industries or business enterprises for any period up to ninety-nine years on very favorable terms. The municipal Belt Railroad now connects or will connect with all the sites.

Extensive shipbuilding enterprises already are established on the canal, and seven great steel ships are being constructed under a guaranty by the Dock Board that a channel to the sea will be ready when they are launched.

This is probably the first case on record where ocean going shipbuilding, involving enormous outlay for shipbuilding plants, began in the center of dry land, with navigable water nearly two miles away. The dredges are ahead of their schedule and the channel was ready a month before the first ship was ready for the water. One of these plants is a French government project, the other is a United States Shipping Board project.

HIGHWAY CONSTRUCTION

Because the city is surrounded by navigable water and by wet prairies, New Orleans, is practically, an island. Highway construction into and out of the city has presented some big problems. In April of this year money was raised with which to construct two 365-mile highways leading east and north from the

city across wet prairies. These highways will cost about $50,000 a mile, exclusive of a number of very costly bridges over wide deep streams.

Early this year the financing of a paved highway extending along the Gulf Coast from New Orleans to the Texas border was completed, and the financing of a paved highway extending from New Orleans to Baton Rouge and Shreveport was practically completed.

Over these four great highways twelve national and international highways will reach the city, including one to Winnipeg, Canada, now more than 60 per cent complete; another to Nashville and Chicago, another to Jacksonville, Fla., and still another to Los Angeles.

Now that the money is in hand, New Orleans' four trunk highway outlets will be completed without further delay.

VOCATIONAL TRAINING

Industrial development, as a result of a port improvement, is now very marked in New Orleans. Throughout the spring of 1919 when many sections were reporting idleness, there was a full demand for skilled and unskilled labor in the city, with a greatly increased demand in sight. For this reason it is fortunate that the city government has a bequest of nearly $1,000,000 for a great vocational school, which will be begun before the end of 1919.

ORGANIZED COMMERCIAL ENDEAVOR

Realizing that the city's development required careful and expert leadership, the business men of New Orleans reorganized a struggling progressive union or commercial club into a modern Association of Commerce, with 4,500 of the leading men of the city as members, and put it to work on a city plan, on domestic and foreign trade development, on good roads promotion, and in organizing the Mississippi Valley to make a concerted effort to redevelop the north and south channel of trade.

The building of the Industrial Canal and Inner Harbor is one of the outstanding results of the work of the New Orleans Association of Commerce. The building of the New Orleans-Winnipeg Highway is another.

Amendments to the state constitution which exempt money on

deposit, mortgage, loans, and ships domiciled in a Louisiana port from taxation are other samples of the vision and constructive work of this business men's organization.

Wet lands around New Orleans are being drained and used for the production of corn, vegetables and other food stuffs, and the New Orleans breweries are being changed into dehydrating plants for the reduction of these food stuffs into an imperishable form.

The state owns 400,000 acres of oyster bottoms; and some day these old breweries which are being turned into dehydrating plants will be reducing Louisiana's oyster flour and selling it in barrels and packages as one of the staple foods of the country. New Orleans believes its breweries can help more by becoming dehydrating plants than by becoming soft drink factories.

While New Orleans' new facilities are not all complete and in working order yet, the beneficial effect of what had been done is best shown by the increases in foreign trade and in bank clearings as follows:

	Imports and Exports	*Bank Clearings*
1890	122,785,054	528,883,481
1900	133,349,575	556,690,000
1910	216,358,440	987,491,234
1913	261,176,635	980,683,893
1917	435,981,894	1,968,023,811
1918	524,255,286	2,660,460,335

Efforts of the Port District of the Port of Seattle to Own and Operate a Public Belt Line

By Robert Bridges
Commissioner of the Port of Seattle

THE Port of Seattle is a municipal corporation created under a state law commonly known as the Port District Act. The purpose of this law was to enable the creation of separate municipal corporations whose object was to develop the natural ports and harbors of the State of Washington. Such Port Districts were empowered by the Act

> to lay out, construct, condemn, purchase, acquire, add to, maintain, conduct and operate any and all systems of seawalls, jetties, wharves, docks, ferries, canals, locks, tidal basins, and other harbor improvements, rail and water transfer and terminal facilities within such port district.

The Port Commissioners of the Port of Seattle early took the position that the power "to lay out, construct, condemn, purchase, acquire, maintain, conduct and operate *rail and water transfer and terminal facilities*," conferred upon the District the power to construct and operate a belt line railway paralleling Seattle's waterfront, connecting up, and serving with rail facilities the various piers, docks and other harbor terminals.

The necessity of such a public belt line was recognized because the railroads had divided the city into some 12 or 13 switching zones, each with a separate switching charge. Furthermore, the four leading railroads may be said to have divided Seattle's harbor into at least three sub-ports or spheres of influence. The Northern Pacific Railway, being the oldest road, controlled by its franchise grants the central waterfront, being that part of the harbor adjacent to the older and more highly developed business of the city. The Great Northern Railroad dominated the situation northerly of the central waterfront, and particularly in what is known as the Ballard and Interbay districts. The Milwaukee, Oregon & Washington in turn controlled sections in the southern portion of the city.

The common user provision in the several franchises of the respective railways had not been availed of because of various

complications which prevented the common use intent, such as lack of adequate physical connections, separate ownership of spur tracks, exclusive agreements of certain railroads with dock companies as to access to docks, etc. The result was a pyramiding of switching charges and delays in interchange between the railways. Comparatively low switching charges were made in the central business district, but to switch a car to any of the newer industrial districts lying outside of the central territory, switching charges had to be paid to two and sometimes three railroads. This resulted in discouraging large companies from establishing their industries outside of the central zone, and tended to place an artificial value upon industrial territory located within the central zone. Smaller industrial concerns, which had to buy cheaper sites and therefore located outside of the central territory, were placed in a most unfavorable situation through the high switching charges. Because of this situation, many favorable industrial locations within easy reach of the waterfront and the central business district were retarded in their development. Smaller industries preferred to locate in smaller cities in the vicinity of Seattle rather than be subjected to the high switching charges and to the delays and inconvenience incident to interchange between several competing railroads. In the year 1914, the Port Commission obtained from the City Council of the City of Seattle two franchises on Whatcom Avenue extending through a section of Seattle which was rapidly becoming the most important industrial section.

On December 4th, 1915, the Commission submitted to the voters at the general Port District election, two propositions:

(I) Amending the Comprehensive Scheme of Harbor Development to include a Belt Line Railway extending from the city limits on the south paralleling the Duwamish Waterway to a point on Elliott Bay, and then extending Northward along the waterfront streets paralleling Elliott Bay to the extreme Northerly end of Seattle's harbor proper.

(II) For $125,000.00 of Port District Bonds to build the First Unit of the Belt Line, namely, that included within the franchise already obtained.

In order to make any harbor development, the plan therefor must be approved by a majority vote of the people and then it becomes a part of what is known as the Comprehensive Scheme of Harbor Improvement.

Notwithstanding a most vigorous campaign against both of the propositions by the two leading daily papers, the Amendment to the Comprehensive Scheme of Harbor Development, providing for the inclusion of a Belt Line Railroad was adopted.

The $125,000.00 bond issue failed to receive two-thirds of the votes of the people voting thereon, which the law requires for adoption of a bond issue. It received, however, a substantial majority, only falling short a small amount of the requisite two-thirds vote. On March 7th, 1916, the Port Commission called a special election held simultaneously with the general city election of the City of Seattle, and presented a second bond issue for a Belt Line in the sum of $285,000.00. This included a larger unit of the total Belt Line as planned in the Comprehensive Scheme that had been adopted December 4th, 1915. Thirty-three thousand nine hundred and eleven voters voted in favor of this issue; 24,635 voted against; the issue again failing by a comparatively few votes of receiving the requisite two-thirds. On December 2nd, 1916, the Commission submitted a third bond issue for a Belt Line in the sum of $450,000.00. This made provision for a Belt Line extending from the southerly limits of the city along the waterfront to the northerly boundaries of Seattle's developed harbor. This issue also failed to receive the requisite two-thirds vote. On the 6th day of March, 1917, at a special election held simultaneously with the general city election of that year, the Port Commission submitted a bond issue in the sum of $450,000.00 for a Belt Line covering practically the same as that proposed in the election of December 2nd, 1916.

This issue failed to obtain the majority vote of the people. This was not due, however, to a reversal of sentiment on the part of the majority who had voted first to include in the Comprehensive Scheme of Harbor Development a plan for a Belt Line Railway, and thereafter three times in favor of bond issues to construct such a Belt Line. The vote of March 6th, 1917, was a reflection of the people's feeling that our country was about to enter on the World War. Several city bond issues for needed improvements were presented at this same election, all of which failed because of the feeling on the part of the people that money should not be voted for public improvements on the eve of our entrance into the war.

In view of the fact, the electors of the Port District had voted to include a Belt Line plan in the Comprehensive Scheme of Harbor Development, and of the further fact that a majority of the voters on three occasions had voted favorably upon bond issues to construct a Belt Line, the Port Commission on May 23rd, 1917, passed a resolution establishing a Belt Line Railway Fund. By this resolution, the Port Commission devoted for the construction of a Belt Line, revenues amounting to about $20,000.00 a year, which the District received from various leaseholds. On June 30th, 1917, the Port Commission adopted a second resolution providing for the immediate construction of railway tracks extending approximately two miles and a half along the Duwamish Waterway, appropriating for this purpose, the sum of $16,000.00, at that time, in the Belt Line Railway Fund.

The Duwamish Waterway is a public waterway extending some six miles from Elliott Bay through the heart of a new and largely undeveloped industrial district. The waterway is paralleled by a street known as East Marginal Way, and on this street, the Port District had a franchise. While the area tributary to the Duwamish Waterway was one of the best prospective industrial sections of the city, its development had been held back because it lacked railway facilities. The property owners for several years had sought to get the railway companies to build a road into this territory without avail. It was due primarily to these facts that the Port Commission passed the two resolutions of May and June, 1917, mentioned above. There was a crying necessity for railroad facilities in this district.

The Port Commission was about to commence work to construct the road provided for in the June resolution, when an injunction suit was started. This suit raised the question of the power of the Port District to own and operate a Belt Line Railway paralleling the harbor and connecting up the various docks and terminal facilities thereon. The suit was originally started by a taxpayer, but immediately after its commencement, a second taxpayer intervened. It soon became apparent that this second taxpayer was acting in reality for the railroads because all of the railroads' attorneys appeared on his behalf. The trial court held that the Port District Act did not confer the power to own and operate such terminal railways. An appeal was taken to the Supreme

Court of the State, and the Supreme Court sustained the judgment of the trial court. Counsel for the Port District challenged the railway attorneys and indeed, challenged the members of the Supreme Court to give a meaning to that part of the Statute, which empowered Port Districts to maintain, own and operate "rail and water transfer and terminal facilities." Counsel for the railways were unable to give anything but a ridiculous meaning to those words of the Statute. The Supreme Court in its opinion practically eliminated the words from the Statute entirely. It was one of many cases of judicial infringement upon the legislative branch of the government. Judicial legislation, however, is now so frequent that it has almost ceased to be a source of comment.

Anticipating that the Supreme Court would rule against the power of the Port District to own and operate a terminal railroad, if the court could find a single peg upon which to hang its judicial hat, the Port Commission caused to be introduced in the 1917 Legislature, an amendment to the Port District Act. This amendment was so framed that if passed by the Legislature, the courts could not defeat the legislation intended. The railways, however, were able through their representatives in the Legislature, to prevent the passage of this bill. The Port Commission while temporarily frustrated in the plan to own and operate a Belt Line Railway, are still hopeful that the next Legislature will empower Port Districts to own and operate such terminal railways.

The fight which the Port Commission of the Port of Seattle made to obtain a Belt Line has not been, however, without beneficial effects. A direct result of the Port Commission's attempt to construct a railroad on East Marginal Way was the immediate building of a railroad on this street by the O.-W. R. & N. Co. As a result of the construction of this road, many new industries including several new shipyards, which sprung up as a result of the war, located in this district. Without railroad facilities, these industries could not have located in the district and it is doubtful if they could have found suitable locations anywhere in the city. Furthermore, the fight for a Belt Line Railroad by the Port Commission, brought to the attention of the people the many deficiencies in the methods of operation by the railroads and a number of the worst practices of the railroads have been eliminated. The

unified control of the United States Railroad Administration also assisted in bringing this about, but it was the campaign of education carried on by the Port Commission which created a public opinion demanding the reforms obtained.

State ex rel Huggins v. *Bridges*

97 Wash. 558, 559.

The separation of the powers granted into, (1) the owning, maintenance and operation of a system of harbor improvements, and (2) the owning, maintenance and operation of rail and water transfer and terminal facilities, seems to us to do violence to the plaint intendments of the language and to grant a power by inference, viz., the power of operating railways not expressly granted by the legislation and clearly not to be implied.

We are asked by appellants to define what is meant by the words "rail and water transfer and terminal facilities." It might be answered that it is sufficient to determine what powers are granted this municipal corporation by the clear intendment of the act or by necessary inference, and that nowhere is it granted the power to construct, operate and maintain railway lines, either terminal, belt, or otherwise, and to act as such a common carrier. But we conceive that the language referred to simply means such adjuncts and appurtenances as are necessary or convenient for the trans-shipment of commodities between land carriers and water carriers. Such facilities may include a spur track or switch to a dock, pier or warehouse, and they may include the connecting track between two docks or piers or warehouses of the port commission, for its convenience. If we construe the language as contended for by appellants, instead of reading rail *and* water transfer and terminal facilities, it should be read rail *or* water transfer, etc. When the legislature has used precise words and used words which subsequent portions of the act and amendments thereto imply were the exact words meant to be used by the law-making power, it is not the business of the court to substitute words, even such a small word as "or" for "and." *Black, Interpretation of Laws* (2d ed.), p. 231.

We are convinced, therefore, that the appellants have not been granted the power proposed to be exercised by them. The judgment is affirmed.

True Cost-Finding—What It Can Do for the Railroads[1]

By Morris Llewellyn Cooke
Consulting Engineer, Philadelphia, Pa.

NO uniform system of cost-finding has ever been nationally applied to American railroads. One is tempted to make this statement much stronger and say that on no American railroad is there to be found a system of cost-finding comparable to the better systems in vogue in other industries. Such cost-finding would improve efficiency and service, reduce expenses, furnish a scientific basis for freight and passenger rates, inspire public confidence in the management, and ultimately bring about standard operating methods. The cost factor is the best measure of performance known, regardless of whether the performance desired be war-making capacity, reasonable freight or passenger rates, economy in labor or material, returns on the dollar invested, or any other.

Existing Fallacies Regarding Cost-Finding

In discussing the problem of cost-finding there are three fallacies which must first be cleared away:

1. The fallacy that confuses statistics with costs—the great mass of operating statistics pertaining to railroads have little bearing on true costs.

2. The fallacy that it is difficult to apply cost-finding to railroad operations, and that a national standard would upset present management.

3. The fallacy that cost-finding is purely a money-saving proposition.

1. The United States Railroad Administration has already installed a system of uniform operating statistics, through its Division of Operation which is described elsewhere in this volume. This seems to be admirably designed but the reports show in

[1] This article in some what different form appeared in the January (1919) issue of Industrial Engineer. It is reproduced here with the permission of the editor of that publication.—The Editor.

averages and ratios only the extent to which present facilities are used. They call attention to equipment capable of better use. They also provide for some accounting information of a general nature, valuable as a general survey.

True cost reports would trace every item of expense to its place in a unit of operation or service. Each unit of expense could be analyzed in terms of maintenance, labor, material, administration, construction, etc. Cost-finding methods would not only be uniform on all railroads under the centralized administration, but there would be the same cost terminology. Uniformity would enable those at interest to trace differences in cost to real causes without time-consuming investigations.

For instance, in any unit of cost the general item "Maintenance" might be subdivided into:

(a) Tracks and roadway.
(b) Rolling stock.
(c) Terminals.
(d) Power stations, etc.

Any of these items might be further subdivided one or more times to whatever extent the data may be useful or desirable. To illustrate, the first item—the cost of maintenance of tracks and roadway—might be expressed both as totals and in terms of units under some such head and subheads as the following:

Cost of ties	Cost of finished rails, delivered at warehouse
Cutting timber	
Creosoting	Delivery to point of use
Hauling	Laying rails
Placing in roadbed	Riveting
Leveling	Spiking, etc.
Cost of rails	

2. A uniform cost-finding system should not interfere with present railroad routine, for a national standard would be developed as a matter of growth rather than the adoption of a ready-made system. One or two typical railroads could be chosen to carry on the work during the development stage. No general announcement need be made. The introduction of such a program should be slow and gradual.

3. Scientific cost information almost invariably brings about economies because it directs attention to abnormalities. Money

saving is important. But accurate cost statistics are even more valuable as a foot-rule for measuring efficiency. During a war, for example, service is more vital than economy. Yet even in the midst of war accurate cost data will indicate wastage of man-power, of materials, of equipment, etc., our war-making capacity being more important than economy, at such a time, accurate data improve war-making capacity.

WHAT COST-FINDING CAN DO AT THIS TIME

The Government has now absolute control of railroad operation. It desires to operate as efficiently as possible, for public service. There is an unusual opportunity to establish cost-finding—an opportunity quite unlikely to occur under private control. Private railroad management is governed by policies regarded as of immediate importance to the particular railroad, or system, or group of financiers, or stockholders. Competition between railroads formerly made broad standardization of cost methods difficult.

Railroad rates have been the subject of interminable disputes in the past. The public believes that freight and passenger rates are either too high or out of balance. Railroad officials under private ownership have been convinced that rates were neither justly nor scientifically computed. Such disputes have been based largely upon general railroad statistics, instead of accurate cost information. Very often they have revolved upon mere statements of opinion, or broad generalizations incapable of demonstration. Between the public and the railroads the Interstate Commerce Commission has arbitrated, but without accurate cost data as an irrefutable basis for decisions. Uniform cost methods would make rate decisions very largely a scientific process, eliminate much of the argument, and more nearly satisfy both sides in the disputes.

Accurate detailed cost data almost invariably lower expenses and prices in other industries. They should lower railroad rates and give more favorable prices for American goods in foreign markets. In view of the large merchant marine now being built this is an important consideration.

Furthermore, it is important that public confidence in railroad operation whether operated by the government or private interests

be firmly established. Accurate cost-finding is such a vital element in modern industry that the public will expect this phase of good administration.

As Mr. Cunningham has pointed out in his article on railroad statistics the Interstate Commerce Commission has already very fully carried out the instructions of Congress in the matter of establishing uniform accounting methods on American railroads. When it comes to developing adequate cost-finding methods, however, it will probably be discovered that a somewhat different basis for railroad accounting will be the outcome, enabling the taking off of special reports and the making of special statistical inquiries with a fraction of the trouble now involved. These special reports are now a well-nigh maddening part of the duties of railroad accountants. Under private operation and Federal regulation they would become even more of a nuisance than at present. Hence the railroad world will welcome any improvement in the technique of accounting methods which will yield special data and information more readily than under the present system.

Fortunately we can point to one concern[1] which has in use on certain utility properties which it operates, a very satisfactory system of cost-finding, which in its main features and more especially in its mechanism might easily be adapted to steam railroad use.

HOW COST-FINDING CAN BE APPLIED TO THE RAILROADS

The first step is to make a careful study of all previous attempts at cost-finding on railroads, as well as similar public utilities. These attempts have been isolated. Preference should be given to cost systems in successful operation. Both the systems and their methods of installation should be reduced to standards which are approximately correct, and will not interfere at all with operating efficiency. This will give a basis for introducing a tentative system on one or more important railroads, and extending the systems as fast as perfected, to the extent that may be desired.

Some of the obvious ends to be accomplished are:

(a) Comparisons between different railroads of actual ton-

[1] Day & Zimmerman, 635 Chestnut Street, Philadelphia, Pa.

mile, train-mile and car-mile costs, subdivided into component parts.

(b) Comparisons of similar costs between various sections of the same railroad, and between railroads covering same territory.

(c) Comparisons between groups of commodities handled on the same railroad, and between two or more railroads handling the same commodities.

(d) Comparisons between various kinds of service (car-load lots, less-than-car lots, terminal facilities, switching facilities) on the same railroad and between two or more railroads, of costs of the same service.

(e) Comparisons between costs of operating various kinds of equipment (steel gondolas, wooden cars, cars of various capacities, freight trains, mixed trains, special trains, etc.) upon the same railroad; and between two or more railroads upon the same kind of equipment.

(f) Comparisons of special elements of costs, such as direct wages, direct materials, direct expenses, as well as indirect or overhead charges (both before and after allocation) on the same railroad, as applied to the information indicated in (a), (b), (c), (d), and (e).

(g) Separate costs of construction, operation and maintenance and comparisons of the subdivisions of these costs somewhat as in the following illustration, taken from the records of a company now employing a comprehensive cost-finding method:

OPERATION COSTS

	1917	1918
General	$.0286	$.0283
Transportation	.0906	.0843
Distribution	.0004	.0003
Traffic	.0005	.0008
Production	.0786	.0445
Roadway	.0018	.0016
Transmission	.0022	.0021
Total cost per unit	$.2027	$.1619

MAINTENANCE COSTS

General	$.0001	$.0002
Transportation	.0111	.0092
Distribution	.0020	.0016

Traffic	$.0042	$.0034
Production		
Roadway	.0149	.0114
Transmission	.0002	.0004
Total cost per unit	$.0325	$.0262
Grand total cost per unit	$.2352	$.1881

(h) The arrangement of the foregoing analyses in such a manner that differences in costs are easily detected by those who use the data.

(i) Original records maintained in such form and in such detail that the information they convey can at any time in the future be assembled by machinery to produce whatever class of cost statistics may be desired without an exhaustive and costly investigation. Thus, in addition to such cost reports as may be required at regular periods, it would be a simple matter to make any kind of special cost analysis by machine, cheaply, at a moment's notice.

To produce the comparative cost statistics above indicated, it is necessary that the cost-finding systems include the following features:

Inclusion of each item of cost applicable to a given period of time, whether represented by current outlay of money or by the comsumption of material, equipment or service paid for during a previous period, or to be paid for during a later period. Thus the cost of hauling a car-mile of a given class of commodity over a given section of track, would include not only every cent of direct wages, direct material and direct expense applicable to the particular period under review, but would include also its proper proportion of interest charges, maintenance of way charges, equipment, depreciation, equipment repair expenses, general expenses, etc. The situation would be analogous to that of an automobile manufacturer, for example, who is in a position to know the exact cost of an axle or a differential or of a thousand small bolts of a particular description, etc.

The method of recording costs must be uniform, to avoid the distortions which might take place were the decision as to how any particular element of costs is to be classified left to the discretion of each individual railroad statistician.

For similar reasons, terminology must be standardized upon all roads—a descriptive name must mean the same thing wherever and by whomever it is employed.

The system should be elastic, in that it would permit periodical expansion and detailed analysis of particular phases of costs which are not normally of current interest because they would not vary materially from one period to another. Some of the comparisons mentioned under (a), (b), (e), and (f) above, would only be made at intervals as may be expedient. The corollary to this expansibility would be easy contractibility. As quickly as the information sought has been produced, the work should revert to its current form without having caused any unusual disturbance.

The structure of such a uniform system of cost-finding necessarily would be the result of careful study of all the factors involved in the situation. In general it would rest upon the accurate recording of each detailed expenditure in such a manner that the record could be easily assembled with others of like character, eventually finding its way through a series of assortings and further assemblies into its proper niche. It is possible through the use of various mechanical devices to reduce nearly all the work to machinery. Electrical assorting and tabulating machines, such as used by the Census Bureau, are essential factors in such work. Mechanical devices reduce almost at once the existing cost of performing work of this kind. They should not be regarded as additional items of expense.

Unfortunately in the past railroad men as a rule have been rather pessimistic both as to the possibility of securing costs and as to their utility even if obtained. Thus in a rate case before the Pennsylvania Public Service Commission, these two typical expressions of opinion by representative railroad men appear in the testimony:

Theodore Voorhees, President, Philadelphia & Reading Railroad:

> You cannot get at the cost of any item of railroad service. . . . It never has been done. I do not believe it ever will be done.

Robert H. Large, General Coal Freight Agent, Pennsylvania R. R.:

You can't take into consideration the cost of the service for two reasons. In the first place, you can't ascertain the cost. That is practically impossible, in freight traffic between commodities.

Fortunately, the whole attitude of the railroad world is changing and it is coming to be recognized that in many respects railroad costs are easy of ascertainment, as compared with industrial costs. Certainly once obtained they will be quite as useful.

The entire subject of course has been before the railroad world for years past. Mr. Louis D. Brandeis—now Mr. Justice Brandeis—in his book *Business a Profession*, says:

The first step in applying the principle of the sliding scale to railroading must be, however, to devise means of determining degrees of efficiency and that involves determining the unit cost for each operation on each railroad. Unless costs are so ascertained, no true measure of efficiency can be arrived at. The knowledge that the average annual cost per locomotive for repairs, renewals and depreciation on one railroad is $3,832.37 and on another is $2,709.27 would be a very unsafe ground for determining the relative economy of operation on the two railroads. The conditions on the two railroads and the standard of renewal and depreciation may vary so greatly that the company expending the greater sum may actually have conducted its locomotive use and repairs more economically and efficiently that the railroad expending less. We must reduce each operation to its ultimate unit and ascertain the cost of that before a proper basis of comparison can be secured. We must learn not merely the cost of turning a wheel of standard size and character, the cost of laying a tie or rail under standard conditions; but even these relatively simple operations must be again analyzed and separated into their component elements before a safe basis of relative costs can be arrived at.

The fact that railroads are subject in their accounting to the orders of the Interstate Commerce Commission makes it possible to require that each company should ascertain and report to the commission the ultimate unit costs of each operation in each department of the railroad. The further fact that the railroad business is largely non-competitive, makes it proper to publish these costs and to give to each railroad the benefit of knowing the lowest unit cost of each operation attained by any railroad and how it was attained.

To aid in this work the Interstate Commerce Commission should establish a Bureau of Railroad Costs by which the ascertainment of costs may be supervised and the results analyzed, classified and compared. Knowledge of the best methods would thus become the common property of railroad men. That alone would lead directly to great advances in efficiency and economy. But the adoption of the best existing methods would be merely the beginning of the great advance. The ascertainment of the lowest existing costs would inevitably be followed by widespread striving to eliminate further waste of time, effort and material and to find ever better methods. With the introduction of exact tests of efficiency, with the establishment of dependable standards of comparison,

railroad operation would soon develop into a recognized profession; and those who pursue it would be stimulated like scientists and engineers to ever higher achievements.

The amount of progress which has been made in this matter of cost-finding on the railroads during the last ten years does not encourage one to hope that any line of action which it would be wise for the United States Railroad Administration to adopt just now would lead immediately to any broadly satisfactory or final solution. A development of this character in railroad administration should preferably, of course, be very largely the result of work originating at a number of different points. It is entirely proper, even necessary, for the top to direct, to guide, and to inspire. We have the right to expect that any centralized control or regulation of the railroads should express a deep concern as to railroad costs and at least to coördinate the procedures which will ultimately give us accurate railroad costs. But any such steps taken in Washington must needs be supplemented by a corresponding interest on each individual railroad. No railroad can by itself hope to set the standard for the country. Coöperation is as inherent in the development of cost-finding methods as in anything else. But it will be a very difficult if not impossible task for the United States Railroad Administration or the Interstate Commerce Commission to scheme out an adequate system of cost-finding methods in the absence of a widespread interest in the matter among railroad executives. In other words, either the Railroad Administration or the Commerce Commission must, and undoubtedly will, take the lead in this matter, but in the accomplishment of any worth-while result the help of all forward looking railroad men will be required.

Women in the Railroad World

By Pauline Goldmark
Manager, Women's Service Section, Division of Labor, United States Railroad Administration

WOMEN in railroad service are no longer the novel sight they were during the war-time emergency. The high water mark of their employment was reached in October, 1918, when their number totaled over one hundred thousand in all classes of work. In the nine months since the armistice there has been an appreciable falling off in numbers, the causes and significance of which must be studied in the light of present tendencies.

Introduction of Women into Railroad Service

In order to secure a full understanding of women's place in the railroad world it is necessary to discuss the various phases of their introduction. According to the statistics of the United States Railroad Administration, Women's Service Section, the number rose from 61,162, January 1, 1918, to 82,370, July 1, and 101,785, October 1. This was an increase of 66 per cent in a period of nine months. Nor does this fully measure the change. As early as the spring of 1917, women had begun to make their appearance on a number of roads increasingly.

At that time far sighted officials saw that an urgent need of labor would develop as the war progressed and insisted upon women being placed in many new positions. It took many months to overcome the long established prejudice on the part of railroad men against the employment of women. It was only after our entrance into the war, and especially after the first draft, that the process of introducing women began to be speeded up, accelerating every month until after the armistice. The process gained such headway that women finally constituted as much as 50 per cent of the forces in the general offices of many railroads. Officials generally admit that at this critical time, when a literal break-down of the office forces was threatening, the women saved the situation. Many were wives and sisters

of men in military service who turned to railroad work as a means of livelihood, and many no doubt were animated by patriotic purpose to serve their country at a time of need.

CHARACTER OF WORK DONE

Coming now to the character of work done by the women, statistics show that by far the larger proportion, namely 70 per cent, went into clerical work. This class includes not only stenographers, typists and machine operators, but also clerks of all kinds, ticket sellers and accountants. These employees were located not only in the general office buildings in cities and towns, but were scattered all along the line in the smaller offices of shops, road and yard masters and engine houses.

The publicity given to the new and unusual forms of work done by the railroad women, apparently gave rise to the general impression that the majority were employed in these occupations. It is true that many were taken on in positions never before held by women and that they helped very substantially during the war in performing these duties, but the total number so employed is slight compared with the clerks. In the shops, for instance, at the time of maximum employment, women formed only 5 per cent of the total; in the signal service, including telegraph and telephone operators handling train orders, there was another 5 per cent. In the round houses and in track work there were only 1 per cent.

These occupations are indeed of great interest because they show the capacity of women to enter successfully into new fields. Besides being employed as laborers in the shops, the women were put at various kinds of machine work and trained as electrical welders, air-brake repairers, hammer operators, crane operators, molders, etc. In the round houses they wiped engines, operated transfer tables and did general laborers' work. In outdoor jobs they came to the attention of the public especially as track laborers and crossing tenders.

If the war had continued longer and the labor shortage become more acute, there would no doubt have been a great extension of these forms of work. But apart from the time and attention necessary for training women, there are practical difficulties in making place for them, especially in the shops and yards,

because of the lack of proper physical conditions. It was exceedingly difficult, for example, under war conditions, to construct the new dressing rooms, toilets, etc., that were necessary. The employment of women in these positions did not last long enough to test out the effect on their health and general welfare. It is not yet clear whether they can be retained in such service without injury. Some occupations are without doubt unsuitable, especially for the young girls who eagerly applied for them. The Railroad Administration discontinued the employment of women as section laborers, for instance, and as truckers in depots and warehouses on account of the extraordinary physical exertion required. It was greatly to the credit of the Administration that these excessively taxing forms of work were abandoned early in the fall of 1918 when the fear of a labor shortage was most pressing and that a way should have been found to supply the necessary man power.

WAGES

The chief attraction which drew women to the railroad service undoubtedly lay in the wages offered. The orders of the Administration, for instance, established a minimum of $87.50 monthly for all clerical work, or $1,050 a year. This was far above the rate of pay then prevailing for similar jobs in other businesses, and was, indeed, an extraordinary opportunity for young girls in small towns who had been working for $10 or $12 a week. In cities the difference between railroad wages and outside business was not so great. In fact, in a number of centers the railroads complained that even under the new wage orders, girls left the service for higher salaries, instancing especially comptometer operators who found positions with banks.

In the shops most of the more skilled women were in the ranks of the "helpers," and were paid the specified rate of 45 cents an hour. This, as well as the cleaner's rate of 35 cents to 40 cents, depending on locality, was eagerly sought, as these wages were very welcome to the women who had previously earned a lower compensation as scrubbing women, or whose regular employment in near by mills, hotels, and in domestic service had not rewarded them so well. (In the new national agreement of the shop crafts, which is to be effective October 20, the coach cleaners

are to be given an increase of four cents, bringing the minimum rate of pay up to 45 cents an hour.) It thus happened that the railroads substantially raised the standard of living for the women who entered the service. It offered them opportunities of congenial work as well as a raise in pay.

INDUSTRIAL EQUALITY OF WOMEN EMPLOYEES

It was, indeed, a new experience for the women to enjoy the same economic advantages as men. The very first order of the Director General established a policy of equal pay for men and women when they do the same class of work. This was a significant step in the industrial history of women in this country, because it was the first announcement by the government, in any department, that it considered women on an equality with men in all the different forms of work which they were called on to perform.

Moreover, in most of the railroad occupations, women are admitted into the labor organizations on the same terms as men. The Brotherhood of Railway Clerks has undoubtedly taken in the largest number, allowing them to become members of local lodges on the same footing as men, and appointing them also as members of committees. The coach cleaners have been organized in separate women's locals by the carmen. More recently they are entering the new cleaners' unions open to both men and women, colored and white, of the American Federation of Labor. The order of Railroad Telegraphers also admits women into their membership without requiring them to enter separate locals.

DECREASE IN NUMBER EMPLOYED

Because of the changed conditions of the labor market, an appreciable decrease in the number of women employed was to be expected during the winter of 1918–19. This change actually occurred. By January 1, 1919, the number of women fell to 99,709, a decrease of 2 per cent as compared with the high water mark of October 1, 1918. The reduction on April 1, brought the figures down to 86,519, or 14.9 per cent decrease. The latest returns compiled for July 1, show the total number now employed to be 82,294. This is a smaller decrease, namely, 4.9 per cent for the last quarter.

REASONS FOR DECREASE

To account for these reductions various important reasons must be analyzed. Are they to be interpreted as a movement to crowd women out of the service, or are other factors to be considered? It is to be noted, in the first place, that early in the year men began to return from military service and were reinstated by the railroads according to federal orders. This meant that the latest employes had to be laid off to make room for the soldiers and sailors. In this change naturally more women than men were affected, as their seniority rights were less.

In the second place the decreases were due to a drastic reduction in the labor force on all the railroads of the country during the early part of the year 1919. This cut was made by the government in order to effect urgent economies. Women, again, were more affected than men on account of their lower seniority rights.

From the point of view of occupation, the greatest reduction since October has taken place in the round houses and shops, where the number of women fell from approximately 7,000 to 2,500. To explain this shrinkage, it must be remembered that women were largely used as laborers in these places and were often found unsatisfactory, because too much heavy labor was required of them. Under these circumstances it was inevitable that they should be dropped when man labor again became available. The decrease is also to some extent explained by the action of the Railroad Administration in discontinuing the employment of women in trucking, in track work, and as parcel room attendants, because of the risk of overstrain and injury. On the other hand, in the occupations in which women have long been employed, such as coach and car cleaning and laundry work, there is naturally a much smaller percentage of decrease.

Aside from these reasons for the decrease in the number of women employed, namely,—the return of the men from military service, the reduction of the labor force, and the unsuitability of the work,—another factor remains to be considered. The final test of the position of women is their value to the service. Can they do the work as well as the men whom they replaced, and thus prove their right to be retained? Now that men are again available, it is clear that women must prove their efficiency if they are to be kept in competition with men employes. The

test is a real one, for in retaining women, the officials are not availing themselves, as other employers do, of a cheap source of labor, because the same salary is paid to men and women.

WOMEN MAKE GOOD IN MANY POSITIONS

The chief objection which has been urged against the employment of women is their unfamiliarity with railroad life. A boy who grows up in the service acquires a general knowledge as he advances from job to job. There is no doubt that women were handicapped when they first began work on account of this lack of experience, especially in outside work, and because of their lack of familiarity with the materials used. Under the pressure of war conditions, it was difficult to give them adequate training, but some experiments in personal instruction were highly successful. Women have, for instance, only rarely qualified as clerks at a freight claim desk, as this requires a full understanding of claims. One of the railroads furnishes an example of systematic instruction for this work. A group of women were given lectures for one month on the various types of claims, details of rule book, etc. They were then taken to freighthouses to see how freight is handled; they learned the trade name of commodities; they visited yards to examine loaded freight cars on the tracks; they observed the construction of empty freight cars and went to car repair shops to examine damaged ones; they visited local stations to observe the agent's work in handling freight, and then traveled by way-freight to see the methods of handling this class of goods. Finally the group was taken to the shipping department of several large factories to see how articles are packed. In fact, as the agent said, they saw and learned a great deal more about the movement of freight than most men in the office knew, and they were thus able to begin the work of investigating claims with a background of actual knowledge. There is no doubt that intelligent training of this kind can make up for the lack of railroad experience. It enabled these women to qualify for highly paid positions, which had previously been considered too difficult for them.

This is only one instance of well planned training. Courses were also carried on in various cities for the instruction of ticket sellers. One of the chief objections which had been made to the

employment of women in these positions had been their ignorance of geography. Through their training they were able to overcome this and other handicaps. A considerable number have made good even in inter-line work, which is known to be the most difficult part of the field.

There is undoubtedly a consensus of opinion on the part of railroad officials that women have made good in a great variety of positions, although judgment is not unanimous as to the jobs for which they are best fitted. The women clerks, officials say, adapt themselves quickly to routine work, pay close attention to details, and are careful and accurate. In manual occupations, such as sorting tickets and way bills and for comptometer work, they show greater dexterity and speed than boys. Their accuracy in certain cases is interestingly proved by the records of errors. In one office, for instance, where women as well as men are employed for the abstracting of inter-line way-bills, the total errors amounted to less than one half of one per cent, although they were working at a high rate of speed. Several machine operators in the same office, who were cutting cards, showed their deftness by an almost perfect record in three successive months, although they were cutting thousands of cards each day. One woman is listed as having cut 85,000 cards during one month without an error.

The criticism has also been made that while women are good in routine, they lack ambition to advance into higher positions. This statement will hardly hold water in view of the many important places now filled by women. That they have, in some instances, been slow to avail themselves of opportunities to bid for better positions is presumably due to their lack of industrial experience. Wherever they have been educated up to their new jobs and been encouraged to advance, they have shown the same capacity as men.

Judging from the facts before us at present, all indications point to the retention of women as a permanent part of the personnel in practically all types of clerical work. Space does not suffice to discuss the probable fate of women in all classes of railroad occupations, in which they are found at present. It can be said, however, that they have proved their value as telegraph and telephone operators in the transmission of train orders, and

will be retained in these positions. They are also spoken of highly as station agents. Women will, of course, continue to do all the different forms of cleaning, including coach and station cleaning, and they will be found in the laundries and personal service, where they have the field practically to themselves.

In conclusion it may be said that sufficient time has not yet elapsed to allow a comprehensive statement of the future of women on the railroads to be made. This article is intended only as a contribution in the railroad field to the general stock taking and valuation of women's industrial achievements, to which the war has given rise.

Should Labor Participate in Management?

By Glenn E. Plumb
Counsel for The Organized Railway Employees of America

THERE are three basic interests in every industry first, the need of society for the products of that industry; second, the use of capital to procure the tools, equipment, materials, essential for the conduct of the industry, and, third, the human effort required to direct and utilize the tools, equipment, and materials which capital furnishes in the various processes of production and distribution, in order that society may obtain and possess those things which it needs.

The first element represents the interest of the consumers, the second element the interest of the investors, the third element the interest of the producers. If there are no consumers, there can be no industry. If capital cannot be obtained, the consumers' necessities cannot be met, the producers cannot find employment. If there are no producers, there can be neither field for investment nor the satisfaction of the needs of consumers. Each element is absolutely essential to the existence of the other two. With one single element lacking, the other two elements cannot function. No single element can obtain a preponderance in the industry, except at the expense of the other two, and no two elements can combine for their mutual benefit except at the expense of the third.

These three elements are all equal essentials to the existence of industry. These three elements make up society as a whole. A benefit to one or two elements at the expense of two or one, disturbs the social balance and creates disorder, unrest and revolution.

Each of these elements has certain well-defined rights which may not be violated without producing inevitable social disorders. The consumers—the need of society—have a right to obtain the products essential to their welfare at a price no more than sufficient duly to compensate the investors and reward the producers. The investor who devotes his capital to the service of society is entitled to the protection of his investment and to that constant

and uninterrupted return which induces him to make the investment. The producer is entitled to receive, likewise, protection in his investment of human effort—that is in the security of his employment, that rate of return which induces him to place his efforts at the service of society, and a fair share of any increase in productivity which his skill promotes and creates. The corporate control of productive industry has resulted, first, in the complete organization of the capital invested in that industry, second, in the partial organization of the labor employed in the industry, and, third, in the total disorganization of the consumers requiring the products of that industry.

In the capitalistic organization the investors contributing money to the enterprise, as the condition of their investment, have been required to surrender all competitive efforts between themselves and to join in a complete coöperative production, each contributor of capital agreeing to pool his money with the other contributors and to pool returns or profits, so that the reward for one should be the reward for all; as owners of capital they have surrendered their privilege of competing with each other in the industry, which they now conduct on a coöperative basis. True, the owner of two shares of investment receives twice the amount of return which the owner of one share receives. But each receives the same rate of return apportioned upon the amount which he contributes to the enterprise. Under the same agreement these investors surrender to the board of managers which they create all of their individual powers of negotiating with employes as to wages and conditions of labor. This group of capitalists through their agreement adopt collective bargaining as the basis of their side of the negotiations with the producers as well as collective selling as the basis of their transactions with consumers. The wage which their management fixes for employes is the wage which all of the investors adopt as the basis of negotiation with the producers. The price which the management fixes for the products of the industry is the basis which all investors adopt in their negotiations with the consuming public.

As against this capitalistic organization so established, labor has organized, not as completely as has capital, but to a very large extent, and has insisted on collective bargaining with capital on behalf of the producers. Capital and labor have classified by

agreement between themselves the ranks of employes, and have insisted that each individual in a specified rank should receive the same rate of return in wages, that return to be commensurate with the service which that rank renders. The consumers remain as yet unorganized, and have no means of collective bargaining with the management of the productive enterprise. Yet by common consent, in instances where the public need has been totally disregarded, an organized boycott has sometimes come into being as a popular protest against the total disregard which capitalistic management has shown towards the needs of consumers.

A boycott is nothing but a consumers' strike. A lockout is an employers' strike. A strike is nothing but a producers' boycott or lockout.

The investors acting coöperatively through corporate management have deemed labor to be a commodity, a thing to be bought and sold, just as are materials which are the product of labor. Commodities are the result of human effort, not human effort itself. Commodities cannot produce. Human effort alone produces. It is the creative impulse of mankind, it is that divine spark of omnipotence breathed into human clay that distinguishes it from merely brute force. Treat labor merely as brute force, and it becomes brutalized, degrading society to the level of the brutes. Recognize and reward its divinity, and it takes its place as the great uplifting formative power of civilization. He who sells commodities always seeks to part with as little of his commodity as possible for as high a price as he can extort from the buyer. He who buys commodities seeks to get as much as he can obtain for the lowest possible price. Under this false conception of labor, that it is a commodity, the wage-earner has been placed in the position of a seller of commodities. Can he then be blamed if he bends every effort to selling the least possible amount of service for the greatest possible price to be obtained?

In the old days when an individual conducted his own industry, furnishing labor, capital and materials himself, he knew that the profits to be obtained from this joint investment of labor depended entirely upon his ability either to increase the quantity of his products, improve the quality of his output, or decrease the cost of production, and thereby supply the needs of the consumers at least cost to them. His profit impulse, therefore, depended upon better

service to society. But this was under a condition of free competition; if he did not render this better service, another would. In those days the management of the individualistic industry paid due regard to the interests of capital, producers, and consumers.

But now conditions have changed. Society, in order to obtain more economical service, has come to recognize that unlimited competition means unwarranted expense, duplication of investment in unnecessary plants and equipment, a competitive lowering of wages below the level conducive to social betterment. Society has therefore granted and fostered a monopoly of privilege for meeting its needs, and so has built up the various industries based on grants, franchises and privileges. The number of industries which come within this description has been gradually enlarged, until now many industries which were formerly considered private are considered essential to the public welfare by reason of their having acquired a monopoly in the field of production. The public need of the products of the Standard Oil Company, of the United States Steel Company, is so great that it is unthinkable that these great industries could now refuse to supply society's demands or could refuse to answer to the responsibility which their great development imposes upon them. Yet they maintain, so far successfully, that they are individualistic industries, not subject to public control either in the matter of prices and service to the public or in the matter of wages and returns to producers. They decide what shall be the interests of both producers and consumers in what they deem to be matters essential to the protection of their interests as investors.

The coming order will treat capital, producers, and consumers alike. The need of society when expressed in a franchise is just as essentially an investment in industry as is the investment made by capital or the investment made by labor. This is a vital, living, human interest. It is just as valuable an asset to the industry as is the capital which furnishes tools and materials for the conduct of the industry. Society has made this investment, just as the owners of capital make their investment, in the hope of obtaining a return on that investment in the shape of increased production, improved quality and reduced prices. Those who make this investment are entitled to a voice in the control of the industry to see their investment is properly protected, and that

no deceit shall be practised upon these investors in any matters affecting their interest in the conduct of the industry. The producers are also investors. They invest the other vital element in the industry, the power that creates. If their position as an investor is recognized, then they, too, become imbued with the motive which actuates all investors—to increase quantity and improve quality, thereby reducing cost.

We have here two vital human elements representing the need of the consumers and the creative power of the producers. The growth of the industry depends upon these two elements. As the need of society increases, the field of production is widened; without this widened field the effort of the producers would be in vain. With this widened field and unlimited capital no increase of production would be possible except for the impetus to the creative element represented by the producers. The creative element of society in order to protect its interests, must have a voice in the management of industry. The breadth of the field of its activity depends not only upon the use of capital, but also quite as vitally upon meeting the needs of the consumers. A rise in the price of the commodity to increase the profits to capital, decreases the field of employment by circumscribing the extent of the market; so that consumers and producers have this interest in common, that the prices charged shall not be in excess of what may be required to pay for production, including fair return on the investment.

Again, both producers and consumers are concerned to preserve that fair return on the required investment, so that sufficient tools, materials and money may always be available for the successful conduct of the industry. By treating the needs of society expressed in a franchise as an essential investment in the industry, the creative forces of producers as another essential investment to share with the third element, capital, in the control of the industry, we establish harmony in industrial relations. We restore to individuals, both consumers and producers, the advantages to be obtained by coöperative production. We establish democracy in industry by giving to each fundamental interest an equal voice in the direction of the industry, exactly commensurate with the fundamental importance which that interest bears to the entire industrial organization.

Railway Efficiency and Labor

By Capt. O. S. Beyer, Jr.[1]
Washington, D. C.

AMERICANS have been wont to pride themselves on the perfection with which their steam transportation is supposedly conducted. Ever since railroading acquired an appeal to the national imagination, many individuals as well as the public and technical press have striven to point out the high efficiency and fine service of American railways, especially as compared with those of foreign countries. Large locomotives, high capacity freight cars, certain well appointed passenger trains, long freight trains, heavy bridge and road construction, are pointed to as particular evidences of American superiority in the art of transportation. And behind all these outward evidences is supposed to be the enterprise and ingenuity characteristic of this nation. Occasionally, to be sure, a late or overcrowded passenger train, a streak of poor dining car service or a long delayed or damaged

[1] Mr. Beyer is a graduate of the Stevens Institute of Technology (Mechanical Engineer, 1907). He did graduate work and railway and industrial economics in the University of Pennsylvania and the University of New York (1907–1919). He has been (1911–1912) technical assistant to the general mechanical superintendent of the Erie Railroad in charge of developing scientific train loading, electric welding, investigation, etc. As motive power engineer he was in charge of similar work on Rock Island Lines (1912–1913). He has been (1913–1915) general foreman, Second District shops of the Rock Island Lines, Horton, Kansas, in charge of medium and heavy repairs and of all Second District locomotives. He was later (1916–1917) research engineer in the Engineering Experiment Station of the University of Illinois in charge of the locomotive test laboratory and other equipment and also instructor in railway engineering. At the outbreak of the war Mr. Beyer participated in the organization of the U. S. Army School of Military Aeronautics, University of Illinois, and later took charge of the Department of Aeroplanes (1917). He was requested by the United States Army Ordnance Department to organize and operate schools for training of ordnance specialists and officers. In this capacity he organized the Ordnance Heavy Artillery School, the Ordnance Instrument Repair School, the Ordnance Engineer Officers' School; and later on as this work became coördinated his duties were extended to the supervision of all technical and military courses of instruction. In order to conduct this work Mr. Beyer was commissioned captain in January, 1918.

Captain Beyer is now Chief of the Arsenal Orders Branch of the Ordnance Department. The employees of the Army Arsenals coöperate directly with and participate in the functioning of this agency for the purpose of making the surplus manufacturing capacities of these plants available on sound economical and efficient basis for all departments of the government.—The Editor.

freight shipment may call forth more or less violent abuse of some particular system, but in no way is this ever considered a reflection on the general merit of the national railway enterprise.

It cannot be maintained, however, that the people of this country, in spite of the impression that their railroads are relatively efficient, have, as a class, been satisfied with their management and control. Judging from the mass of past regulatory legislation, city, state and national, finally capped by the climax of federal control as precipitated by the recent war, we must conclude that something has not been going well with the relationship of this industry to the public. And today, the war long over, with the railroads still rented to the government, a situation has arisen concerning the future welfare of transportation which apparently cannot be remedied by resorting to the usual measures of the past.

It is unfortunate in view of the present impasse in which the industry finds itself that the impression should ever have come into existence, despite all its other ills, that railroad efficiency as such is of a high order. The heritage of this notion is doing more to becloud the railroad problem as it stands than almost any other phase surrounding it. And those concerned with the solution of the problem along lines intended primarily to safeguard or further certain types of financial control through the mediums at their disposal, are, of course, making the most of this fallacy. Today, as their own iniquities are coming home to roost, these interests are, with characteristic alacrity, taking advantage of the short cut reasoning of the popular mind, and are maintaining that the deficits which have occurred under federal control are due to the inefficiencies which, as they allege, inevitably follow governmental management.

This, of course, is absolutely untrue and has so been demonstrated by both Mr. Wm. G. McAdoo and Mr. Walker D. Hines, the former and the present Directors General of the United States Railroad Administration in much of their recent testimony. In the last two years all the fine work of fifty years of financial exploitation has come to a head. The first necessity of the federal railroad administration after its organization was to get the industry on a square basis with respect to all the interests concerned, and this it certainly did with a speed, a thoroughness

and a fairness truly remarkable. That the whole problem with its infinite variations and ramifications was not solved in accordance with certain financial standards in the twenty-one months of governmental control just passed is now speciously held out as proof of the federal government's inability to participate genuinely and permanently in the conduct of this vital industry.

As already indicated, the notion that our railroads in the past have been highly efficient is fallacious. This is doubly true when judged from the basis of real standards of operation and organization such as science has been able to devise in recent years. Only once has this false notion been seriously questioned and that was by Justice Louis D. Brandeis when in 1910 he was acting as attorney for the Interstate Commerce Commission in the now famous Five Percent Rate Case, heard in Boston.

Since the whole subject of railway efficiency was so rudely driven into the open in 1910, attempts were made, more or less in secret by private managements, to do something by way of bringing about improvements. Most of these were made largely because of the necessity imposed by rising labor and fuel costs. They have all fallen into one class, principally mechanical improvements, which specifically resulted in grade reduction, more powerful locomotives, and heavier freight trains. The test for any such improvement has always been its justification from the viewpoint of return on the capital invested, except where improvements were forced by law for the sake of safety or service.

A close inspection of the entire situation to date reveals the fact that the only two directions in which railway operation might have been bettered were simply those of physical improvements and of extensions to the mechanical plant. And from the point of view of conventional financial standards, the net effects of such improvements when made were almost invariably absorbed by the inevitable demands of labor and the public. It never has been possible to coördinate the basic interests concerned in the railway industry, namely, the public, labor, management and the investor, so that their contributions and requirements would work cumulatively for a continuous and automatic raising of the efficiency of the industry. The attempts of the American Railroad Employees and Investors' Association, led by Mr. Morrissey, former Grand Master of the Brotherhood of

Railway Trainmen, for the purpose of bringing about an identity of interest between the railway worker and the railway investor, ended, as so many similar experiments in other fields have ended, in abject failure. The application of the principles of scientific management tc certain of the processes employed in steam transportation, as originally conceived and devised, were discredited as rapidly as they were suggested or tried. An irreconcilable conflict of interest has been in existence, with the workers and the public usually on one side and the private investors with their managements, from bankers, directors and presidents on down, on the other. As showing to what miserable depths this conflict has at times precipitated important railroad systems, and to what a degree the public has been imposed on the experience of the New Haven, Rock Island, Frisco, Alton, Pere Marquette, C. H. &. D., Gould Lines, and many others need but be cited.

In all this turmoil it is no wonder that the minds of the railway managements have never been primarily engaged on the problem of efficiency, service and safety except in so far as they were identical with profits. It is no wonder that the workers have been diverting their latent resourcefulness and ability from constructive channels into channels which led to the safeguarding of their basic interests, irrespective of conventionally conceived efficiency and service. Over all the specific problems of the managers which concern themselves with raising the railways to a high degree of scientific perfection, those precipitated by labor disputes, rate disputes, competition, accidents, etc., etc., had, by their very insurmountable abundance, inevitable precedence. Time was rarely, if ever, left for studying and applying to the utmost the developments of science. Indeed, it has usually been by a sort of mild mannered sufferance on the part of both labor and management that really effective scientific improvements were ever permitted to steal into the business.

It should not be difficult to imagine what kind of men for managerial posts this system has bred. The average railroad official has had to be a so-called "he-man." His main quality had to be ability to keep his subordinates in line and have them do what he and his superiors considered necessary. He had to be an autocrat with a superior will; he had to be able to "handle

men." While practical judgment, bred of long and tortuous experience, was as absolutely necessary as autocratic qualities, keen scientific insight, a thorough appreciation of the possibilities of scientific organization and of the value and significance of coöperation, all were quite secondary in the usual evaluation of the typical railway official. It certainly cannot be maintained that these officials as a class have ever acquired a high scientific appreciation of their industry. And this deficiency, of course, has had its serious effect on the efficient conduct of the railroads.

In justice to existing managements it is only fair to state that the predominant characteristics (pointed out above), which mark them, are inherent in these managements because of basic conditions over which they have little if any control. It is to be regretted, however, that those composing the managing groups are blind to their predicament and therefore take no steps towards remedying these conditions and achieving the true ideal which they now dimly realize is possible, but do not know how to secure.

One other element of importance concerns the contributions to the industry by way of mechanical improvements. Most of these have in reality come from outside sources, namely, the supply interests whose products are sold to the railroads. The stimulus actuating these supply interests has always been profit, and the cost to the railways for improved devices supplied has always been accordingly. No system has ever been devised within the railway organizations themselves whereby it became distinctly desirable to develop internally mechanical improvements, which would bring about better operating or service conditions. These all had to be sold to the railroads from the outside. The vast developments in the dependence of the railways upon private supply concerns is revealed annually in most striking ways by the elaborate exhibitions which accompany the many yearly conventions of the different railway technical associations.

Such in brief are some of the features of the railway situation in relation to past and present-day efficiency. When the government took the railroads over, the most conspicuous conditions contributing to existing or threatened inefficiency and operating troubles were recognized and partly remedied. The most important of these remedies undoubtedly was the administration's approach to the solution of the labor difficulty. How

fundamental this problem is with respect to the possibilities in real railway efficiency seems never to have been appreciated. The railroad administration, however, courageously took cognizance of it and made some progress in demonstrating its true significance, even if the maximum of results possible have not been secured.

The fight which labor has been and is conducting in the railway as in all other industries is fundamentally a fight for status. Living wages and decent working conditions are but the preliminary objectives to be won. These are necessary as starting points for further advances. Many of these objectives having already been gained, the next ones necessary for progress are becoming clear. For instance, it is becoming apparent that in order to hold the gains so far made, a large measure of responsibility for the conduct of industry devolves directly upon labor. Without power to exercise this responsibility, it is finding that its advance positions by way of better wages are being rapidly mined by increased living costs. How to control costs of production, therefore, begins to loom up as the next important problem of strategy for labor in its battle, and railroad labor finds itself acutely involved in just this phase at this very time.

An analysis of the situation from the viewpoint of railroad labor, reveals the following points: The acquirement and control of the railroads by groups of financial interests, too often sentimentally intrenched for their selfish purposes behind insurance, educational and philanthropic institutions, and widows and orphans, has resulted, by the very nature of the motives actuating these groups, in the creation of an intensified struggle in which real railway efficiency and service have suffered immeasurably. With their minds bent (in the terms of the British Labor Party's Program) not on service to the community, but—by the very law of their being—only on the utmost possible profiteering or speculation, have these groups proceeded with the conduct of the industry. Thus the inefficiency and dis-service which was inevitable has made itself felt time and again in the cost of transportation to the public. Thus railway labor, which, with its dependents, constitutes no small part of the public, has not escaped the results of the increase in the cost of living.

Obviously, therefore, as long as the conditions are such that

these groups retain control of the industry primarily as a source for profits and exploitation, the railway workers reason that their daily efforts, that portion of their living energy, of their very lives spent working in the shops, on the road, in the stations, freight houses, storehouses, and offices, is subject to a tax which must be satisfied before they can derive that return from their daily efforts which will enable them to continue to contribute their energy to the conduct of this industry. How, they reason, under such a system can they possibly give the best that is in them for the sake of the industry? Of course, they cannot, for they would then be perpetuating a system of distribution which goes absolutely contrary to that urge in the heart of labor, which has been seeking eternally to divide the blessings of the earth with greater and greater fairness.

Since the relation between rising transportation costs, living costs and the net return possible to labor from the industry conducted under the system exacting a prior lien on labor's daily efforts has grown clear, the railway workers have begun to see what actually can be made possible when these obstacles which have forced labor into its present position are removed. Primarily, as already pointed out, the railway worker is not overlooking the necessity for assuming greater and greater responsibility for the economical and efficient conduct of the industry. That his opportunity in this direction will become greater, nay indeed almost unlimited, is wholly true.

Mention has already been made of the popular delusion concerning the high efficiency of the national transportation systems. Due to the suppressed, veiled, and occasional open struggle which has been going on between the workers and the controlling interests, coöperation between workers and management for service and efficiency has never been possible in any degree comparable with the ideal. The slack, the waste, the loss which has resulted, from this is incalculable. All the thinking, all the planning, all the guidance, all the responsibility, has been arbitrarily relegated to the management, a very small group as compared with the millions of workers. If unusual efforts on the part of the workers were put forth at times, the stimuli which provoked them sooner or later lost their effectiveness. Spontaneous efforts looking towards real lasting continuous

improvements have rarely developed or ever lasted any length of time. The appeal for such a desirable state has never come from the proper source. It has never come wholeheartedly, voluntarily, from the men, from the bottom. The insistence has always come from the management, from the top.

From the minimum of individual and collective efficiency, which results when the workers give only just enough to hold their jobs, has often been subtracted that amount of efficiency which would have resulted from the effort, resourcefulness and ingenuity of the workers, which, with proper inspiration, might have been added to this minimum, had not conditions been created, due to suspicion, arrogance, lack of faith, etc., which made it imperative for the workers to convert their latent ability into means for safeguarding their own immediate and vital interests. The strike with its consequent total cessation of service and efficiency is the culmination of this particular tendency.

It appears, then, from the foregoing that labor's opportunities in assuming greater and greater responsibility for the ultimate cost of transportation certainly lie in the direction of providing that inspiration which will release its constructive and creative ability, untrammelled and unhampered by conscious or unconscious reservations and restrictions. On this particular point, Mr. Alvin Johnston, in the *New Republic* for June 7, 1919, pointed out most clearly that there is very great

"loss in inventiveness that results when men give their bodies to their work but not their whole minds. The industrial process is susceptible of infinite improvements in detail and the workers, if alert and intent upon the problem of industry, know just where these improvements are needed. They know collectively more about this than any manager, however well equipped for efficiency engineering. Most of them lack the ability to devise improvements although they may be conscious of the need. Practical inventive ability is rare. But nobody can question that there is potentially a vastly greater volume of inventive ability in the whole working class than in the small group of inventors, selected for training by extremely haphazard methods, who are almost the exclusive carriers of industrial progress today. What is requisite to the development of this incalculably valuable resource is the active interest of the workers and a pride in workmanship that not only will direct their own thinking toward the problems of production but will enlist their support for public technical education. These can be had only on one condition, the thoroughgoing revision of the relations between employer and employee. The employee must be given a share in the responsibility for production if he is to give in return a freeman's initiative."

These are the losses which the railroad industry indirectly is suffering now and which are preventing any possible approach to a high degree of efficiency and service. It is for the railway workers to retrieve these losses by their assumption of responsibility for them. Democratic control or workers' participation or the Plumb Plan must base their main claim for the correct solution of the railroad problem upon their ability to release the forces which will overcome these losses.

Nor is the burden assumed by labor for the democratic solution of the railroad problem limited only to this responsibility. In addition to the constructive contributions possible from the railway workers, much valuable assistance may be secured for the railroads by substituting for public hostility public favor. Here again the fundamental element of coöperation must be brought into play by the removal of those conditions which have created the existing divergence of interest between the public and the railroads. The loss which results from the present state of latent and open animosity between the public and the railroads is no less serious and vast than the loss which is following the inability of the present arrangement to enlist the full creative faculty of the two million railway workers. The diversion of the public's resourcefulness, ingenuity and ability from purely defensive efforts to efforts seeking constructively to benefit the industry, and thereby itself, would indeed be a long step in advance.

The conditions which are responsible for the clash of interest between railway labor and railway owners are also responsible for the clash of interest between the public and the railway owners. The public suffers from the ills of the existing system of railway control and management in ways quite identical with that of labor. Hence it is forced to protect itself by measures not widely at variance with those employed by labor. It follows, therefore, that the removal of the causes which compel both labor and the public eternally to employ all their resourcefulness to protect themselves from exploitation will make possible the complete application of the joint resourcefulness of both labor and the public to the rapid improvement of the industry.

Thus in short, the net result under the system of private financial control is that no group, neither management, labor, nor public, is ever primarily, wholeheartedly and automatically

concerned with promoting the true ideals of railway service. By the very nature of the existing influences and tendencies under this kind of control, new difficulties are created faster than old ones are solved. This condition has invariably required the full time, effort and energy of these groups and left little for the solution of the problems of service and efficiency. And lastly, under this system, just one group of the three, the smallest and, under the circumstances, the most harassed, namely, management, has been saddled with the entire responsibility for introducing improvements into the industry. It is no wonder, therefore, that the entire industry from the viewpoint of true progress has lately exhibited signs of deficient vitality.

It may be well to indicate a few of those reforms which will be brought about and scientific standards which will be rapidly approximated when those elements responsible for creating an antithesis of interest between the three groups concerned are removed, and it becomes possible for these three to coöperate genuinely towards but one end, namely, perfection of service. In a general way the reforms which are possible in the industry as it stands today, may be classified under the following heads:

(a) Those possible through unification of the so-called competing elements of the industry, i. e., nationalization.
(b) Those possible through the representation and participation of the workers in the management.
(c) Those possible through coöperation between the public and the railroads as a national enterprise.

NATIONALIZATION

Under "nationalization" may be listed many of the reforms introduced by the United States Railroad Administration. Mr. William G. McAdoo in an address to the Senate Interstate Commerce Commission submitted the following as the principal improvements, already started or possible in the future:

1. The maintenance of the permit system so as to control traffic at the source.
2. The maintenance of heavy loads for cars.
3. The pooling of repair shops.
4. The elimination of circuitous routes.
5. The unification of terminals.
6. The maintenance of the "sailing-day plan."

7. The consolidation of ticket offices.
8. The utilization of universal mileage tickets.
9. The standardization of equipment.
10. The maintenance of the uniform freight classification introduced by the U. S. Railroad Administration.
11. The maintenance of common time tables between important points.
12. The maintenance of uniform demurrage rules.
13. The establishment of through waybilling freight from point of origin to destination.
14. Rendering unnecessary the rebilling by connecting or intermediate routes.
15. The elimination of the old practice of paying in mileage or per diem rental for the use of freight or passenger cars of one carrier by another.
16. The simplification of the old practice of apportioning interline passenger revenue.
17. The utilization of water routes for the relief of crowded rail lines.

And this list may be extended by adding:

18. The zoning of the railway coal supply on a national basis to prevent useless cross and backhaul, much of which is going on at the present time.
19. The pooling of motive power as well as of car and shop facilities.
20. The electrification of large railway districts adjacent to coal mine fields by securing electric power derived from super-power plants located directly in these fields.
21. The maximum utilization, through pooling and otherwise, of the test and experimental facilities now owned by individual railway systems, which lie idle for the largest part of their useful life.

REPRESENTATION AND PARTICIPATION OF WORKERS IN MANAGEMENT

The improvements possible in efficiency under this head are many indeed. This is an almost unexplored field. A few of such reforms are as follows:

1. The gaps which exist in the present administrative machinery both between the management and the men and between the various supervisory groups, such as superintendent and master mechanic's offices, chief despatcher's office, yard master's office, engine despatcher's office, car distributer's office, roundhouse office, etc., could be closed up and the possibility of the misunderstanding and poor coöperation which now result in delay and expensive irregularities of all kinds reduced to a minimum. At best the liaison be-

tween all these groups is surprisingly imperfect. From the point of view of scientific organization very little progress has been made in this particular respect.

2. There are many obstacles at the present time which make it very difficult to get accurate information concerning incoming trains and cars due at each of the terminals of a railroad into the hands of the terminal supervision in sufficient time to enable the preparation of accurate workable operating plans for a given period in advance. Most of these obstacles would automatically disappear and the others could much more easily be overcome than at present. The benefits which would follow this one improvement, in more orderly, systematic, daily operation, would be very remarkable and would undoubtedly serve in a much greater utilization of existing facilities.

3. As a corollary to the foregoing the establishment of standard schedules for all freight as well as for passenger trains, based on scientifically accurate and economically correct operating determinations, would follow. With such schedules fully appreciated and understood by all the employees because of their greatly enlarged interest in the success of the industry, the organizing of daily operation accordingly would be markedly facilitated.

4. In order that the contribution of each element, especially the employees, to the success of operating the industry might be properly determined, reliable individual performance records would be developed. The fundamental tendency under the new order on the part of everyone will be to take a deep interest and pride in these records, such as is absolutely out of the question at the present time on account of existing relationships. They will serve as a guide and inspiration to every individual to improve his particular contribution to the collective effort.

5. The real significance of thorough industrial education for each worker would quickly develop. Ways would promptly be provided for everyone, apprentice and engineer, to benefit thereby in order to increase his usefulness.

6. No mean opportunity for improved economy would lie in the direction of eliminating petty waste, particularly in engine and train supplies; water and fuel for locomotives, power houses, pumping stations; in shop and office supplies, in heat, light and power around shops, offices, stations, store houses; track supplies, tools and equipment repair materials, etc., etc. When the stake in the welfare of the service becomes of paramount importance to the workers, then this opportunity will be pushed to the utmost by those

who can do most to eliminate this petty waste, namely, the men themselves.

7. In this connection mention should also be made of such savings in damage to shipments which would follow when the employees individually feel their responsibility every moment of their time on duty for the unharmed transport of the freight and baggage entrusted to them. This, however, can only become possible when customary indifference is broken through and the desire for safe transport of materials becomes as much a part of the conscious will of the employees as furthering their own safety. It takes a deeper appeal, however, than the iron hand of discipline to bring this about.

8. When unalloyed coöperation between the supervision and employees is fully developed, the applications of science to the process of railroading will increase by leaps and bounds. The attempts of Dr. Frederick W. Taylor to apply the results of scientific research in an intensive form to the methods employed in many of our manufacturing industries have largely gone astray because the economic and psychological welfare of the workers was, under the existing industrial system, practically ignored. What little good, as a result of the scientific perfecting of manufacturing processes accrued to them in the end, amounted to nothing more than a mere sop, and this, of course, any self-respecting group of society is bound to resent. This is especially true when the net effect in reality amounts to nothing else than the further intrenchment of an arrangement which would make the ultimate emancipation of the workers all the more difficult.

However, with the basic arrangement so modified that the benefits of the thorough application of science would accrue jointly to the good of society as a whole and the producers in particular, and not primarily serve to increase the wealth of an investing class, then a vast incentive is created for the extensive application of everything that science has to offer by way of bettering railway transportation. A recent resolution passed by the American Federation of Labor is an indication of the true significance from the viewpoint of organized labor of the relation of science to industry.

9. The establishment of employment bureaus for the purpose of enlisting workers in the railroad industries and properly keeping them engaged would undoubtedly become very desirable. The existing methods for securing help and getting men started is very chaotic. Labor turn-

over, as is well recognized, is very expensive. This, through employment bureaus properly and democratically controlled, would be reduced to a minimum.

10. In a general way the loss to society because of the suppression or diversion of the workers' creative powers has been indicated. It is easily conceivable what great good can be made to follow if conditions are such that every worker is enabled to participate genuinely and wholesomely in the particular processes of transportation with which he has to do. Railway workers are of a relatively high order both intellectually and physically. They are quite conscious of the necessity for a high amount of responsibility to the community and this by very virtue of the service in which they are engaged. For them it forms an ideal foundation upon which to erect their structure of creative human contribution to the industry. The technique of building this structure is not difficult of development provided it can be shown conclusively to the worker that he will grow in status as he releases more and more of this now dormant ability.

COÖPERATION BETWEEN THE PUBLIC AND THE RAILROADS

With the element of antagonism between the public and the railroads removed, it is easily conceivable that a true spirit of coöperation, a real and lasting *rapprochement*, can be effected between these two interests. The public mind and will, as expressed through civic bodies, officials, city, county, state and national courts, legislatures and commissions, would then be released from their forced position of safeguarding, through eternal check and control, the interest and welfare of the public. The prevailing purpose will then become helpful and constructive. This again is a field which will offer a large variety of opportunities for improving railway service and efficiency. A few possibilities follow:

1. Almost everyone is familiar with the car situation throughout the country and has undoubtedly observed occasions when cars might have been loaded or unloaded with greater despatch. The whole demurrage system is largely an outgrowth of the tendency towards indifference on the part of shippers and consignees to load and unload cars promptly and get them back into service. A greater natural readiness to release equipment for service ought quickly to do a good deal to reduce the premium by way of

demurrage charges upon idle cars and so effect a plausible measure of public economy.

2. In a memorandum entitled "Can we move it?" Mr. Morris L. Cooke, Consulting Engineer, Philadelphia, Pa., has indicated that by close coöperation between the shippers and the railroads, it is possible to devise an intelligence system whereby the demands for cars can be so systematically anticipated that the likelihood of car shortages and inadequate railroad facilities in general (particularly during times of heavy freight movement) would be greatly reduced. The gain from this source by way of greater public satisfaction and improved efficiency in equipment utilization would be no small element contributing towards eventual economy.

3. In the educational field, i. e., the preparation of young men and young women to become useful members of society, it seems that the opportunity exists for the greater and greater use of our public, vocational and high schools, our colleges and universities, for the purpose of training for railway service. Our public and high schools, especially those in railroad towns, may be utilized to a much larger extent than they are, particularly during afternoons and evenings, for supplementary education in railway matters for those entering the service, as well as for adults already long in the service. For many reasons the railway industry in this country has not in the past attracted a proportionate share of thoroughly trained technicians to its organizations. With improved relations between the public and the railroads, it should prove possible to have the instruments of public education contribute more and more towards the training of railway personnel.

4. Scientific research is at present largely fostered by public institutions, such as state university experiment stations, the Bureau of Mines, the Bureau of Standards, the National Research Council, and to a more limited extent, by scientific societies. As compared with the agricultural industry, the funds advanced by the public for experimental research in the interest of the national industry only second to agriculture, namely, transportation, are very limited indeed. No doubt a very great deal of this can be ascribed to the difference in the relationship between the public and these two industries, as developed by those who stand sponsor for them. Agriculture, in the mind of the public, is a favored institution because it has not been characterized by exploitation, whereas railroading is an unfavored institution because it has been so characterized. Hence little

assistance has come from the public purse for the scientific development of the industry.

And even where the public has, as in two of our large state universities, advanced large sums for helping the railroads through engineering research, circumstances have been such, due to the snarl the industry has always been in, that even the facilities thus provided have been idle practically all the time. This is certainly a sad commentary on the alleged progressiveness of American railroad methods.

It is simply suggested here that if one-tenth of the funds spent by the public for combating the evils now associated with the railroad industry as it is controlled, added to one-tenth of the funds spent by the railroads directly for combating the public, plus one-tenth of that spent for "Advertising" in order to create or divert business from one road to another,—and this total devoted to scientific research and the application of its results to steam transportation, the effect, measured in improved service, greater safety, higher efficiency and better economy, would be ten times that now attained.

5. Under the head of reforms made possible by public faith in the industry may finally be mentioned the subject of railroad credit. This is primary in its importance to the future of the transportation industry, particularly if it is to improve its service to society. The ideal to be approximated should be the assumption, on the part of every communal interest, of a proper measure of responsibility for physical improvements or extensions of the railway facilities required by it, consistent, of course, with necessary standards. That this possibility is by no means fantastic may be concluded from the responsibility which communities now assume for through roads, park systems, educational systems and such local facilities as streets, fire protection, libraries, etc. A highly developed relationship between the public and the transportation industry would make it relatively simple along truly democratic lines, for each distinct portion of the population, in much more direct ways than are possible today, to assume and feel its full measure of responsibility for not only the successful conduct of the industry, but also for its perfection and extension in conformity with the genuine needs of society.

SUMMARY

To summarize what has been said, therefore, it is reiterated that the American railway transportation industry is by no means as efficient as it might be nor as the public generally has been led to believe. This does not mean that relatively, as judged by such conventional standards as tons per mile hauled, capacity of freight cars, size of motive power units, freight rates per ton of traffic, tons per train, the American railroads are not as efficient as those in other countries. However, the question of relative railroad efficiency is not germane to the issue which confronts the country today. The question concerns itself more with the maximum efficiency possible as determined by the extent to which the achievements of science are employed in the industry. In this respect, as has been pointed out, much indeed remains to be desired. The railroad problem never will be solved until the fundamental conditions based squarely on the economic relationships of the interests concerned tend constructively towards greater and greater harmony and an ever growing intensity in the application of science to the conduct of the industry. When this desirable state has been reached vast stores of latent resources both in the control of the railroad workers and the public will be released with the effect that the efficiency, service, economy and safety of the railroads will continuously increase. Only a truly democratic solution of the problem can possibly bring about this desirable condition.

DISCUSSION

By SAMUEL O. DUNN
Vice President and Editor of Railway Age

The time given me to prepare a discussion of Captain Beyer's paper is extremely short and, therefore, I shall be able to touch upon only a very few of the points sought to be made in it. As I read this paper, Captain Beyer takes the position that the railroads of the United States under private management have not been efficiently operated and that in order that they shall be efficiently operated their ownership must be transferred to the government and their management largely transferred to the employees under some such scheme as the Plumb Plan.

In measuring the efficiency with which an individual does his work or a management conducts a concern it is necessary to apply standards of some kind. Captain Beyer says that "the notion that our railroads in the past have been highly efficient is fallacious" and that "this is doubly true when judged from the basis of real standards such as science has been able to define in the last ten years." Unfortunately, he does not mention any of the "real standards" to which he refers, and, although I have been a constant student of railroad operation and the railroad problem for many years, he does not convey to me any idea of what standards he means.

There are, however, certain standards which have been generally applied by experts in measuring the efficiency of operation of different railroad systems, and I maintain that the application of these standards shows, first, that the railroads of the United States under private management were as efficiently operated as any other railroads in the world, and second, that under private management there was a steady and rapid increase in the efficiency of their operation. Nowhere in his paper does Captain Beyer cite a single concrete fact in support of his proposition that our railroads have not been efficiently managed. The following are some facts which may be cited in support of the counter proposition that they have been efficiently operated.

They have developed and used the most powerful locomotives and the largest freight cars in the world. I grant, of course, that in developing them they have been helped by the railway equipment and supply companies.

They have handled more tons per car and per train than any other railroads.

They have paid higher wages while charging lower freight rates than any other large system of railways.

They have handled more traffic in proportion to their capital investment—nominal or real—than any other railways.

They have handled more freight traffic in proportion to the number of their employees than any other railways.

Except in respect to the matter of safety, they have rendered as good freight and passenger service as any other railways.

Anybody who reads Captain Beyer's paper without knowledge of the facts regarding the way in which our railways have been

managed would conclude that because of their alleged domination by a few great financial interests the managing officers have hardly thought of anything except trying to please and placate their financial masters in Wall Street. Doubtless this has been the case on some roads; but on a large majority of roads it has not been the case. I have lived for many years in close contact with the operating and executive officers of our railroads throughout the United States, and I am stating what I personally know to be a fact when I say that very much the greater part of their thought and energy has been devoted to trying to increase the efficiency of operation and improve the service rendered to the public. The results of their efforts to increase efficiency are set forth in the statistics of the Interstate Commerce Commission, where every man can ascertain them.

Let us consider just a few of these statistics for the years 1906 to 1916. I stop with the year 1916 because in 1917 abnormal conditions were created by the war. In the year 1916 the railways had 1,654,075 employees. The average compensation paid to them was $849, an increase over the average compensation paid in 1906 of $272, or 47 per cent. A very simple computation will show that if in 1916 the railways had paid their employees the same average wage that they did in 1906 the total wages paid in 1916 would have been $450,000,000 less than they actually were. In other words, there was an increase of $450,000,000 a year in the pay roll in these ten years which was due to advances in average wage per employee. During the decade when this large increase in wages was occurring there was no advance in the average charge for transportation to the public. The average receipts per passenger per mile increased from 2.003 cents in 1906 to 2.006 cents in 1916, while the average receipts per ton per mile declined from 7.48 mills to 7.16 mills. The facts, that the railroads during this period made advances in wages of $450,000,000 a year; that they made no advances in rates; and that nevertheless they earned about the same percentage of return in 1916 as in 1906, indicate that there must have been a substantial increase in efficiency of operation. The statistics of the Interstate Commerce Commission show how this increase of efficiency was obtained. The number of tons per loaded car increased from 18.9 to 22.4; the number of loaded cars per train

from 18.2 to 23.4; and the average number of tons hauled per train from 344 to 535, or 55 per cent. In consequence, although there was an actual decline in average receipts *per ton-mile*, the freight revenue earned *per train-mile* increased from $2.61 to $3.83, or almost 50 per cent. In these figures is to be found the chief explanation of the fact that the railroads were able, in the absence of any advance in rates, to increase the average wage per employee from $577 in 1906 to $849 in 1916, or 47 per cent, and at the same time maintain their solvency.

While it is easy to demonstrate the incorrectness of Captain Beyer's contention that under private management our railroads have been inefficiently operated, I do agree with him that an increase of efficiency could be secured under some plan by which the employees would be stimulated to greater efforts. It is unfortunately true that a spirit of antagonism has grown up between the owners and managers on the one side and the employees on the other which is constantly rendering it more difficult to get efficiency. But I certainly do not believe that an increase in efficiency would be obtained by substituting government ownership for private ownership, and the so-called "tri-partite management" contemplated by the Plumb Plan for private management. The Plumb Plan and all other syndicalist plans really contemplate and would result in the domination of management by labor unions. Under the Plumb Plan specifically if any surplus earnings were made the employees would get half of them, while if any losses were incurred the public would have to pay all of them. Would the employees be deeply concerned about losses no part of which they would have to pay, especially if they were incurred in order to give them higher wages? Furthermore, the Plumb Plan would drive brains out of the railroad business. No man of real ability and initiative would stay in the railroad business under that plan if there was any other business left into which he could go and get freedom of action and rewards in proportion to his ability and initiative. Consequently, while it is conceivable, although not probable, that under the Plumb Plan the employees would do more and better work, it is certain that the total amount of brain power actually devoted to increasing railroad efficiency would be diminished; and no increase in the efficiency of those who work with their hands could long com-

pensate for a substantial decline in the amount of brains devoted to the business.

Personally, I should like to see the ownership of the railroads radically changed. I should like to see it transferred, however, not to the government, but largely, or even wholly, to the railroad employees. In my opinion, the only way in which true democracy in industry can ever be brought about is, not by the government buying large industries and turning them over to their employees to run, but by the employees themselves buying these industries. It would be by no means so difficult to do as it may seem. A simple computation will show that the railway employees, by saving one-fifth of their present annual wages, investing these savings in railroad stocks and investing also in railroad stocks the normal dividends upon their stock, could in five years buy at par a majority of the stock of all the railroads of the United States. Ownership of a majority of the stock would give them complete control of the management. Everybody should be glad to see them in control of the management if they had bought control of the ownership of the properties with their own savings. The employees would then know that if the properties were efficiently managed they would gain by it, and also that if the properties were inefficiently managed they would lose by it; and it should not be overlooked that the fear of loss is just as necessary an incentive to efficiency in business management as the hope of gain.

Knowing that if the railroads were efficiently managed they would gain and that if they were inefficiently managed they would lose, the employees would have incentive not only to do the best and most work of which they were capable themselves, but also the same incentive that the present owners have to employ the best brains available to manage the properties and to give the managers the freedom of action and the authority necessary to enable them to develop and manage the properties efficiently.

When the railroads are returned to private management I personally should like to see some plan worked out under which the employees would be given ample opportunity to acquire railroad securities; under which they would be given some voice in the management even before they had acquired substantial amounts of stock; and also under which each individual employee would

be given opportunity, not only to earn reasonable standard wages, but, in addition, premiums or bonuses for doing more than the standard amount of work. But, as I have said, I do not agree that our railroads have been operated with inefficiency in the past and I feel sure that the efficiency of their operation would be destroyed by the adoption of any plan which placed the control and management in the hands of the employees while imposing upon them no financial responsibility for the results of their management.

Index

The American Academy
OF
Political and Social Science
Philadelphia

THE ANNALS
OF THE
AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE

Editor: CLYDE LYNDON KING
Assistant Editor: C. H. CRENNAN
Associate Editor: J. H. WILLITS

Editorial Council: THOMAS CONWAY, Jr., A. A. GIESECKE, A. R. HATTON, A. S. HERSHEY, E. M. HOPKINS, S. S. HUEBNER, CARL KELSEY, J. P. LICHTENBERGER, ROSWELL C. McCREA, E. M. PATTERSON, L. S. ROWE, HENRY SUZZALO, T. W. VAN METRE, F. D. WATSON

MODERN MANUFACTURING

A Partnership of Idealism and Common Sense

A few of the remarks received from those who have read MODERN MANUFACTURING

"You are certainly to be congratulated on the thoroughness with which the September volume of THE ANNALS on 'Modern Manufacturing' has been prepared. To my mind, it is the most comprehensive work on the subject of modern manufacture of anything yet appearing, and at a time when it is conceded by all thinking men that industry is the basis of not only national but international life as well, it would be hard to conceive of one who would not be intensely interested at least in some phase of the subject presented."

H. H. LEONARD
Cundall, Powell & Mosher, Inc.,
Consulting Engineers, Buffalo, N. Y.

"Your volume on 'Modern Manufacturing' is jammed full of real material that is going to be a very valuable thing to all business men who read it, and I propose in an early issue of THE LEWIS BULLETINS to make review, and thereby call it to the attention of some 3,000 business executives. This volume should be in the hands of every business executive in the country, especially at this time."

E. St. ELMO LEWIS
Vice President, Campbell-Ewald Advertising Co., New York

"I consider your September edition of THE ANNALS one of the best volumes relating to industry which I have ever had the pleasure of seeing. Will you be good enough to inform me where I can get duplicate volumes and at what price?"

GEORGE F. WILLETT
Boston, Mass.

"While I have not as yet had an opportunity of reading all of the articles contained therein, I have gone far enough to see that the volume contains much of wisdom that is of especial value at this particular time."

GEORGE R. JAMES
President, William R. Moore Dry Goods Company,
Memphis, Tenn.

"I have received THE ANNALS to which you asked me to contribute ['Modern Manufacturing']. While I have only had the time to glance over it thus far, I am very glad to feel that I contributed in however slight a measure to such a worth while piece of work. You have indeed brought together a volume of moment and consequence, especially in view of the more grave and complicated aspects the industrial situation is assuming, and I am very glad to be among the large number who should appreciate your splendid undertaking."

JOSEPH F. COHEN
Compositor, Weber Printing Company,
Philadelphia, Pa.