

RAILWAY MONOPOLY AND RATE REGULATION

BY

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University of Minnesota*

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN THE
FACULTY OF POLITICAL SCIENCE
COLUMBIA UNIVERSITY

NEW YORK
1916

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PREFACE

THE purpose of the following study is to present the general theory involved in what is understood by railway commissioners as the cost-of-service principle in rate regulation. This principle is quite different from that which has been advanced frequently under that name. The earlier cost theories were that the rates should closely follow the cost of each particular service; a practice which has resulted in unfortunate rigidity of rates wherever tried. The theory of the present-day commissioners avoids this rigidity by paying considerable attention to the complementary principle of value in the adjustment of particular rates, while basing the system of rates as a whole, in so far as possible, on the total cost to the railways. The object is to reduce the rates as a system to the level of cost by means of governmental regulation, just as it is asserted is done in other fields of enterprise by the forces of competition, the particular rates within the system, meanwhile, being allowed a flexibility that would be impossible if cost alone controlled the situation. The scope of the present study has not allowed a discussion of particular problems of rate regulation; the general theory alone has been presented, and with it a discussion of the more obvious reasons for its adoption and the difficulties which it encounters.

The writer wishes to take this opportunity of expressing his appreciation of the direction of his major professor, Dr. E. R. A. Seligman, particularly of the stimulation given for the pursuit of the work and of the liberality

manifested in encouraging the development of an independent point of view. To this gentleman as well as to several of the writer's fellow students is due great gratitude for criticism of the manuscript and helpful discussion of the theory.

R. J. McF.

MINNEAPOLIS, NOVEMBER, 1915.

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INTRODUCTION

THE hope was formerly entertained that competition would regulate the railroad industry. In the early days when railroading was establishing itself in our economic life, competition was looked upon as the good genius which would secure justice and fair treatment to all, and no exception was anticipated in the case of the rapidly developing systems of steam transportation.

Experience has proved that such was not to be the outcome. Competition in railroading has shown itself to be not beneficial but disastrous. The history of our rate wars has demonstrated this to the satisfaction of all. It might be more accurate to say to the dissatisfaction of all, for all suffered by it, the shipper as well as the investor. Competition in this field is not limited by bankruptcy, as is the case in the ordinary affairs of business. Bankruptcy but makes the struggle more bitter, for the bankrupt competitor has nothing to lose and uses any means he may to win a small return. Even if this were not the case, the introduction of competitors into a field which can be cared for by the existing lines has proved itself to be a useless waste. Experience in transportation the world over is against the paralleling of existing lines by competitors. The judgment of students of the question in all countries is that the railway business is in its nature a monopoly and should be conducted as such.

Every attempt possible has been made to escape this conclusion. England attempted to make the railroad a public highway like a street or a canal on which anyone might run a conveyance. Needless to say this idea disappeared very quickly. More hopeful was the attempt

of Belgium to expose the private companies to the competition of government lines, but this experiment also proved a failure and has been abandoned. In the United States many measures have been tried to preserve the beneficial features of competition, but the features have proved to be far from beneficial. Pooling has been prohibited, but the man who pushed the prohibition through Congress later acknowledged his mistake. Rate agreements and combinations have been made unlawful, but the laws have proved ineffective to prevent the movement towards monopoly. Canute, in his day, had about the same success in stopping the advance of the incoming waves of the sea.

Monopoly being a fact, the question before us now is the regulation of this monopoly. There are many problems which arise in this connection, but the one that will be considered in this discussion is the problem of price. We are perfectly willing to accept the economies and conveniences of monopoly, but do we have to submit to monopoly price? Must our railway rates and fares be based on the principle of monopoly profits—the ability of the company to collect the maximum—or may we hope through regulation to be able to base the charges on the ability of the railways to supply the service? Can we retain the privilege of securing our transportation at or near what it costs to give it, or must we, when allowing monopoly, allow the companies to collect as much as they can in the absence of competitors?

The influence of cost as an element in determining price is generally recognized in those fields of production not controlled by monopoly. It is a limit below which price cannot remain without destroying the business in question. It is, on the other hand, the level

toward which price tends to be reduced by reason of competitors entering the field. In a sense, also, cost determines the value to the consumer, in that his estimation of an article frequently is based upon what it would cost him to make a similar article or to purchase a substitute. Cost is an ever-present element in price determination until we enter the field of monopoly, and the price in turn is one of those factors which determine the number of customers who will be able to avail themselves of the goods or services in question.

When monopoly is the controlling factor, cost is the margin below which price cannot remain; but if the monopoly be unregulated it is very generally admitted that the price may be fixed at a considerably higher point than the cost. The ability of the producer to continue producing the services ceases to be the determining factor and the charges are fixed at the price which the producer thinks will yield him the maximum net profits.

The mere fact of higher price may not in itself be an evil. The trouble with monopoly price is that, being high, it limits the number of consumers who are able to avail themselves of the service. So, for that matter, does the competitive price fixed by cost. But the competitive limitation is a necessary one. Neither competition nor monopoly can continue to supply at less than cost. The monopoly limitation to the consumption of goods or use of service is almost always greater than the limit of cost, and this added limitation is what is felt to be an unnecessary burden.

Confining ourselves to the railway question, it is evident that if the monopoly be unrestricted, rates and fares may be fixed at a higher figure than is necessitated by the cost of the service. This practice, of course, will

lessen the amount of the railway's business, but a somewhat lesser traffic at higher rates is almost always more profitable than the greatest possible traffic at cost, cost always being assumed to include all expenses and the ordinary remuneration of enterprise. The result of this practice then would be that those who are able to avail themselves of the service of the railway would do so at less profit than if the rates were fixed at cost, or ability of the railway to serve; and, in addition, many who might be patrons of the road are unable to use it because the price is beyond their ability to pay. Hence, unrestricted monopoly means less profit to the actual users, and fewer actual users; in other words, the business of the country is restricted.

The purpose of this present inquiry is to see to what extent this restriction of business has been and can be prevented by government regulation. We want to know how far the ability of the railways to provide the service, rather than their ability to charge for it, can be made the basis for rates. It is this question which the commissioners are attempting to solve in their efforts to apply what they call the cost-of-service principle in regulation. The movement towards the use of this principle is an attempt to refer rates to the ability of the companies to supply the service, as shown in their fair or necessary income. By this effort the hope is entertained of allowing the public all the advantages which could be hoped for from an ideal state of competition without at the same time bringing in the evil effects which competition is always found to involve in railway enterprise.

There are two general phases of the cost principle as developed by the commissions. One phase is the relation of the cost of the total service rendered by the railway to the income derived from the whole traffic,

that is, basing the system of rates as a whole on the total costs, the costs always allowing reasonable returns on the enterprise. The other aspect of the question considers the relation of particular rates within the total system to each other and to cost; should the particular costs of each branch of the traffic be worked out and made the basis for the rate on the traffic in question?

There is an unfortunate ambiguity in the use of the phrase "cost-of-service principle". When railway men and economic writers in general use the phrase, the emphasis is laid on the latter aspect of the question as just outlined. Mr. Peabody, the statistician of the Santa Fe, says, "The cost theory of rate-making would put a flat mileage rate on all articles and utterly upset the commerce of the country".¹ It is very evident which phase of the principle Mr. Peabody is considering. Professor Ripley, in speaking of the cost principle, says, "The freight service of a railway comprises the carriage of all kinds of goods simultaneously, from the most valuable high-priced commodities such as silks and satins, down to lumber, coal, cement, and even sand. To compel each of these classes of goods to bear its proportionate share of the cost of carriage would at once preclude the possibility of transporting low-priced goods at all".² Professor Ripley also very clearly has in mind the latter phase of the question, that is, basing the rates of particular traffic on its own peculiar costs.

The emphasis of the commissioners who are working on the problem is on the former phase of the question. Their contention is that rates as a system should be based on the cost of service as a system, and that the

¹ Letter of Nov. 25, 1911. (Private correspondence.)

² Ripley, *Railroads: Rates and Regulation*, p. 169.

division into particular rates should be based, not wholly, but only partially on the comparative costs of the particular branches of the traffic. As Mr. Staples, Commissioner of Minnesota, and President for 1912 of the National Association of Railway Commissioners, in a committee report presented at the convention of that body in 1911, said, "Common carriers are entitled to rates for their services that cover reasonable amounts for operating expenses, including returns upon a fair cost—that is, the value of the property necessarily employed. . . . In connection with the freight transportation service, it has been further ruled that the cost of transportation thus established should be borne by the various articles and commodities transported somewhat in proportion to their value, the cost of handling them, the risks involved therein, etc. The law, and the rulings under it, has established a so-called 'cost of service theory' of rate-making, under which articles of higher value are made to contribute more to the income of the carriers for interest and profits than articles of lower value. Under this theory the higher profits contributed by the former or high-priced articles are as much a part of their cost of transportation as is the case for the relatively lower profits that are borne by the lower-priced ones. . . . The basis for rates or for charging that has thus been briefly outlined is in fact the so-called 'cost of service' basis for rates". And again: "In order to fix rates upon the cost basis, it is necessary to determine the approximate cost per unit of traffic as well as to weigh these costs for each class of the traffic in proportion to the value of the articles contained in each of these classes".¹ And Commissioner

¹ *Proceedings of the Twenty-third Annual Convention of the National Association of Railway Commissioners, 1911, pp. 32-33.*

Erickson, in speaking of the view of the Wisconsin Commission on the subject, says, "The total cost is first determined. This cost is then distributed between the various branches of the traffic. That part of the cost in turn which should be borne by the freight traffic is then distributed between the various classes and commodities on the basis of cost, and this cost per unit of transportation is then weighted, so to say, on the basis of the value of the articles transported."¹

The object of the following study will be, primarily, an investigation of what is involved in the attempt so to base rates on the ability of the railways to provide for the transportation of the traffic; for that is what the cost-of-service principle, as understood by the commissioners, really amounts to. The movement has risen very largely out of consideration of what justice to all parties calls for. It is held that the railways, being public servants, should give their services on the most advantageous terms possible to the public. On the other hand it is intended that no injustice be done to the vested interests of the railways. But beyond this consideration for vested interests on each side, the study of the question reveals that there are more vital considerations. It is not in the long run so much a matter of a just return being allowed to the railways as it is a matter of giving them sufficient income to provide accommodations for the commerce of the country, particularly when the business is constantly increasing. The emphasis in the past has been on the ethical aspect; it grows out of statical conceptions and looks principally to past and present conditions. It is being seen more clearly now that we must look ahead. We have a dynamic problem. The ethical considerations are not set aside—they are

¹ Letter of Dec. 15, 1911. (Private correspondence.)

included in the larger considerations of the ability of the railways to provide the facilities for an expanding traffic. The railways must be allowed an income sufficient to provide these facilities; any more income than this is a restriction of the other business of the country that is not justifiable on the grounds of social welfare.

An investigation into the possibility of relating rate regulation to the ability of the carriers to provide transportation involves primarily a study of what is the measure of such ability. The ability to serve will be found to lie in the income derived from the traffic at the prescribed rates, for it is income which warrants capital and provides for running expenses. In inquiring what the income must be, it is a matter of first importance to consider upon what capital basis the income is computed. Hence we must make a study of the question of the valuation of the property, the principles involved therein, and the connection between valuation and rate-making. We must know in what way capital value is a criterion of railway ability; we must look into the principles of valuation for such a purpose, and then we can consider what income is necessary on such a valuation.

Manifestly, this only provides for the regulation of systems of rates as a whole in relation to the cost of service as a whole. A practical system of rate regulation must go farther than this; it must consider the regulation of the rates on the particular branches of the traffic. To this end a study will be made of the method which the commissioners are advocating for the purpose under the so-called cost-of-service principle. The first task at hand, however, is a more careful consideration of the principles involved in the relation between government regulation of rates and the ability of the roads to supply the service.

CHAPTER I

REGULATION AFFECTING WHOLE-RATE SYSTEMS

THE regulation of railway rates by governmental authority has been justified in various ways. It may be defended on the grounds of the extensive public aid which has been given to the railways; it may be taken from their quasi-public character as performing a delegated function of Government by permission of the state; or it may be demanded on the grounds of social welfare or benefit to the public. All these reasons and many related ones may be advanced, but, whatever justification be expressed, all parties are agreed that government regulation is a necessity and is here to stay as long as we retain private railway ownership.

Whatever the real reason for government regulation may be, it should not be lost sight of, when we consider restrictive regulation at the present time, that during an earlier period the public contributed a vast amount to the building of these railways and assumed a very considerable amount of the risk of their success. Authorities state that land was actually given to the promoters to the extent of 155,000,000 acres, or 242,000 square miles, which is equal to one-fifth more than the total area of either France or Germany.¹ Vast sums backed by the public purse were given into the hands of the companies with no other security than the success of the enterprise. And when we see how little of the stock issue was actu-

¹ Ripley, *Railroads: Rates and Regulation*, p. 36.

ally paid up in some instances, we conclude that at the time when the railways really were a speculative venture, the proportion of risk by private capital was not so large that the public is guilty of confiscation when it fails to allow the companies to charge as much as they please. The public has been an investor looking for returns, not in dividends, but in the best possible service at reasonable rates.

Perhaps the most common justification of regulation is the so-called quasi-public character of these common carriers. As the Interstate Commerce Commission has said: "The providing of the highways of a nation is an act of sovereignty essential to the existence of the nation. These highways may be provided directly by the Government itself or by private individuals under sanction of the Government. If the duty is delegated to a private individual, that individual, whether person or corporation, is the agent of the Government and acts subject to the well known laws of agency. If being authorized to impose for its services a reasonable charge, it in fact imposes one that is excessive, it is answerable to the Government."¹ Or again, the Railroad Commission of Wisconsin draws attention to the fact that the companies hold the place of agents of the State by virtue of the powers of eminent domain which have been conferred upon them.²

Not only are these companies agents of the State, but by reason of the privileges granted to them by the State, they have been placed beyond the range of regulation by natural forces. By reason of the franchises, the right of way, the financial aid given in the period of specula-

¹ 15 I. C. C. Rep., 414.

² W. R. C., *A. E. Buell v. Chicago, Milwaukee & St. Paul Ry. Co.*, page 12.

tion, in short by reason of government act creating them legal corporations to do business which must become a monopoly, and by assistance towards success in that field, the Government has placed these companies in a position where nothing but regulation by the creative power can operate. That it is justified in undertaking this regulation when necessary is now generally admitted by all and even acquiesced in by the companies themselves. That regulation is necessary is also a very generally admitted fact and forms the real reason for its application by the only power competent to apply it.

The necessity for regulation is found in the common good, the general welfare. As Professor Seligman pointed out at the time when the Interstate Commerce Act was first placed on the statute books: "Railway tariffs may be regarded from two essentially different standpoints—the private and the public. In so far as a railway is a business corporation it is a private matter. It may fix its prices in accordance with general business principles. It will endeavor to subserve primarily the interests of its owners. It will strive for the greatest possible profits. Its course is legitimate and praiseworthy. But in so far as the railway forms our public highway, it is a public matter. The objective point is now the general welfare, the interest of the community. It aims not at the greatest possible profits, but at the greatest possible benefits. It looks not at the interest of its owners, but at the interests of the public. The one point of view is individual, the other social".¹

Now, it is precisely because of the fact that the railways left to themselves act so frequently solely from the standpoint of their own private interest that regulation has

¹ *Political Science Quarterly*, vol. ii, p. 223.

become necessary. The real reason for railway regulation is to supply the factors neglected by the railway managers, that is, to secure the ends of social justice, and to promote the interests of the community. It is not for us scornfully to censure the companies because they have attended to their own interests rather than those of the public which they serve. The object of railway enterprise is not philanthropy. Its object is the same as that of any other business, namely, to make money. And so long as it does this lawfully the railways should not be made the target of our accusations. It is the duty of the public, since it is an interested party in the compromise, to see to it that the social interests are maintained. Just as surely as the shareholder should have his voice in the matter of the making and distributing of dividends, so surely the public should have a voice in determining the relation between the amount of the dividends and the scope and efficiency of the service.

It is not to be claimed that the railways have totally neglected this social element: they have not gone to this length. It has not been to the business interests of the companies to act in this manner. The success of all agencies of transportation is very closely connected with the business and industrial development of the communities which they serve. It is to the advantage of the railways that their patrons should be prosperous. But this prosperity has been fostered in such a manner as to work mainly to the interest of the railways and their promoters; the general business and industry of the country have been made subsidiary to railway success rather than the chief ends in view as it is right they should be. As we should expect, the history of railroading in the United States shows that the corporations, both as competing systems and as monopolies, have neglected the interests of society as a whole. It is prob-

ably true that in the past the public has suffered more from the evil effects of competition than from monopoly, but this is no guarantee that conditions might not be yet worse under undisturbed monopoly. In years past, government regulation, both by legislation and by commission, has done much to mitigate the effects of unrestrained competition. We may reasonably hope that it will solve the problems involved in the increased effectiveness of monopoly.

In the earlier days while new and independent lines were continually coming into the field, regulation was needed to check the railroads in their relations with each other. We are accustomed to think of regulation solely as a protection to the shipping public. Aside from protecting the railways from the attacks of over-zealous public enthusiasts, regulation has been a boon to the railways in their dealings with each other; it has materially aided them in doing away with the weapons of cut-throat competition. Probably neither regulation alone nor yet the power of the railways unaided could have done away with those policies of rebating and rate-cutting which have been suicidal alike to railway and to public interests. Certain it is that the railways, hampered as they were in their combination by our anti-trust restrictions, could hardly have achieved the steadiness and certainty of rates necessary alike for railway and private interests. It may not be so readily admitted that public regulation alone would have been unable to arrive at this goal, but a careful study of the history of American railroading will show that such has been the case. So long as the railways were actively competing with each other, secret rebating and rate-cutting persisted; the power of the law was unable to do away with the practice. Thus we may say that government regulation in conjunction with railway combination has done away with pernicious cut-throat competition.

Regulation may thus serve railway ends. It may be of such a character as to be readily approved by the railway managers themselves. But this is not the only regulation possible, nor is it the only kind with which we are familiar.

Since the railways have become monopolistic, the cry of extortionate rates has been raised and has been followed by restrictive regulation. And so long as our transportation systems are in the hands of private monopoly with its ability to raise rates and restrict the service beyond the natural limits of competition, we may look for restrictive regulation. This is simply supplying the social factor in our rate-making system for which we cannot expect the private companies adequately to provide.

When we begin to talk of restriction, we must bear in mind that justice demands that when the state undertakes to restrict the railway policy of private interests, it should not at once plunge to the opposite extreme. When the government deals with a powerful corporation it is not on a footing on which equal meets equal. When we stop to think that there is no limit to what the state can do if it wishes, and when we hear men all about us talking of confiscation in general and of confiscation of the value of railway property in particular, we see that we have another basic principle to be considered. Justice to the vested interests of the railways is a vital part of any sound theory of rate regulation. The railways have been public beneficiaries, but they have been none the less truly public benefactors. They have been given great areas of land, but they have increased the value of the land through which they run by an amount vastly in excess of the value of the original land grants. This nation owes too much of its prosperity to its excellent railway system, despite its shortcomings, to begin any general system of confiscation by denying the railways a fair return upon what they have

been freely allowed to build up and legally acquire. In our list of industries which it is the duty of the state to protect, we cannot justly class the railways as outsiders from whom the state must protect its proteges in the other fields of production. Though perhaps the most powerful of all, nevertheless provision must be made for their lawful interests.

The part the government must play to be consistent with our modern ideas of social justice is that of an equalizer between these powerful monopolistic organizations and the less powerful and frequently unorganized shippers. Our general feeling is that justice is most likely to be done when the parties meet each other fairly as equals. It is very similar to the principle of collective bargaining which is being developed by the labor unions. Our justification of just regulation is that the shipping public may through their representatives, the regulative commissioners, meet the common carriers in positions of equal bargaining strength. And our ideas of what principles should thus be artificially enforced are that they should be the same principles, as far as possible, which operate in the relations between equals in free competition. That is, such principles and methods must be applied in this artificial regulation as will prove fair to the railroads, and at the same time allow for all the expansion of other business consistent with this fairness.

The railway interest, while important, is not that for which the rest of the business of the country exists. It would be much truer to say that the railways exist for the sake of our other industries. If this be so the railways cannot be allowed to bargain for their services on monopolistic principles. They cannot be allowed to fix their prices simply with the view to getting the greatest profits. Their returns are made from the product of rates and volume

of business. If, then, they increase their profits by raising their rates to the limit where any further increase would so lessen the volume of traffic that the product would be diminished, the presumption is strong that the public interest is being neglected. The social good demands that the traffic, the amount of business done, shall be the greatest possible consistent with a reasonable return to the railways. It is the quantity of business that must be increased at the expense of rates, rather than the rates at expense of the volume of traffic; due regard always being paid to an ample return to the railways.

The assumption has been made so far that the railway business is a monopoly. This view will to a certain extent be challenged. In view of the fact that ever since the enactment in 1887 of the Act to Regulate Commerce there has been a prohibition to prevent pooling, and in view of the recent legislation to retain competition as far as possible, it will be well to look into this matter a little more closely. The problem is how far the railway industry is subject to monopoly law, and what the effect of this would be on the nation's business if unrestrained by government regulation.

When the Act to Regulate Commerce was first passed the idea was certainly prevalent that the principles of competition were the necessary rules in the railway field in order to secure fairness. Not only was it held that the results of normal competition were the desired end, but it was thought that by means of supervision by the Interstate Commerce Commission the forces of competition could be preserved and made to act normally and regularly in the transportation business. As Professor Hammond says, "The act to regulate commerce was passed by a Congress which was strongly of the belief that competition between railroads was salutary in its workings and to be fostered.

The purpose of regulation was not to thwart competition but to check monopoly." And again, "The members of the Interstate Commerce Commission appointed to carry out the provisions of the act were fully aware of the intention of Congress in this matter, and in good faith undertook to apply the competitive principle to railway rates."¹

Recently, however, the Interstate Commerce Commission has expressed quite a different opinion. In fact the commission has seen for some time the necessity for combination. In 1901, after the attempt to break up the traffic associations by law, the commission said that not only were conditions practically the same as before the court decisions, but that it was necessary for associations to exist. Since then they have stated the matter more strongly. In their opinion given by Commissioner Prouty in "Re Advances in Rates by Carriers in Official Classification Territory" the statement is found:

There is but little competition in the price at which the commodity produced by these railroads, *viz*, transportation, is sold; that is, in the rate. This was not always so. In the past the most violent competition in railway rates has prevailed, and this competition has often gone to the point of imperilling the financial integrity of great railroad systems; but all that is a thing of the past. The law itself practically forbids it, and if it were permitted by law it is inconceivable that the practices of former years would recur.²

This expression not only shows the present non-existence of competition but also its undesirability. In the same opinion a still stronger statement is made on the subject:

¹ M. B. Hammond, *Railway Rate Theories of the Interstate Commerce Commission*, pp. 108-9.

² 20 I. C. C. Rep., p. 264.

"The railroad is a monopoly. Its rates are not made under the influence of competition."¹

The Interstate Commerce Commission considers the railroads to be monopolies; Congress maintains the struggle to preserve competition between them. What then is the true status of the business? The fact that Congress has attempted to preserve competition, and that meanwhile the commission has become more firmly convinced of the fact of monopoly, is perhaps the most striking indication of the true state of affairs.

As the commission says, railway rates are not made under the influence of competition. That is, rates are not made under the influence of competition of the so-called competing railway lines. The most striking apparent contradiction to this statement exists in the Southern Basing Point System. But even in that field the railways now acknowledge that competition does not determine the lower rates to the basing points. The system was built up under the influence of competition among the railways and with the water carriers, but now the competition has disappeared. The lower rates to the basing points exist on account of the jobbing business in the towns and the competition between the markets, but not on account of the competition between rival carriers. Likewise the rates to the Atlantic seaports are determined by port differentials arising from the competition between these ports as markets for the trade, but the railways supply the same service to the same place on the same terms and do not compete at all in their fixing of rates. The competition that exists in such cases as these, where no other system of transportation enters the field, is not now competition between the carriers in the matter of rate quotation. It is a competition between the

¹ 20 I. C. C. Rep., p. 280.

patrons of the railways. This competition in no way affects the fact of the monopoly of the railway service.

A certain amount of competition does exist between the railway and the water carriers, and probably this will increase with the growth of business through the Panama Canal. But looking at the railway field as a whole, this is rather a disturbing element in what is otherwise a situation ruled by monopoly. It may be objected that the advertising campaigns carried out by some lines are a form of competition. They are, but not a form of competition that has a regulatory effect on rates. They are a form of competition for traffic at an established rate. But even this form of competition has its decided limitations under the present system,—although it may be, as some railway men assert, too much practiced even yet. There still exists more or less bidding for traffic at established rates. Every line in a definite passenger field must maintain a service similar to that of its rivals. The main lines west from Chicago must maintain similar fast trains on each line, whereas if all the lines were consolidated under one management the traffic might be divided and the total number of trains might be cut down, thus allowing a considerable saving of expense. But when the management is separate, each company must bid through its service for the traffic. The Pennsylvania and the New York Central both maintain their twenty-hour and other fast trains between Chicago and New York. What service one line gives, the other must supply also. But is this competition? Is it not rather agreement? While each maintains its twenty-hour train the other is not trying to outdo it in the matter of speed. In fact they maintain similar service by agreement, just as they do similar rates.

A survey of the field in the United States shows that the same rule holds here as in other countries. The railway in-

dustry, whether in the hands of a single management, as under government operation, or in the hands of numerous private companies, as we have it, tends in its rate fixation as well as largely in its service to follow the rule of monopoly. To prevent this tendency resort must be taken to rate-cutting. Rate-cutting tends inevitably to unfair rebating, which is more injurious to the shipping public than are uniformly high rates, and also it tends to the bankruptcy of the roads and the impoverishment of the shipping facilities. This policy is now strictly prohibited by law. Of the policy of the interholding of stock and interlocking directorates which may lead to manipulation of the financial market and of contracts between the railroads and its customers we have nothing to say here. But as for rate-making, as the commission says, we have to do with a monopoly whose rates are not subject on the whole to the influence of competition.

What then are the rules which govern rate fixation? And what are the principles that must be considered in the regulation of railroad rates?

Stated briefly, the principle of monopoly price is that the price is raised at the expense of the amount of business done until the point is reached where the gain netted from the rise in price is offset by the restriction of the business done.

The gross returns in any business are the amount of the business transacted multiplied by the price at which the business is carried on. There may be lines of business in which, within reasonable limits, an increase in price will not decrease the amount of business done. An example of this would be an article which is used in conjunction with other things and, while being a small part of the complete product, is nevertheless essential to the product. The platinum wire is a necessity for an electric lamp bulb, and yet an increase in the price of platinum wire will not

materially limit its use in that field. But this is an exception to the general rule which is that the higher the price be pushed the less will be the demand for the article in question, and even here if the price of platinum be pushed high enough its use will be restricted or perhaps a substitute discovered. It can be stated as a general rule that every commodity has a more or less elastic demand schedule; that is, the demand for it falls off with an increase in its price. That different articles have different demand schedules is obvious, and that aspect of the matter will be considered later; the point to be emphasized here is that for commodities and services in general the demand is elastic, the amount of business transacted falling off as the price increases. Exceptions to this rule may be found in the field of particular railway services, but it is certain that while the demand schedules for railway services remain substantially the same, the higher the rates as a system be placed the less will be the amount of business transacted. Neither is it necessary that the demand schedules remain the same in order that a rise in price exert a downward pull in the amount of business done. The apparent exception to this "downward" effect of a rise in rates would be seen in a period of rising prosperity, when the amount of business in all spheres is increasing. In this case a rise in rates might not stop the increase in the amount of business transacted, the business might increase in spite of the higher rate, but the business would not increase as much if the rate were raised as it would if the rate were not raised. In dealing with such a complicated matter as a system of railroad rates and the business depending upon them, it can be asserted safely that an increase in rates will tend to decrease the amount of business transacted.

It would not be easy, nor is it necessary to cite an example where, in the field of transportation, the price has

been raised so that the traffic has actually fallen off on account of the greater charge. It must be remembered that the normal state of affairs in the transportation world at present is expansion, an expansion due to entirely different causes from the influence of the rates. This expansion had been going on with minor set-backs ever since, if not before, the discovery of America, and has received great impetus from the industrial revolution in England over a century ago and later from the opening-up of the American West. True, we have periodical set-backs, as in the year after the crisis of 1907, but the ruling state of business, and with it transportation, is a steady expansion. The effect then of an increase of rates, if the increase were only moderate, would be merely to reduce the rate of expansion; expansion would perhaps still continue, but at a slower rate. In fact it would require a considerable advance in the charge absolutely to check the expansion, and a still greater advance to change the expansion into actual contraction. So when we speak of the influence of an increase in rates being a decrease in the amount of business transacted, we mean that the amount of business is less than what it otherwise would have been.

The field of transportation does not even abound in examples where the rates have been raised for the field as a whole. The rule has been that rates have actually declined with the expansion of business. Until within the last few years the expanding business has brought with it such great economies in the cost of conducting the business that the normal charge per unit has declined. The business expansion and the normal charge, which has declined during the same period, might both be likened to streams, where even to be anchored and to remain at the same place in either would be retrogression as far as the normal current of affairs was concerned. For business to cease its expansion

and to stand still is a limitation of the normal current of affairs. For price to maintain even a steady level, if expansion of traffic means economies of operation, is to limit the normal expansion of the traffic.

That there is this correlation between price and the amount of business transacted is admitted by economists. But so little emphasis has been laid upon the fact that, in the railway field, even in the absence of actual falling-off of business, too high rates may mean limitation of traffic, that we cannot forbear citing two very striking examples of a tremendous increase of the traffic effected by a sudden reduction of rates. In each case the reduction of rates was so sudden as to preclude the possibility of the expansion being due to other causes, and in the latter case the expansion has gone forward even in the face of depression in other fields of business. Reference is made to the classic story of the expansion of the post-office business in Great Britain resultant upon Hill's reform in rates; and to the recent case in the United States of a tremendous expansion of the carriage of parcels which took place with the reduction of rates at the time of the introduction of the parcel post.

Hill's reform has now so far passed into history that we dare make only brief reference to it. Suffice it to say that Hill, a postal clerk, conceived the idea that if the price of postage were reduced to one penny from what averaged at least a shilling, the amount of mail matter offered at this lower rate would be so increased that the postal receipts would be fully as large as before the reduction in price. Hill's expectations were not immediately fulfilled, but after a few years the postal business did sufficiently increase as the result of this reform fully to justify even such a drastic reduction in rates.

The correlation between the reduction of rates and the

consequent expansion of business is illustrated in a still more spectacular fashion by recent events in the carriage of parcels in the United States. Up to January 1, 1913, this carriage of parcels was altogether in the hands of the express companies, but on that date the government instituted a parcel-post system which since then has been a most important factor in this business. The government went into competition with the private companies and cut rates in a rather drastic fashion. Since then the express rates have also been reduced quite materially. We have in this a very striking example of the growth of the business formerly handled exclusively by the companies and now carried jointly by the companies and the parcel post.

It was expected that the reduction in price would bring about an increase in the business as a whole; the business handled by the companies might be reduced, but this reduction would be more than compensated for by the increase in the business carried by the parcel post. It is impossible to secure data that will show the exact effect of the change of rates, owing to disturbing influences and to the fact that the data kept by the express companies and those kept by the parcel post are not comparable in all particulars, but facts enough are available to prove that the expectation of expansion of business was more than justified.

The express companies have suffered. It is not a matter for surprise that such should be the case. How much their present difficulties are due to the advent of the parcel post and how much to the general financial depression is a matter that cannot be decided accurately. The *New York World* is responsible for this statement regarding the situation of the companies:¹

During 10 months of the fiscal year ending last April (1914)

¹ *N. Y. World*, Aug. 18, 1914.

the eleven largest American companies, two of which operate in Canada as well as the United States, had an aggregate net income from operation amounting to only \$628,437, whereas during the 10 months of the preceding fiscal year their net income aggregated \$4,231,465.

How much of this loss is due to slackness of business not connected with parcel-post rates or order of the Interstate Commerce Commission it has been impossible to estimate accurately, but it is assumed that at least \$2,000,000 of the loss is due to parcel-post competition.

At this same time the gross earnings of the same companies for the fiscal year of 1914 showed a falling off in comparison with 1913 of \$10,000,000.¹ Just as in the case of the net earnings, this cannot by any means all be credited to the influence of the parcel post. A general decrease in express rates ordered by the commission went into effect during this period, namely on February 1, 1914. And the *World* assumes that a great deal of the falling off in the net earnings was due to slackness of business in general. We know from the evidence presented in the Five Per Cent Case revision that the general transportation business was very slack at this time. If we assume that the estimate of the *World* as to the proportion of the decrease of net earnings due to the parcel post would apply as well to the decrease of gross earnings, the amount of such loss to the express business during the fiscal year of 1914 would be some \$5,500,000.

If the accounts showed that the business of the parcel post had amounted to a sum equivalent to this loss to the express companies, then, in view of the fact that the business was being handled at much lower rates and that we are now measuring the business in terms of the money received for

¹ *N. Y. Times*, Nov. 18, 1914.

its carriage, the only conclusion possible would be that the amount of the traffic had increased sufficiently to make up for the decrease in charge. But what do the figures show us?

It is impossible to determine exactly what traffic was handled by the parcel post during this period. The post-office does not enumerate all its handlings. It samples them twice during the year. But a comparison with one of these samples will suffice for an approximate conclusion. The official count for the first two weeks of the month of April, 1914, is very significant. The receipts from the postage on the parcels carried by the parcel post during these two weeks of enumeration amounted to \$2,119,410.¹ Just \$119,410 worth more business in two weeks than what it is alleged the express companies lost in net earnings during the whole ten months. If these two weeks can be taken as a sample for the year we can say that the parcel post business for the full 52 weeks was approximately \$55,000,000. During this time the express companies lost \$5,500,000. For every dollar's worth of business that the express companies lost the parcel post secured ten dollars' worth of traffic. And it must be remembered that this is expressing the traffic in terms of receipts, and to show increase of traffic due to decreased charges in terms of the receipts from these lowered charges is in effect discounting the actual increase by the percentage of the decrease of the charge. The only possible conclusion is that the decrease of rates co-incident with the inauguration of the parcel post has tremendously increased the traffic in parcels handled jointly by the two rival systems. Moreover it should be emphasized that this increase occurred not during a time of business expansion but in a time of quite decided depression. The increase came in spite of business depression and hence can safely be

¹ *Annual Report of the Postmaster General for 1914*, Appendix B.

said to be due to the decrease in rates. This increase was held in check by the high rates formerly imposed by the express companies. Could any proof be more striking that even the maintenance of an old rate may be a serious cause of limitation upon the expansion of traffic?

And yet "the traffic all moved out" before—all that existed at that rate of charge. The former rates met the railway managers' standard of fairness: "Any rate is reasonable under which traffic will move absolutely. It all moves out, it must be a reasonable rate." The new rates built up new business, business that never existed before. That is, within certain limits, the lower the rate the more the business. Because, besides those producers who are in the field at any ordinary rate, there are others who could and would be in business at a lower rate. They cannot afford to pay the rate as established, and so they are not in the field. Their traffic is not there to move out. But if the rates were lowered they could produce, and the business of the country would be increased. Of course, this could not go on indefinitely, even though the railways might be subject to the law of diminishing costs. To a certain extent the increase of the traffic would make up for the lower rate; but there would be a decided limit here, beyond which the very continuance of the business of the company would not allow a decrease in rates; a limit where the increase in traffic fails to make up for the decrease in rates. Needless to say, this limit is carefully avoided by monopolists. The price rule in monopoly at least is to maintain price levels at the expense of possible expansion, as shown in the case of the express companies, if not actually to raise the rates beyond their former level, as the railways are attempting to do at present.

In the ordinary fields of business subject to competitive influences, the rule is that the price is raised as far or kept

as high as the entrance, or the fear of entrance, of competitors into the field will permit. When the price is raised and the profits rise with it, competitors will tend to enter the field so long as their ability to produce the goods or services in question will permit; that is, the price limit is found at the cost of production for the least capable of the competing producers. But in the railway field we do not have competitors entering the field, and consequently we lack this limit, at least when we do not have outside regulation. The point of similarity between competitive price and monopoly railway rates is that each one tends to be as high as it can be maintained. In competition the limit is in the ability of competitors to enter the field, or, as the language of economics would have it, the cost to the marginal producer. In the case of monopoly there are no actual or possible competitors to enter the field, and consequently, if there be no outside regulation, this limit or norm for price does not exist. But there is another limit. This limit grows out of the state of affairs described in the preceding paragraph. As the price is raised the amount of business falls off. After a certain point the business becomes so much less that the actual income, in spite of the increase of price, is less than it would be if the price had not been raised. Naturally this is where a sensible monopolist becomes public-spirited and restricts his rates. Sometimes, strange to say, this limit is lower than the former. There are ill-favored and badly-situated businesses which, even though they charge so much that any increase would not result in more but even less actual profits, yet are not making as much as the ordinary competitive return on investments. Naturally such enterprises could not be expected to survive; capital would not be likely to remain in them. However, such enterprises do exist and that in the railway business; the reason being that it is impossible for capital to get out once it is sunk in

them. It might be said to be wedded to the enterprise with no hope of divorce. Money laid out in railway track cannot, if the enterprise prove unsuccessful, be taken up and applied to another business. It is there to stay and must be thankful to win any returns that fortune and good management may swing its way. Of course, it is true that as the plant wears out and new capital is needed to keep the business going, such enterprises will be hampered most seriously unless their capitalization be reorganized.

Although there are railways which get all possible return out of the traffic and yet no reasonable income, still in any well-situated and carefully-managed business such is not the case. In any well-ordered railway the rule is that the business should yield a return greater than that which could be obtained from a competitive enterprise. Such railways, unless subject to rate regulation, may raise their rates above the point where they will secure a return greater than that enjoyed by competitive industries before they come to the monopoly limit where any further increase would diminish their gross returns.

So far we have only considered the effect upon gross returns. This, of course, is not the ultimate goal of business. The question is as to what the net return may be. And this adds to the problem the question as to whether or not the business is subject to the law of diminishing cost, whether or not the cost per unit of business decreases as more business is transacted. It has been maintained, and is a fact, that in the past the railway business has been so subject to the law of diminishing cost that as its traffic increased it was cheaper per unit to maintain the traffic. If this be so, it means much in the question of where the monopoly price will be fixed. The aim of the enterprise is to gain the greatest possible net return on all the business transacted. The gross return increases for a time as the

price advances and then after more or less gradually ceasing to increase, on account of restriction of traffic, it begins more and more rapidly to decrease. Since the net return is the difference between this gross return and the cost, it makes considerable difference whether the cost is decreasing or not during the fluctuation of the gross return. Obviously the point of greatest difference between this gross return and the cost will be at a different place if the cost be diminishing as the business increases than if the cost remain constant. Under the law of diminishing costs the point of maximum net returns will be reached at a lower price and greater amount of business than if the law of constant cost obtains, and it will be at a still lower price comparatively than it would be were the costs increasing all this time. If the railway situation is, as has been maintained in the past, that increased business is handled at less cost per unit of traffic, then it is not to the advantage of the companies to raise the rates and consequently decrease the traffic. But if there be a limit to the operation of the law of diminishing costs in the railway business, and if we have now reached this limit, as there is much cause to fear, then the companies are free from the above restrictions and may, as monopolies, raise their rates higher than would be to their advantage in the former situation.

As intimated above, the railroad business has been in the past subject to the law of diminishing cost. To the extent that property and equipment are only partially utilized, the business can be increased without a corresponding increase in cost per unit. But a railway track reaches its limit of efficient carrying capacity and then a new track must be laid down, and terminal facilities must be enlarged at high cost, while all the time the increase of equipment must keep pace quite closely with the increase of business. For many years, as the railway traffic increased, the rail-

ways were able to, and did, decrease their rates, but the figures for the last fourteen years indicate that this is a thing of the past. As the Interstate Commerce Commission pointed out in the first five-percent case,¹ the transportation and traffic expenses have very substantially advanced in ratio to revenue during the last fourteen years on lines then under consideration. That this is due to a breakdown of the law of diminishing returns as applied to railways may be questioned, as the years 1906 and 1910, which had the greatest relative density of traffic, show the least relative ratio of cost to revenue. A more careful consideration of the matter will show that declining costs cannot be so readily assumed. A great density of traffic will for the time cause the operating ratio of cost to amount of business to decline, but that does not prove diminishing costs in reality. The cost incurred by the traffic is not all laid out at the time, but is spread out over a period of years. The actual operating expenses must necessarily follow the density of traffic pretty closely, but the replacement of worn out and obsolete equipment is spread out in the expenditures of several years after a rush of traffic. During a boom year the need of many new tracks and much new equipment may be seen, and the orders for these may be largely placed, but the completion of all this new work and the payment for it will not all be shown on the accounts of the companies for some years. Consequently, to determine the question of the influence of the law of diminishing costs we must rely on the statistics covering a period of years. The figures show that, while the railroad business has increased a great deal, since the opening of the century, the operating ratio, or ratio of the costs to the returns, has also risen. During these last fifteen years the traffic, both passenger and freight, has very

¹ 31 I. C. C. Rep., 376.

nearly doubled, while the operating ratio instead of declining, as would be expected under circumstances of diminishing costs, has actually risen more than ten percent.¹ This would look on the face of it as though the days of diminishing cost were a thing of the past. Certainly during the last fifteen years, while the traffic has increased, the cost per unit has not diminished but actually risen. But this does not prove the actual breakdown of the formerly accepted principle. Too many disturbing factors enter the field. It does, however, give strong reasons to fear that though a sudden increase of traffic may cause a diminution of cost per unit at that immediate time, yet, if the traffic be already dense, this is only a temporary situation which will pass away as soon as the requisite items of cost are added to the balance sheet. It certainly appears that there has been a weakening of the tendency toward diminishing costs on the lines of denser traffic.

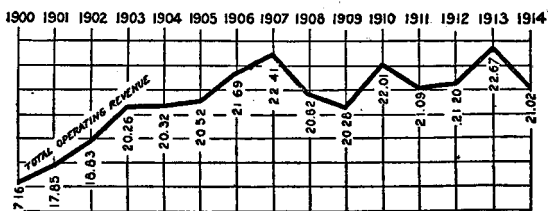
The increase of cost per unit is by no means altogether due to the increase of traffic. It is a patent fact that the price of labor has also risen rapidly during this period, and this rise in the rate of wages has no direct connection with the increase of business, and it may have no necessary correlation with it. Neither has the increased tax bill arisen from the increase of traffic and it is certain that this has played a large part in the change of the operating ratio. When we add to these disturbing factors the fact that the rates have not been retained at the same point per ton-mile and per passenger mile, we must conclude that the operating ratio does not answer the question under discussion with any clearness. Costs, to be sure, have advanced with an increase of traffic, but there have been other causes that have had a large influence in the change. The question is: have these other factors produced all the change?

¹ From 64.62 per cent to 75.96 per cent. 32 I. C. C. Rep., 350.

The ratio of the revenue to the operating expenses is not the only thing to be investigated. The increased traffic and the accommodations which it has demanded have necessitated an increase in property investment. Has the operating revenue during this period been increasingly profitable or not, when viewed as a percentage on the property investment?

During the first five years of this period the revenue did rise as a percentage on the investment. It continued rising till the crisis of 1907. From then on it has fluctuated widely, the total operating revenue averaging for the last ten years about the same percentage to investment that it assumed a year before the high mark of 1907. A straight line fitted to the very irregular curve of the last ten years would show a very slight rise in this percentage.¹

CHART I—Ratio of total operating revenue to property investment for all 35 systems



Within this ten-year period during which the percentage of revenue to investment has remained at about the same general level, the rates, both passenger and freight, have fallen to a certain extent. The average rate per ton-mile in mills for freight fell from 6.94 in 1904 to 6.37 in 1913.

¹ 32 I. C. C. Rep., 349, Chart I.

The passenger fares per mile have in this same time declined, on the average, four-tenths of a mill, from 1.89c to 1.85c per mile. This decrease is due in part to reductions forced on the railways by state legislation, and in part to the fact that the cheaper freight traffic has increased more rapidly than the higher classes. The effect of this latter fact should not be to overturn the expected increasing returns. Neither is the former fact of a decrease of rates for the same kind of traffic by any means wholly responsible for the failure of the percentage of revenue to investment to rise. The increase of traffic has caused an increase in investment, and in many cases investment at much higher prices than previous investments. Certainly in so far as railway expansion requires investment in new land, its business departs from this rule of increasing returns as much as does farming; perhaps more so, for its expansion is in large measure at the cost of purchasing the very highest-priced lands for terminals. And again as the Interstate Commerce Commission shows,¹ the increased traffic is demanding expenses that were never met at all in the past:

Another cause which has depressed the ratio of revenue to investment in recent years, is the increasing proportion of investment in property, which, although used in transportation and acquired in response to a public demand for better service, is relatively unproductive under present practices. Among other things, investments in equipment of improved type, displacing other equipment of equal capacity, the elevation of tracks, and the construction of expensive terminal facilities in the large cities, while adding to the value of the service rendered, have not yielded proportionate returns in revenue. The greater part of these expenditures has been for the immediate benefit of the passenger service. For instance, the

¹ 31 I. C. C. Rep., 375.

Pennsylvania station in New York City has involved the expenditure to date of about \$114,000,000; and with respect to the new passenger terminal of the New York Central in that city it was said in 1910 in *Advances in Rates—Eastern Case*, 20 I. C. C. 243,283, that:

“When its passenger improvements are completed in the city of New York the New York Central will have expended in that betterment \$82,000,000, nearly one-half the capitalization of that magnificent property, the Lake Shore & Michigan Southern Railway.”

The Interstate Commerce Commission said in its first decision on the Five Per Cent Case, “The decrease in the capital cost per unit of production was so great that the ratio of net operating income to property investment was larger in 1913 than it was in 1900.”¹

We have already pointed out that during the first part of this period the ratio of revenue to investment did rise, but that the average trend from about 1906 has indicated but a very slight rise. The table which the Interstate Commerce Commission publishes in support of the statement immediately above² shows a very similar relation between the increase in property investment and the increase in ton-miles and passenger-miles. There was sufficient rise in the ratio in the years up to 1906 to make a rise in the ratio for the period as a whole. But if the figures from 1906 on be treated separately a different aspect of the matter is shown. It will be remembered that the significance of the ratio of the revenue to the investment was complicated by the fact that the rates for both passenger and freight traffic had slightly fallen during this time. But the figures given in this table by the Commission separate this element. We

¹ 31 I. C. C. Rep., 368.

² *Ibid.*, 369.

have an opportunity to compare the increase of investment directly with that of the freight and passenger traffic. Unfortunately the latter are separate and cannot be added nor reduced to a common denominator readily except through the medium of price. However, the figures are very significant. The percentage of increase of both ton-miles and passenger-miles up to 1906 over 1900 was double that of the percentage of increase of the investment during the same period. The increase of freight was 42.27 per cent and of passenger-miles 42.26 per cent, while the increase of investment in property was only 21.91 per cent. But from 1906 till 1913 it has been quite a different story; the passenger-miles have actually not increased as much as the investment, while the freight has not by any means preserved the former tendency to increase twice as fast as the property investment. The figures are, comparing those of the year 1913 with those of 1906, an increase of thirty per cent for investment, thirty-eight per cent for ton-miles, and twenty-nine per cent for passenger-miles.¹ We see that even when the decrease of rates is eliminated, the investment has at present a very much greater tendency closely to follow the increase in traffic.

But the operating expenses are by no means to be disregarded in this question. While in many points the increase in operating cost is due to factors independent of railway growth, yet in many ways it is directly brought about by the increase in the traffic. And to the extent that it is brought about by the expansion of traffic, its influence must be added to the above-mentioned tendency of investment to follow more closely in the wake of traffic. In regard to this increase of operating expenses due to enlarged traffic the Commission says: ²

¹ 31 I. C. C. Rep., 369.

² *Ibid.*, 377.

The last ten years has been a period of remarkable development among the railroads. During that period heavy locomotives have taken the place of the lighter types formerly in use. The small and relatively light wooden freight and passenger cars have been replaced by larger and heavier equipment, some of the cars of each class being made entirely of steel; many of the old cars have also been reconstructed partly with steel. The more powerful locomotives haul longer and heavier trains with larger trainloads, and this has required the retirement from service of many of the lighter cars, although still in good repair, because they can not safely be operated in the same train with the heavier cars of the more recent type. The use of larger and stronger equipment and the running of heavier and longer trains has necessitated a heavier rail, stronger bridges, more and better ballast, more cross ties per mile, larger tunnels, more ample roundhouses, stronger and larger turntables, machine shops equipped with larger and stronger tools to handle the equipment, the raising of overhead bridges, and the enlargement and change in many other ways of the facilities devoted to the service. In that period also very large expenses have been incurred in the reduction of grades, in straightening curves and in relocating bridges. The volume of traffic also has constantly increased, necessitating the enlargement of platforms and warehouses, and many similar changes and additions to their facilities in order that the carriers may meet the increased demands made upon them by the shippers. In reconstructing their tracks and in changing and adding to their facilities in this manner the carriers, wisely as we think, have endeavored somewhat to anticipate the future and have not limited themselves to an effort to meet only the current demands upon them for transportation. In some instances changes of the character described have resulted in the practical rebuilding of lines, and there are few roads in the territory under consideration on which work of this nature has not been done more or less extensively. To provide for these changed conditions the carriers have expended during recent years enormous sums in the aggregate.

much of which has properly been charged to their capital account; but a very substantial part of these expenditures has been charged to operating expenses through the maintenance accounts.

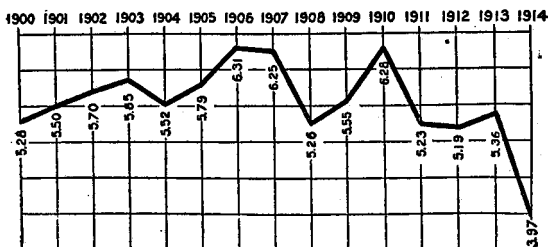
This discussion applies to the railways in the north-eastern part of the United States, where the railway traffic is more dense than in other sections. The facilities for handling the traffic are more nearly utilized up to the maximum of efficiency than in the more sparsely settled districts in other sections of the country. It may be that the time is still far off when the railways in the South and West will crowd this efficient utilization of their plant so closely that the law of diminishing costs will cease to have any controlling influence in American railroading. But if this rule once ceases really to operate in the East, we cannot hope that it will perpetually continue to dominate conditions in the country at large.

It is not claimed that this law has wholly ceased to work, even in the East. There are too many disturbing factors which tend to becloud the issue. But in the light of the facts and figures cited above, the conclusion can hardly be avoided that as a controlling factor it cannot now be depended upon to maintain railway rates at a low level.

If it were only the operating expenses which were forging ahead with the expansion of business, we might ascribe the phenomenon to some other cause. Or if it were only the capital investment which was tending to keep pace with traffic, we might say that the companies were charging to capital account what formerly went to running expenses. But this cannot be true, for the criticism of the railway policy of the last few years has been rather that they have sought to make as much as possible appear on their maintenance accounts. Neither can it be claimed that in these last eight years the companies have invested more heavily

than their traffic would warrant. The claim of the railways has been that their income was too low to warrant even enough investment for the public interest, and this claim has been allowed by the Commission in recent years. No, not only has investment tended to follow the expansion of traffic since 1906, but when we add to the increase of investment the greater operating expenses, part of which are unquestionably due to the expansion of traffic, we find a marked falling-off in the ratio of operating income to property investment; such a falling-off as cannot be ascribed to the slight decrease in average rates, nor to the increase in taxes. The ratio rose unsteadily till 1906, and with the exception of the year 1910, when owing to large increases in traffic, which could not affect the investment at once, the ratio rose to the average for the years 1906 and 1907; it has fallen rapidly ever since. Instead of 6.31 per cent in 1906 it was in 1914 at 3.97 per cent for the thirty-five eastern systems, as will be seen from the following chart:¹

CHART II—Ratio of net operating income to property investment for all 35 systems



¹ Chart H, 32 I. C. C. Rep., 348.

This, to be sure, is citing extremes of the curve, but if we fit a straight line to the curve of the ratio from 1906 to 1914 we none the less would find a very rapid and certain fall in the ratio; such a rapid fall that it would be very difficult to ascribe all this change from an increasing ratio (which would be expected to go with the great increase in traffic if this brought with it diminishing costs) to the increased prices which the companies have to pay for labor and supplies. It must be remembered that while this decrease in the ratio dates from about the year 1906 the general rise of prices began a full decade earlier. Rising prices which have affected other business since 1896 would not wait till 1906 to make their presence felt in rail-roading.

The situation with the north-eastern railways leads to but one conclusion in so far as it can be taken as an indication of what does or what will ultimately obtain with respect to the railways as a whole in the United States. The law of diminishing costs has lost its potency. We may not enter at once into a period of increasing costs. Invention, either mechanical or fiscal, may to a great extent counteract this new tendency. We may be able to maintain conditions at constant costs, or even retain a slight degree of diminishing costs, but the outlook at present is that, as far as economic factors are concerned, the power of diminishing costs is a thing that is passing. In our more settled regions railway facilities are so fully utilized that increased traffic must bring its share of increased outlay; and this is a condition which apparently must eventually apply to the country as a whole.

In earlier days the railway business was subject to both competition and the law of diminishing costs, and it may very easily be that there were periods when it would have been to the public interest that rates should have been higher

than they actually were. Certainly for brief periods rates were so placed in some localities, and we know that many railroads, if not most of them, have passed through periods of severe financial embarrassment. Injudicious investment and bad management, even with unrestricted monopoly, may easily fail to secure a living return. This was especially true when the railroads were in the experimental stage. But the experimental stage has passed. Unfortunately this is not the case with bad management. Yet the time of experimental risks and cut-throat competition has gone, and with it any likelihood that a well-located and well-managed railway will not be able quite easily to earn enough on which to grow and prosper, unless it be the victim of over-regulation.

When we notice the immense fortunes that were built up in the past and the continued enormous investment in railroads, our suspicions are aroused that, even in the period of competition, the trouble, taking it all in all, was not in insufficient earnings, but in misapplication of the earnings once they were garnered from the public. But this is a thing of the remote past, and why concern ourselves about it? Within recent times competition has fled before the laws of economics and of legislators. Then the railroads became monopolistic and their business became subject to the law of diminishing cost. Also, until quite recently, government regulation has been for the most part an adjustment of the proper relations between the various patrons. Under such conditions what can we expect?

We can expect that the railroad business would be prosperous. And at the same time we can expect that rates would be retained at such a moderate level that the other business of the country would be fairly prosperous also, and this without material restriction of rates by the commissions. As we have seen, when a monopoly is subject to

the law of diminishing costs, it is to its advantage to keep its charges fairly low in order that its business may expand. Even under such circumstances, however, we cannot expect this tendency to go as far as it would normally if the business were subject to the influence of competition. What the monopoly naturally seeks is the greatest possible net return upon its investment. And this rate of return is usually, even under diminishing costs, greater than the rate of return enjoyed by business subject to competition. The usual condition under unrestrained monopoly is that the rates are higher than they might be, without reducing the net income of the enterprise below the level of returns usual under competition. This fact requires no discussion; the railway field is full of examples. That the traffic over the line would be increased by a reduction of rates can also hardly be denied. That this state of affairs, when existent on a particular line or system, is always opposed to the social interest is not claimed. Neither is it a question just here whether or not the charges under such a system are higher than they would be if competition ruled in this particular field. The contention is that since monopoly rules in the railway field as a whole, the charges, to meet the private interests of railways, are higher and consequently the traffic less, than what would be necessary to give the railways a rate of return similar to what they or any other business could reasonably hope to secure under competition. This may be disputed, for it is a patent fact that some of the railways are not now earning a living. But it must be remembered that rates are subject to government regulation now, and again that these railways which are doing badly under present conditions would be doing far worse if subject to competition. They would then follow the way of the insolvent lines in the days of competition and *laissez faire*, and of the derelicts in the other spheres of business which pile up at every period of financial depression.

But we have shown grave reason to fear that the law of diminishing costs does not operate as strongly now as it once did; that, as conditions give evidence these last few years, the power of this economic law to keep rates down cannot be counted on as in the days when the railway property was less fully utilized. It cannot be claimed that the days of diminishing costs are over for the American railways. But the facts do point to the conclusion that the costs do not decrease with expansion of traffic nearly so much as they did formerly. And to the extent that costs cease to diminish this economic law ceases to hold down the natural level of the charges.

We may then reasonably conclude that, since the railway rates are not now held in check as formerly by the law of diminishing costs, the policy of their directors may legitimately be to raise rates at the expense of the expansion of traffic. No one would expect them so to raise rates that the traffic in future would be less than it is at present. That would cause disuse of their property and equipment as at present organized. Neither is it at all to be expected that rates, if unrestricted by government regulation or the consciences of traffic managers, would be raised so high as altogether to stop the expansion of business which, with occasional set-backs, is continually going on. The tendency would simply be to skim the cream of the business expansion a little more closely, rather more intensively than extensively; to raise the rates so as to retain only the more lucrative part of the business while at the same time trying to make it more lucrative. This is only legitimate business, especially when the public has able representatives who can look out for the social interests. It is the same general principle which operates in all lines of business enterprise; only in spheres subject to competition is this tendency held in close check by the underbidding of com-

petitors. As we have seen when the law of diminishing costs obtains, there is a strong limit to the tendency to raise prices even in monopoly, but this limit is not likely to be reached so early as in the former case. To the extent that competition and diminishing costs are both absent or negligible, the price, while still having its profitable limits, would naturally be placed higher than in either of the preceding cases, and this at the expense of the expansion of the business. The natural policy of the railway managers would then be so to raise rates that the amount of traffic actually handled would be considerably less than it would be if the rates were maintained at as low a level as they could be kept and still allow the railways to earn as much as investments in competitive industries. This tendency exists to a certain extent as soon as competition ceases to control, but it becomes seriously operative when the tendency toward diminishing costs loses its strength; and this certainly appears to be the situation at present.

So much for what the railway managers would naturally be expected to do under the circumstances. It is probably what many of their democratic shareholders would have them do. In so far as the private interests of the railways are all that are considered, or in so far as the social interests are only a matter of subsidiary importance, this struggle for net profits at the expense of expansion of traffic is legitimate business.

The statements of the railway managers as to their policies does not give any very clear light on the question. One might almost suppose, from some of their statements before the Interstate Commerce Commission, that their main object was philanthropy. But a more searching enquiry into their position shows that they are not proving false to their shareholders' interests, at least in this particular manner.

Turning to the Interstate Commerce Commission report on the Western Advance Rate Case, by Commissioner Lane, we find an account of the views of President Ripley of the Santa Fe, as expressed by him in that hearing:

"The maker of the rate," he says, "in the first instance must make the rate such as to permit of the freest intercourse and the freest interchange of commodities in the country, regardless of capital, regardless of cost—almost regardless of cost, but entirely regardless of capital." Discarding the elements of cost and capitalization, he was asked to define a reasonable rate, and replied that it was one that the traffic would bear, "and the amount that the traffic would bear," he said, "is that amount of charge at which it will most freely move over the lines of transportation." This definition he again repeated when he was asked if the phrase "what the traffic will bear" meant the rate at which the commodities would "most freely move over the lines of the carrier," to which he replied, "I will qualify that by saying, 'What the traffic will bear and still move most freely and enable the products and the manufactures of one part of the country to be used to the utmost possible extent in the other'."¹

As Commissioner Lane says, "This is the latest, the most modern, and the most liberal definition of this much abused phrase. Indeed, it is so liberal that it is impracticable unless properly qualified. Mr. Ripley would not have us to understand that a railroad is an eleemosynary institution."

It is clear that Mr. Ripley could never seriously have meant what his words would at first glance imply. If the last sentence quoted from his statement were to be taken literally we would have to look for the Santa Fe to advertise transportation free or at rates next to nothing. For it is a patent fact that no matter how low the rates be, if

¹ 20 I. C. C. Rep., 349.

they are charged at all, still more traffic might be hauled if less were charged. To move most freely traffic must be free of all charge. Mr. Ripley never meant that. He is a sane man. That he did not mean that the traffic be hauled as freely as the ability of the railways would allow is also clear.

Judging by other contentions made by this gentleman in the same case it would be hard to give the statement under consideration any more liberal interpretation than that given by the Commission, which says:

We assume that Mr. Ripley stated his principle of rate-making, not only with the limitation we have already noted—that rates were to be made so that, as a whole, they yielded adequate return to the carrier—but with the further limitation that they must be subject to the prohibitions of the law. Manifestly, under this principle all that stands between the shipper and extortion is the wisdom and the good sense of the traffic manager who makes the rates. If, in his judgment, it is advisable to carry a small volume of traffic upon a high rate, rather than a large volume of traffic upon a low rate, there is nothing to interfere with this decision, and all the consequences affecting the country at large, excepting now the right of appeal to the government as represented in this commission.

Rates being made upon this theory, the function of the traffic manager is that of a statesman; he determines zones of production and consumption, the profits of the producer and the cost to the consumer; he makes the rates, if he so pleases, to offset and nullify the effect of import duties and determine the extent and character of our foreign markets.

To make rates for transportation based solely upon the ability of the shipper to pay those rates is to make the charge for transportation depend upon the cost of production rather than upon the cost of carriage—to measure a public service by the economies practiced by the private shipper. This necessarily gives to the carrier the right to measure the amount of profit

which the shipper may make and fix its rate upon the traffic manager's judgment as to what profit he will be permitted. This theory entitles the railroad to enter the books of every enterprise which it serves and raise and lower rates without respect to its own earnings but solely with respect to the earnings of those whose traffic it carries. This is not regulation of railroads by the nation, but regulation of the industries of the country by its railroads.¹

Even disregarding the fact that a rate may be so high as to check the growth of business while still permitting the movement of all the traffic already built up, yet the charges may be unreasonably high from the standpoint of the shipper. As Commissioner Staples of Minnesota says:

If shippers generally would and could withdraw from the business as soon as any rate becomes unreasonably high, it is, of course, likely that the rates that would move the traffic would not be lifted above a reasonable point. But there is hardly a shipper who is in a position to do this, even if fully aware of the fact that his rates are unreasonable. Few, again, stop their business or withdraw from it at all. This especially is true in undertakings requiring large fixed investments in plant and equipment which can not be used for any other purpose. They are often better off with one or two per cent profit than with none at all, and will therefore continue to ship under rates that would absorb most of the profits, although they may be high enough to yield to the common carrier many times the profit to which it is entitled. It is manifest that such rates are not reasonable rates although the traffic moves out under them.²

This statement of affairs is an argument against the oppression of the vested interests of shippers already in the field

¹ 20 I. C. C. Rep., 349-50.

² *Proceedings of the Twenty-third Annual Convention of the National Association of Railway Commissioners*, p. 35.

and of the business already built up. If, as Mr. Staples' experience as Commissioner has shown him, the actual practice of the traffic managers is to raise rates, if possible, so high as to encroach upon the profitableness of established business, it must certainly be holding back much more traffic that might be moved if the rates were lower. Apparently Mr. Ripley's description of the principle of rate-making is, if a literal interpretation be taken, a Utopian dream. Prospective traffic is held up by the scale of charges imposed by the railways. And if there were no other restriction on charges than the ability to make net profits, there would be strong reason to suppose that the public interest was not being cared for.

It is only reasonable, as already pointed out, that the railway managers should seek to increase their profits. Even President Ripley, of the Santa Fe, whose remarks quoted above bear witness to his care for the social interest, sought to raise the charges on his system so that the profits might be raised higher than it had been possible to maintain them in the period when the Government had imposed no restriction. As Commissioner Lane says on this subject:

It is apparent that the carriers at present in this and similar cases are relying upon the restrictive provisions of the law which declare concessions from the published rate to be criminal and thus give stability to rates—at least as between carriers—to permit the elevation of rates to a standard which under the force of competition the carriers were unable to reach and maintain.

President Ripley, of the Santa Fe, in his testimony, which, it may be said, was the broadest and most statesmanlike of any given herein, said that in the past the rates in the territory through which his road runs had not been sufficiently high, although they had been made without any substantial regulation. Being asked if in his opinion the result of operating

railroads without regulation had resulted in not making a proper return to the carriers, he answered emphatically, "I do."

"And now, that we have regulation, rates should be put upon a paying basis, is that your opinion?" he was asked.

To which his answer was, "Yes."¹

The figures regarding the earnings of the Santa Fe which the Commission publishes in support of its refusal to allow the proposed advance in rates indicate that this line was not in a relatively bad condition financially. And the London *Statist*, which must be taken as an authority in no way prejudiced against the position of the railways said in an article in the issue for December 3, 1910, in regard to the general financial condition of the American railways at that time:

No one who acquaints himself with the condition of the American railway industry can fail to be impressed by the strong position it has now attained. . . There is practically no comparison between the physical conditions of the railways to-day with that of ten years ago. The main lines of the country are now furnished with very heavy rails, are provided with strong bridges, have easy gradients and moderate curvatures, all of which render travelling much safer than it used to be. The employees have derived great advantage from the new order of things, and in the past ten years have secured much higher rates of wages and conditions of labor. The return upon capital has also appreciably increased, and their improved credit has enabled and is enabling the railways to raise the additional capital required to deal with the growing traffic without difficulty—a matter of no small importance.

The ratio of the operating income to the property investment, as shown in the figures for the eastern railways, was not, to be sure, any greater in 1910 than the previous

¹ 20 I. C. C. Rep., 318.

high-water mark of 1906, but it was not appreciably lower and the appearances were not strong at that time that it was about to fall off seriously in the near future. In short, it is evident that the statements of the railway men, as quoted by the Commission, claiming a more remunerative rate than they had been able to secure before the legal prohibition of rate-cutting had built up their monopoly status, are a true outline of the policy of the managers. As the Commission says:

We inquire again, Why was not such a higher rate imposed long ago? The answer is, We could not maintain it; the pressure of shippers and carriers was too strong. May we not ask one more question, Why then do you seek it now? And should not the answer be, Because we think we can get it. We are united in mind and the law will safeguard our right to it. The reasonable rate was the one that could be secured. That definition remains as the carriers' guiding star.¹

That the Commission was right in its view of the case in refusing the advance in rates and that the carriers were asking too much does not necessarily follow from the fact that they wanted more than they got under competition. It is a well-known fact that competition in the railway field may reduce earnings much below that limit of fairness which is supposed to rule in other lines of business where competition operates naturally. But that such was not the case taking the situation as a whole, that the railways of the United States, previously to the legal restrictions on rate-cutting, had been earning too little, is disproved by the record of the enormous growth of our railways throughout this period. Investors did not put their money into railways to satisfy a passion for gambling. They in-

¹ 20 I. C. C. Rep., 356.

vested because it was profitable for them to do so. The railway enterprise bids for investment in the open market for funds in competition with other lines of enterprise, and the result has been a phenomenal expansion of the transportation facilities in this country. As Mr. Dunn, Editor of the *Railway Age Gazette*, says in a recent book, comparing the privately owned system of the United States with the government system of other countries:

Under private ownership, the development of the railways of this country has gone forward at a rate which, until recent years, has not been equaled in any other country. The capacity of the railway trackage and equipment provided in proportion to both area and population is not surpassed in any other country; and while there are sometimes shortages of facilities for hauling freight traffic, these are not peculiar to this country. Similar shortages occur on some of the other leading private and state railways of the world.¹

This is a comparison by a well-informed authority and one favorably disposed toward the railway interests. And the comparison is made with other countries where the lines are operated by governments which have no other restraints than economic limitations to prevent them from expanding their service, countries where, the railway management and the government being one and acting for the public interest, the service has been expanded without being hampered on account of rate restriction by a government commission. These railways, being owned and financed by the state, have been pushed in some instances, by the use of public credit, into regions which were unprofitable for years, if judged from a private economic point of view. And yet the American railways, being financed in the open money market, in competition with other possibilities for investment,

¹ Dunn, *Government Ownership of Railways*, p. 376.

where the investor had reasonably good knowledge of the profitableness of his investment, have, unless very recently, expanded more rapidly than the railway systems of any other country. What better test could be found as to the sufficiency of the railway income during this time of expansion?

No doubt the railway men in their zeal for pushing their work feel that the expansion might nevertheless have been still greater. But the history of our railroading shows that expansion may be too rapid. On the stimulation of a boom, railway building may be carried farther than the needs of other business for the average times between the booms. Such an expansion can only end disastrously. Provided that their activities be held in check by the Commission, it is natural and fortunate that the railway managers push their expansion as fast as they may. Since the Commission has become a rate-restrictive body, such a tendency on the part of the railway interests will prove of advantage to the country in counteracting the natural tendency of any body of men to push restriction toward an extreme. But during the period when the railways were independent of such restriction, the income was sufficient to warrant an expansion which has kept pace with the country's needs.

If this be so then when we consider the position of the Santa Fe in its brief in the Western Advanced Rate Case, we naturally conclude that the railway managers, while not wholly unmindful of the public interest are yet mainly actuated by their own. They say: "The case of the Atchison, Topeka & Santa Fe Railway Company is that American railway rates never have been high enough and that the public never has paid adequately for the service which it has received."¹

¹ Brief of the A. T. & S. F. Ry. in Western Advanced Rate Case.

The conclusion must be that as the commission says, "The reasonable rate was one that could be secured. That definition remains as the carrier's guiding star." The railways while not unmindful of the public, put their own interests first. Their tendency is to raise the rates so as to retain only the more lucrative part of the business while at the same time making this more lucrative. This tendency to off-set expansion is becoming greater as the railways are less subject to the law of decreasing costs.

This is the reason why we must have commissions with authority to restrict the rate-making powers of the traffic managers. In addition to their authority to deal with discrimination between shippers, the commissions have for some time had the power to restrict the rates even when there was no question of discrimination. The reason for this is the social necessity to off-set the monopolistic price-making power which economic forces and the law of the land have given to our systems of transportation.

Such being the case, on what principles should government regulation proceed in its dealing with the regulation of systems of rates? Where the relative advantages or discrimination between the shippers is of less relative importance than the question as to the reasonableness of charge as between the railway interest and the shipping public, what principles must govern?

There are two principles which bid for acceptance, the principle of cost and the principle of value of service. Each of these has its advocates; each quite different meanings, and each, as will be seen, has its place in the theory of rate regulation.

The theory of cost has been very vigorously attacked. The railway men used to claim that cost had nothing to do with rate-making; but recently they have learned that it is a most useful principle with which to defend themselves

against the zealous commissioners. Moreover, the two arguments which have been most potent against the cost principle lose their force at the present time and for the question in hand. It has been claimed that cost figures could not be computed, that the data for the application of this principle could not be found. The day when this argument could be effectively used, except for the cost figures of particular elements of traffic, passed with the application of the accounting methods inaugurated by the Interstate Commerce Commission. Cost figures are continually being used by the carriers in their defense and have had especial significance in the cases involving an attempt to increase schedules of rates as a whole, as in the great cases of 1910-11 and the recent five-per-cent cases. These cost figures may lack precision as yet, but it is hoped that the valuation work of the Interstate Commerce Commission may greatly improve the situation. The other great argument against cost is one that does not apply to the specific problem on hand, but which will be discussed later, namely, that regulation on a cost basis means that the cost of each element of the traffic should be worked out and the rate made strictly in accordance therewith. For the present the discussion is confined to what should be the guiding principle in the regulation of schedules of rates as a whole, leaving, for the present, the question as to the proportion of the burden which each element of the traffic should bear.

President Ripley, to quote him again as an able exponent of the railway man's attitude, says, "I think they (the commission) should consider the value of the service first and foremost and leave the cost and the value of the properties to altogether secondary consideration."¹

The Interstate Commerce Commission also at first ac-

¹ 20 I. C. C. Rep., 349.

cepted the value of service as the true principle of rate-making. As they said in their first annual report: "Such method of apportionment would be best for the country because it would enlarge commerce and extend communication; it would be best for the railroads, because it would build up a large business, and it would not be unjust to property owners, who would thus be made to pay in some proportion to benefits received."¹

It should be noticed that in the first stages of its work the Interstate Commerce Commission was dealing principally with the question of rates on particular commodities, and judged these by comparison with other rates by the criterion of value. They have not confined themselves to the view expressed above in their dealing with whole-rate schedules and rates whose reasonableness was to be judged aside from the question of comparative advantages to shippers.

For a view at the other extreme of the question, Commissioner Thorne, who is very well known at present in the railway world, may be quoted:

If you do not take cost of service as a basis, but adopt value of service to the shipper you are taking a basis that becomes impossible for practical application. The value of service on one railroad to the shipper depends upon how much he can get the same service done for by somebody else, or else upon the improvement in the value of what he has to sell. When the railroads are all united as they are at the present time value of the service without competition is the difference in what it costs to haul stuff by railroad compared to what it costs to haul stuff by wagon.²

This statement is evidently addressed to the point in view, *viz.*, the mere question of fairness between the rail-

¹ *First Annual Report of the I. C. C.*, pp. 30-32.

² Letter of November, 1911. (Private correspondence.)

way and its patrons. The inference is that the value of the service can be measured only by the improvement in value of the commodity by virtue of the services performed on it by transportation, or by measuring the cost of the next best substitute. These are in principle criteria by which we measure economic value. But are they of any use at all in rate regulation?

Considering first the improvement in value from the transportation. This reduces itself to the railway rate between the two places. The price of wheat is higher in New York than in the West by the charge for shipment. Of course, since New York stands in great need of wheat or its products, this charge might be placed at a higher figure than that at which it now stands, and still wheat would move. The demand for wheat is elastic. It would not entirely cease to move with a higher price, but, as we have seen is the general rule, the amount carried would decrease with the increase of the charge for carriage. What, then, is the value of the service of carriage? It is manifest that the possible value is an unsettled quantity. There are consumers to whom the possible value of a limited amount would rise to famine prices. Even these persons would use more if the price were less, and there are those who could never pay the higher prices at all who do consume largely at lower prices. There are even uses to which wheat might be put which are cut off at the present prices. One might eat two sandwiches instead of one for lunch. It is very evident that there is a series of potential values for any economic good the supply of which is subject to variation. This series of potential values makes up what is known as the demand curve for the article or service in question. It is along this series of possible values that monopoly may push up its price till the amount demanded so falls off as to decrease the actual profit. In so far as transportation

charges make up the price in question it is at this upper limit along the demand curve that the monopoly charge is fixed, and it is at this point that a monopolist estimates the value of the service. It is the only definite point along the series that is determined by the consumers or by their demand for the goods in question. It is the point of maximum social ability to pay.

Manifestly this price is of no use to the regulating commissions. No well-informed monopolist would exceed this limit; and if he charged less, the public would be only too happy.

The other possibility for the measure of value of the service is what is called the marginal value. This is the usual economic measure of value. It is the value to the consumer who is least able to pay and still does pay, or the lowest possible use of the good or service to which it is actually put; it is the lowest potential value in the service that comes to be included among the actual transactions. Is this criterion of any use to us for the question in hand? Clearly it is not. It is about as much good as the formula: "That which is, is; that which is not, is not." If the price be fixed at the monopoly limit, the marginal value will be the same as this price, for consumers will enter or leave the field, according to their ability to pay, until the market be adjusted to the price. If the price be reduced, the marginal value will follow it to the new level. To be explicit, if the price be lowered, consumers will enter the field—or if the price be raised, consumers will leave—until the last one in, whose offer is always the marginal value, is just able to pay the price as fixed. The demands of customers of the railways, or, in other words, the market for the railway service, only fixes the limits of profitable price and the amount of service demanded at the price as fixed by the railroads. The marginal value is the same as the price, and

is measured and determined, within the above-mentioned limits, solely by the price. If this be so, the improvement in value due to the transportation, so far as it is at all measurable, reduces itself to the railway rate between the two places. Clearly, the rate is of no use to regulate the rate.

Now what is to be said concerning the other criterion, the cost of the next best substitute? Commissioner Thorne puts this in the worst possible light, and at the same time very clearly.¹

It is impossible that the cost of carriage by wagon should measure the value of railway service. The great bulk of the traffic that now exists simply could not move at all at such rates as wagon carriage would necessitate. It would not exist. The relatively cheap transportation has brought into being an enormous service whose value per unit of transportation is nowhere near the charge which would be necessary to maintain wagon transportation. Of course no one argues that railway rates should equal wagon rates, but such an extreme statement helps to show the impossibility of measuring the value of the service for rate-making purposes by measuring the cost of a different means of transportation.

It might be argued that a fair measure of the value of the railway service to the public would be what it might cost the public to supply the service itself; not necessarily to build new lines, but to acquire and operate the old systems. But it is very difficult to see how the standards of one system could measure fairness for another entirely different system of affairs. If we were to change to an entirely different order of operation it might very easily be that the service, including the amount of the traffic, would materially change. The change would probably not be at all so strik-

¹ See page 56.

ing as that which would be brought about were we to revert to the pioneer wagon, but we could have no assurance that it would be the same service that would exist. If this be so, then we need not talk of measuring the value of one service by the cost of another.

As matters stand we are committed to our present system of privately owned and operated railroads. It is the regulation of the charge for this service as it now exists, or may exist under private operation with governmental regulation, that we are considering. And we cannot, from considerations of the cost of any other potential service, impute any value to this actual service that will be of any practical assistance to us as a criterion of the fairness of rates on this actually-existent service. What we want to know is what principle of regulation will be the best for our present system of privately-owned railways, for what would be fair in another system might be very unfair to them. It would be very unfair to compel them to maintain the present service at rates unremunerative to them just because a system financed and operated by the government might give the service at lower rates. And on the other side, if the rates under government operation would be higher than at present, that is no reason why the rates of our present system should be increased.

In short we have not discovered any criterion for just regulation from either of these possible measures of value. It may be possible, as we shall see later is the case, that value is of great use in determining the justice of rates comparatively, when the question is as to the comparative burden to be borne by different articles, but the value of the service is such an indeterminate quantity that by itself it can give us no solution of the question of regulation of whole-rate schedules. There are only two points in the series of potential values that are even tolerably definite, the

point which will yield the greatest monopoly profit, and the marginal value or the value to the least able of the actual patrons. If the first of these be taken as the real value to be considered then we need not talk of regulation, the railways are as able as any regulative commission to ascertain this, and it is to their interest to charge in accordance with it. As for the marginal value, economically speaking, this is the actual value of the service. It is at the margin that we measure real value. But it is very evident that this point on the scale is fixed simply at the rate whatever that may happen to be. The only conclusion that we can make is that value of service by itself can afford no criterion for regulation, where the question is of schedules of rates taken as a whole.

What, on the other hand, can be said for the principle of cost? Is there anything definite about cost that will make it available for the purpose in hand?

It may be seen by reverting to the discussion of the question of the operation of the law of diminishing costs in railways that the element of cost is not definite. The cost varies with the amount of the service. It may be less, or it may not be less, with an increased traffic, but the chances are very strong that a change in the volume of traffic will make a change in the cost per unit of this traffic. In taking a period of several years we find that the costs follow the change in the volume of the traffic, yet within this period the costs per unit would fluctuate widely. The amount invested cannot fluctuate punctually with the fluctuations of business. It can hardly decrease when traffic falls off, and its increase cannot follow the increase in traffic at all closely except as we take into consideration a period of several years. Then, again, when we investigate practical conditions, we find that in taking any large area into consideration there are several lines handling the same service, which

must necessarily be taken on the same terms by all, but the costs on the different lines are not the same even at any particular point of time. The cost of railway service is not so simple or definite a thing that we can readily say whether or not even systems of rates on traffic already in existence conform to the cost. Moreover, if we should be able to fix rates on the basis of cost, and if this should bring about a change in the rate, there would follow a change in the amount and volume of the traffic that would react on the cost and necessitate a recomputation.

Is the problem then hopeless? Can we arrive at no solution of the question as to the criterion for regulation? It is doubtful if we can ever find one single principle that will solve the riddle. Just as in our ordinary competitive economic life the price depends on both the supply and the demand, so here we must take cognizance of both principles, both the value and the cost.

But this does not mean that these two principles are of equal weight in regulation or that they are equally workable as criteria. Neither does it mean that even in conjunction the two principles can be worked out in any very simple manner. The value principle cannot be utilized simply by considering the marginal value, for this depends directly on the rate. We must rather proceed in this direction by investigating what the traffic will bear, or, more explicitly, *how* the traffic will bear the rate that may be imposed. The matter of interest is not any particular value, which varies from patron to patron and even with the same patron, but the series of potential values. We want to know how much the service will be used at the different points in a possible scale of charges, how the amount of traffic will depend on the rate. This, so far, is just what the railway manager wants to know, only he wants to know how the traffic varies with the rate in order that he may place the rate so as

to secure the greatest net profit. The public wants to know this relation so that the traffic may be built up, even at the expense of the income, until the rate shall fit the cost to the railway of handling that amount of traffic. Is this want of the public just and reasonable, and is it workable?

The cost principle, disregarding the troubles of segregation for the different classes of traffic, is more workable for regulation than the value principle. For any one class of service the law requires that the charge must be the same. So, taking this as a unit, all that we need do, all that we can do, is to take the average cost of this branch of the service, and this, while the amount of traffic remains constant, is a simple quantity for all the items within the class. But while this cost remains the same, the value to the patrons varies within wide limits. The passenger traffic between New York and Philadelphia is sufficiently constant for the railways to know how many trains to provide and how many cars for each. But who could say what the value of the service is? It varies all the way from those who look at the four dollars a long time before they buy their ticket to those who would not forego the trip for perhaps hundreds of dollars if there were no other means of transport. The reason that cost is more simple than value in this case is that the patrons are far more numerous than the railways. The railway costs may be a variable scale, but so are the values to the patrons; and so we may say that the values are more variable than costs, as patrons are more numerous than railways. Costs vary somewhat about normal, while values vary tremendously from the low-level of shut-out would-be customers to what a very few could pay were they forced to it.

And to stress this principle seems just and reasonable for the very reason that it is the element which would be left out unless stressed by the regulators. The element stressed

by the railways is certainly not this; judging by their own statements they would not consider this were they not forced to in self-protection. Not, as repeatedly stated, could we reasonably expect them to do so. The public is able to look after its own interests. It cannot expect the railways to do so except as it is profitable for them to do so. The public cares for the railways only as it is a question of its advantage. And so the principle stressed by the railways is that of value in the sense of what the traffic will bear. What the railway men naturally have in mind is what the ability of their patrons may be to pay. They have been held in check in the past by the law of diminishing cost, by competition, by regulation, and, if corporations have consciences, by their consciences. But still this has been, and is, their ruling principle. Is it not just and fair then that regulation should emphasize the other element of the two which have so far proved themselves necessary in other economic fields? The application of the principle of cost is but regulation of rates on the standard of that for which the railways are able to supply the service.

As stated above, the operation of this principle would, if the rate were originally above this level, reduce the rate and so extend the traffic until the limit was reached in the ability of the railway to provide the service at the prescribed rate. Provision must be made for the fact that the cost would change with the change in the traffic, and here again we must know the extent of the influence of diminishing costs. But it seems no more unreasonable to suppose that the ability of the railway to supply the service would be more difficult to ascertain than the ability of the public to bear the charge.

Does not the social interest demand the application of this principle in regulation? That the railroads are public servants is legally established, and acquiesced in even by

the companies themselves. Their function is to provide the service of transportation. If so, then certainly they should provide the greatest possible service. Their service should be limited only by their ability to provide it. The railways exist for the public, not the public for the railways. Extension of the railway net, limited only by the ability of the patrons to pay for it, is not our goal. Railway extension must proceed as the public business demands it rather than as it allows it. But the public business, being the ultimate social end of transportation, the end for which we have fostered the railways and allowed them to become monopolies, should be held in check only by the ability of the railways to provide the service. And this ability of the railways to provide the service is what is to be worked out by the theory of cost.

The enforcement of this principle by regulation is not at all unfair to the railroads. It merely supplies by governmental law what railway men and the public expected to dominate by force of natural law. When the railroads were being established, it was expected that they would be subject to the price-restraining force of competition. The result expected was as great service as possible for the price. It was not the competition itself that was wanted at any time. And experience has shown us that competition really did not give us this in the railway field. Competition was injurious to both the railway and the public interest, so we have practically abandoned it. But we know the result we wanted from it, and can obtain this result with more fairness to the railways than by the use of competition. Certainly it is only fair, then, to allow the railways to abandon competition and to secure if possible this result of the greatest possible extension of business through the saner method of regulation. And this principle of costs affords a most useful limit to the activities of over-zealous commissioners.

This theory of cost to the railways has been worked out along the line of an attempt to allow a fair return to the railways upon a fair valuation of their property. Of course, in costs we must provide for all running expenses such as labor and supplies. But these items are so easily ascertained and so patently must be provided for, that they do not require much discussion. To be sure they constitute a large part of the railway costs and are a first lien on the income and it must also be noted that, rising as rapidly as they have been doing of late, they are playing a tremendous part in railway finance. But they must be met; no one challenges that. There is no problem in theory as to that. There is, however, a big problem as to what is the criterion of the ability of the railway to supply the services of transportation.

As stated above, the theory is being worked out as a question of allowing the railways a fair return on a fair valuation. To this, then, we turn. An attempt will be made to sketch briefly the development of valuation and the principles involved in it, and also to discuss what is the return to which the railways are entitled, whether it be based on a valuation of their property or on some other standard. Whether or not they are entitled to a return as an earning on a certain property valuation we may question very easily, but, at least in view of the enormous work that is being done on valuation, we must expect to find it a sufficiently good criterion of railway ability to warrant a careful consideration. And we also must attempt to discover what part the value of service plays in the theory of rate regulation.

CHAPTER II

VALUATION AS A CRITERION OF RAILWAY ABILITY

WE turn now to the consideration of the ability of the railways to supply the service. This is the question of cost. It is the question of the cost of the service as a whole rather than the cost of carriage of particular elements of the traffic. In fact we can for the present set this latter phase of the subject entirely aside. We want to know how far the regulating commissioners may go in principle in extending the traffic or service of the railways by means of rate limitations without trenching on the rights of the companies, or, what will be shown to be the same thing, the abilities of the railways to supply the service.

As already stated, this is a question of cost. It may very easily be that nearly one-half of the gross railway income goes to labor, as claimed by the Pennsylvania Railroad. But this element as well as that of fuel and other strictly running expenses must be taken out of the gross income before we arrive at the corporate income, the income on which the railways themselves live and grow in order that they may supply the service to their patrons. Such elements as labor must unquestionably be provided for, and, if we overlook the matter of more or less unavoidable wastes, we may hold that in so far as they affect the problem at issue their amount is no greater and no less than necessary. They must be provided for before arriving at net corporate income, and their amount is decided by economic laws which it is not worth while here to call in question. But as to the bearing of the other great division of the costs, that of the

net corporate income which is due the railways, there is great room for discussion.

If it were only a matter of deciding what was due to a particular railway of known capital value under settled conditions of traffic and interest requirements, this element would also be simple. But such is in no way the case. It is a question of corporate costs for the situation as a whole, with a view to the fact that there are rival lines of different ability in the same field, that interest requirements are not settled, that traffic conditions are not only subject to change, but that what we want is that traffic should expand as much as it may, and last but not least that the true capital value of the lines is not as yet defined. Leaving for the next chapter the discussion of the rate of return on the property, and assuming that such rate of return may be determined, let us now consider the problems as to the relation of the value of railway property to the regulation of the systems of rates, and the principles upon which the value of this property is to be determined.

Much had been said against the policy of basing railway rates on any valuation of the property concerned. But no better criterion has been devised whereby it is possible to avoid the monopoly advantage of the companies over their patrons and to relate the rates to the corporate ability. In fields of enterprise subject to competition, capital value is measured by the earning power. Manifestly this criterion of value is out of the question for making a valuation for rate-regulation purposes. But even in competitive fields the earning power is only one side of the question. If new capital stock can be added, there is a very definite relation between the estimation of value placed upon the vested capital and similar goods devoted to other uses. The earning power limits the investment in any particular enterprise, but the value is determined, not by the earning power in

the particular use alone—unless possibly this be the least profitable use to which the goods in question are put—but by the earning power in all uses, and this value is measured by the least profitable use to which the goods are put. It is objected that property invested in the railway enterprises is fixed in this particular business. This to a certain extent is true. But it is none the less true that there is a constant flow of goods, if not out of the railway enterprise, at least from markets where other enterprises compete into the railway use. There is a constant connection between railway investment and the market for similar goods. If this be so, it does not seem unreasonable to hope that a fair and workable method may be found of so estimating the value of the railway property that the corporate ability may be calculated with sufficient accuracy to afford a just standard to which to conform the rates and extend the traffic of the companies. Moreover, the principle of valuation for rate-making purposes has been very widely upheld by the courts, advocated by the commissions and even utilized extensively by the railways themselves in questions involving the fairness of rates.

The task of making a valuation of the American railways is one of almost appalling magnitude, and the problems involved in the task are fully in keeping with their setting. It is a situation in which Hercules would have delighted when he was young and possessed the confidence of the race. But we can no longer call on him; men solve such riddles themselves now. The task involved is to ascertain the value of 251,000 miles of railway, and since we are not yet sure on what basis the valuation will be settled, the value must be found from all points of view. The courts have given no simple and definite criterion by which the value shall be measured. The working-out of this problem is still before the country, and, consequently, in

the investigations all factors which may be considered or form part of the final rule of measurement are to be found out. Forty-six per cent of the world's total railway mileage must be measured with all the yardsticks that may finally have a part in the standard of value.

It seems almost unnecessary to say that such a tremendous undertaking would have been avoided if it had been supposed to be possible to neglect it. The railway commissioners who have been advocating this work and who have been, and are, actually taking part in it are very practical men of affairs. They are quite fallible and liable to error, but no one could accuse them of entering this field for the pleasure of idle speculation. These questions of regulation have been forced upon the commissions in the execution of their public duty. Some of them have been brought up by the railways themselves; some have been forced on the parties involved by the decisions of the courts; and some simply have evolved in the general attempt to regulate the transportation of the country on a basis which will be fair to all interested parties. Valuation has been brought to the front in all of these ways.

The importance of this valuation and of the methods used in carrying it out can be more readily appreciated when we see what immense issues are at stake. It has been estimated that there are at least \$15,000,000,000 worth of railway property in the United States. That amount of property is not a thing to be dealt with lightly. It not only is a considerable portion of the national wealth but it is a very vital portion. The railways have well been called the arteries of the nation and when we undertake to regulate such an important function we need to proceed very carefully.

It might be thought that in such an immense sum the errors which would be made in valuation would have a

rather slight significance. Many errors naturally will be of this character, errors which are slight and which will neutralize each other. But there are difficulties of a totally different character; difficulties which bring in errors that instead of being hidden by the size of the value involved will rather be multiplied by it. Just here a single example may be cited as illustrative of many such cases.

In making a valuation, the various boards have usually considered it necessary to allow for what is called contingencies in addition to the other items of value. This item of contingencies is provided for in a percentage added beyond the other valuation, but just what percentage it shall be is a matter of no small dispute. Professor Cooley states in regard to this factor that "Engineers in making estimates usually allow ten per cent on the average".¹ Mr. Jurgensen, chief engineer for the Minnesota Commission, fixes this item at five per cent.¹ Mr. A. I. Thompson, formerly of the Oklahoma Commission, and now of the Federal Valuation Commission, states that the records of the companies demonstrate that this item ranges from one-half of one per cent to two per cent.¹ Massachusetts, on a conservative estimate, allowed two per cent on the total value of the New York, New Haven and Hartford Railroad.¹ Now when we apply this difference of percentage to such a figure as \$15,000,000,000 we see the seriousness of the problem. The difference in method in this one item alone would make a difference in valuation sufficient to pay for the expenses of the valuation of our transportation systems more than one hundred times. The difference in procedure makes a difference between \$150,000,000 and \$1,500,000,000. And when we find that there are other

¹ Cited from *Proceedings of the Twenty-fourth Annual Convention of the National Association of Railway Commissioners*, p. 35.

problems of fully as great importance which are still unsolved and which leave railway regulation on very unsettled and different bases we begin to realize the seriousness and importance of making a very careful valuation on a systematic basis.

The problem of valuation has arisen from an attempt to put the transportation of the country on a basis which will be fair to all the parties interested. Judging by the utterances of many of the commissioners it is a problem which has been pressing itself with increasing force upon their attention as they have been struggling to execute their duties. Originally there was little or no idea of any positive relation of railway rates to the value of the property. This was very natural under what were practically frontier conditions, in a period of such rapid expansion that we were too busy to count costs. But the time came when the shippers began to count the costs of shipping and thought them too great. They thought that the railways were securing too heavy earnings and that too on a capitalization far in excess of what the actual value of the properties would warrant. The shippers were indignant, they were in earnest, and they succeeded in inaugurating a campaign of government rate regulation that amounted to restriction. The railways had stated their rate policy as one based on "all the traffic would bear". The policy of regulation now inaugurated under the commissions has been described on the other hand as being based on "all the traffic managers would bear". Naturally enough this limit was soon reached, if it be interpreted as all the managers would bear without a struggle, and litigation began.

The regulation then assumed somewhat the shape of what the courts would make the traffic managers bear—the legal limit. This limit was found as an application of the Fourteenth Amendment, the railways claiming that they

were being robbed of their property, or, what was counted to be the same thing, of an income on this property. This introduces an interesting phase of railway defense under the plea that the proposed rates were confiscatory, a plea that has played a leading rôle, notwithstanding the very hazy idea of the real value of the property involved.

The most famous decision that has been handed down on this question is one that has been quoted so frequently that we almost know parts of it by heart, that is the case of *Smyth vs. Ames*, opinion by Mr. Justice Harlan:¹

We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public, and in order to ascertain that value the original cost of construction, the amount expended in terminal improvements, the amount and market value of its stocks and bonds, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth.

Out of this decision has grown the principle of a minimum standard below which the regulating commissioners should not attempt to force rates. In it is laid down a more

¹ 169 U. S., 46.

or less indefinite idea of that value of the property upon which the railway is entitled to demand a "fair return". The court has been criticised for vagueness in its definition of railway value, but it simply put into as definite form as possible the principle of valuation as worked out up to that time. And, fortunately for a regulative policy still in the formative stage, and applied to varied and changing conditions, it was left to the wisdom of subsequent commissions and courts to determine what weight given to the specified factors might "be just and right in each case". The decisions and opinions following this have taken account of these factors, and have been working out a system of administrative procedure based upon them. And the railways have found the decision an invaluable bulwark of defense as establishing a limit beyond which restriction could not go in its policy of "all the traffic managers would bear". Unfortunately, the commissions have not yet come to an understanding as to what weight, if any, each and every factor specified in the above opinion should be given in determining valuation as a basis for railway rates.

The use of this principle of relating rates to returns upon the value of the property grew up, as we have seen, as a minimum norm in regulation. The idea has also been growing that the maximum allowed for rates should bear some relation to the same norm. Perhaps the public had in mind the ethical view expressed in the proverb, "What is meat for the goose is meat for the gander". But the commissioners appear to have been influenced originally rather by the dual idea that their public duty called them to restrict rates to as near this base as possible and that the force of competition would, if applicable in this field, have the same effect. The popular idea has been that the effects of competition in so far as it has worked sanely, were salutary. The commissioners held to the same view, and have worked

on the theory that they should regulate on the principle on which competition would operate if applicable in this field. As regulation has progressed, they have hoped to build up a system of scientific rate fixation, using the valuation of the property as a basis. Naturally they have turned their attention toward ascertaining the true valuation, and, finding the data supplied by the companies themselves insufficient, they have in some important instances made an official inventory of the value of the property under their supervision. In this matter the state commissions have taken the lead.

By the year 1909 eight of the states had already valued, or started to value, the railway property. These states were, Minnesota, New York (confined to city lines in the first district), Oklahoma, Oregon, South Dakota, Texas, Wisconsin and Washington. Besides these, Nebraska had shortly before passed a law authorizing the appraisal of the physical properties of the common carriers, and appropriating \$40,000 for the purpose, and the state commission had organized an engineering staff to proceed with the work. The North Dakota Commission had made a recommendation to the legislature for a law to provide for physical valuation and for an appropriation to this end.

With regard to the Minnesota Commission it is stated that,

With a view of establishing a solid foundation upon which to construct, for the future, a fair and equitable basis of rates, the commission began in June, 1906, an investigation of the costs of reproducing the railroads of Minnesota, and, incidentally, to secure all available information and data as would aid in determining the original cost thereof.¹

The Washington commission stated in 1909:

¹ *Proceedings of the Twenty-first Annual Convention of the National Association of Railway Commissioners*, p. 79.

The principle item in the work of the Railway Commission of Washington during the past year has been in closing up the work of valuation of railroads in the state and the determination of rates based upon such values.¹

Thus it is seen that by 1909 the work was well advanced in some of the states. A statement of the Valuation Committee of The National Association of Railway Commissioners, however, shows the inadequacy of the work:

We believe that these values must be authoritatively established before there can be such supervision and administration, both by state and national authorities, as will do the greatest justice to both the carriers and the public. One of the chief objects of our organization is to promote uniformity; this it seems impossible to accomplish without having a reliable valuation of the railway properties, and in the belief that the Federal Government is better equipped to conduct this work than are the several states.

Your committee recommend that action be taken to urge upon Congress the necessity for having as soon as possible a comprehensive and authoritative valuation made of all the tangible properties of the railroads of the country under the direction of the Interstate Commerce Commission.

This valuation to be made with a view to segregation by state lines, then every state could avail itself of the valuation for all purposes to which it could be applied.²

By the year 1912 the Federal Government had not yet started the work of valuation, and up to that time the work had been still going on in the separate states. The records for the year show that ten state commissions had recently made, or were then making, elaborate inventories and valuations of all the railroads in their respective states. Com-

¹ *Proceedings of the Twenty-first Annual Convention of the National Association of Railway Commissioners*, p. 167.

² *Ibid.*, p. 333.

prehensive valuations to be used for rate making, as well as for other purposes, had been made recently, or were being made in twenty states. In many of these, there had been no extensive or thorough inventories or appraisals undertaken. In three of these states the valuations were made for short lines in connection with certain litigation. In one state, Texas, a comprehensive valuation was made about twenty years ago. In two states, Michigan and New Jersey, elaborate valuations had been made shortly before solely for taxation purposes. In one state, Massachusetts, valuation had been undertaken solely for the purpose of investigating the soundness of a company's securities. In another state, New York, several individual properties had been valued for various purposes. And in Oregon several properties had been valued, but not all.¹

As for method and standards for valuation, there is little agreement among the states. The Valuation Committee of the National Association of Railway Commissioners for 1912 states:

At the present time great confusion exists in the methods pursued by the different states. There are hardly two states which have agreed upon the same rules. The actual effect in dollars and cents, caused by slight variations in methods, is quite remarkable.²

One of the Mississippi commissioners stated in regard to the work of his commission:

I cannot say that we have any specific plan by which we reach the value of the same, basing the valuation according largely to the earning power of the property. The valuations are made more for the purpose of taxation, yet the earning

¹ *Twenty-fourth Convention of above*, p. 46.

² *Ibid.*, p. 36.

capacity of a railroad has something to do with rate-making.¹

We note the work of the Oklahoma commission in contrast with this indefiniteness. This state is making a valuation for any purpose for which it may be desired to use it. It is first undertaken to find out the original cost of the right of way, original construction and all betterments to date. It is also required that the replacement value of the same property be ascertained. The plan provides for the

allocation of property and accounts as between states; the separation of state property and accounts between terminal and line; the apportionment of both line and terminal property and accounts between freight and passenger; the separation of main line and branch line property and accounts, showing the data for each main and branch line separately, both as to line and terminal; and the apportionment of main and branch line freight and passenger accounts, both line and terminal, between intrastate and interstate.²

The Wisconsin commission has made a complete valuation which is used for both rate-making and taxation purposes. They say that the fair value of the property can best be determined, as a rule, from such factors as the original cost of construction and development, and from the cost of reproduction of the same under conditions which are normal, and when, in both cases, full consideration is given to the depreciation that has taken place in the property because of age, use, and other reasons.³

In the State of Washington practically all the railroad property has been valued by the commission for rate-making

¹ *Proceedings of the Twenty-fourth Annual Convention of the National Association of Railway Commissioners*, p. 41.

² *Railway Age Gazette*, July 3, 1914.

³ 11 W. R. C. R. 1, 14 A. T. & T. Co. Com. L. 197, August 23, 1912.

purposes, but on a principle rather different from the above. In fixing the value of the railways of the state for rate-making purposes, this commission "has made market value the basis." The commission, following the steps indicated in *Smyth vs. Ames*, has considered cost, cost of reproduction, depreciation, the amount and value of stocks and bonds, the population and density of traffic along the line, the physical characteristics of the road and "every element which the commission believed an intending purchaser would consider."¹

Enough has been said to show that, while a great deal has been done toward valuation, yet the Association's Valuation Committee is fully justified in calling the situation confused even in the sphere of the state commissions. In the sphere of federal regulation, nothing had been done by the government to ascertain the true value of the properties until a recent date. And this need was felt.

The Interstate Commerce Commission in its opinion on the proposed advance in rates in Official Classification Territory in 1911 said:

The commission has been compelled to dispose of this case upon the evidence available, but there is no testimony tending to show the cost of reproducing these properties. It is plain that a physical valuation would introduce into the calculation a new element which might lead to a different conclusion. Congress ought to authorize a reproductive valuation of those railroads subject to federal jurisdiction. The interest of the public ought not to depend upon a valuation made entirely by the owners of these properties, no matter how honestly the work may be prosecuted.²

Five years before this time, Senator LaFollette offered

¹Whitten, *Valuation of Public Service Corporations*, p. 45.

²20 I. C. C. Rep., 243.

as an amendment to the Dolliver-Hepburn bill the proposal that Congress provide for a valuation of the railroads. The amendment was, however, rejected by an overwhelming majority in the Senate. By 1913 the country's ideas in regard to regulation had so developed that the measure being again introduced, was passed, not only without any real opposition, but without provoking any serious public comment. And now, after the preliminary preparations, the Interstate Commerce Commission is fully launched upon the work of making a valuation of all the railroad property in the country. A similar task of such magnitude has never before been undertaken.

When Germany took over her railways she made no such attempt to secure a capital valuation. The principle of payment, simple and just under the circumstances, was employed of giving the stockholders bonds yielding an income equal to that which they had enjoyed from their shares in the corporations. England, on the other hand, when she endeavored to inaugurate a settled policy of regulation, simply declared that all rates in force at the time of the act were to be considered fair and just, unless proof to the contrary could be established in regard to particular rates, and all rate increases from that time on must be proved to be necessary. But the United States is not prepared to purchase its railways, nor is at all convinced that its present schedule of rates is just and fair. In this phase of regulation neither of these countries can give us any material aid by way of example.

The greatest assistance comes from the experience of the states which have undertaken this task of valuation, and material help is being given by the railroads themselves. A great deal has been done in the way of blazing the trail for the federal undertaking, but much yet remains to be done in the way of working out principles, to say nothing of

the great undertaking involved in the actual application of these principles.

Since no one definite principle has been decided upon as a basis for valuation, the Interstate Commerce Commission is to work out all the elements which may be taken into consideration. If it is eventually decided that original cost shall be the final basis, wholly or in part, the findings of this investigation are to show this factor in so far as it is at all possible to ascertain it. If the decision results in favor of the cost-of-reproduction or cost-of-reproduction-less-depreciation these figures are also to be at hand. If a combination of these factors is desired, we shall not be at a loss there either. In short, the federal valuation is supposed to ascertain all about the value of the railways that we can want to use and can possibly find.

As already pointed out, the task is enormous. Late statistics credit the United States with 251,000 out of 613,000 of the world's total railway mileage.¹ Each and every mile and piece of property is to be inventoried, and its history worked out. And the undertaking is further complicated by the instructions to value the property of all common carriers subject to the Act to Regulate Commerce, including telegraph, telephone, express, car-service lines, pipe-lines, ferries and steam-ship lines.

The commission is given plenary powers to carry out this work. Its instructions are to hire experts, take testimony and administer oaths, and to make full investigation of all records, books, papers and property. Penalties are provided against anyone hindering the commission in its duties.

Under Commissioner C. A. Prouty as Director, four departments are organized, viz., engineering, accounting, land and law. Of these, the work of the engineering department

¹ *Statistical Abstract of the U. S.*, 1924, p. 263. *Statistical Abstract of Foreign Countries*, p. 463.

has made the greatest progress. Besides these departments of the commission, there is the president's conference committee, representing the carriers, which is associated with the government forces. These committees are divided into three groups corresponding to the three classification territories of the country, the eastern, the western and the southern. They are endeavoring to formulate the standard method of procedure for the guidance of the roads in collecting their data, for the roads themselves are obliged to assist the commission in a great deal of the work. Needless to say the committee will have the opportunity of presenting the attitude of the carriers on many important matters that will arise.

The commission has divided its work into five districts, each of which extends from the north to the south of the country so that work can progress uninterrupted by the winter season. For the engineering work there is a board of five engineers each of whom is in charge of a district, but with headquarters at Washington for the purpose of mutual consultation. Besides these, there are five other engineers each at work supervising in his own district. The head engineers are men chosen for their wide experience in such matters and under their charge the work in this department is making considerable progress. Their work began on the first of January, 1914, and within half a year from that date the valuation was definitely under way on ten lines, and they hoped to extend their work rapidly, aiming to complete the work on 25,000 miles of line by the close of the fiscal year on June 30, 1915.

The accounting department is in charge of one chief accountant who will supervise the work in all five districts. There will also be a division accountant in direct charge of the work in each district, which will be carried on in the offices of the roads under survey. The land department

will be organized on very similar lines. There will be a supervisor of land appraisals in entire charge and a land attorney in each district.

The law department is in charge of a solicitor and his assistants. Their principal duties will be to study the corporate history of the roads and to prepare this information for the use of the other departments of the valuation work. They are supposed not only to ascertain the history of the present corporations, but the history of all underlying and preceding corporations that have handled the same property from the very beginning. They must as far as possible make a detailed and specific history of every property from its entrance on the field of transportation down to this present time. Judging from former expressions of the commission, this will be a very unsatisfactory undertaking.

Many matters of corporate history, however, can be ascertained fairly closely. In the past the various spheres of government from the federal down to the localities have made large donations of land and money, as well as other subsidies. These probably can be traced fairly accurately, and it is intended that this shall be done. The amounts of all these grants are to be ascertained and also what parts have been disposed of and for what consideration. And again, all property held for other purposes than that of transportation is to be listed and reported separately. These items, with an account of any and all concessions made to the federal or other government, will be the chief matters to consider from the historical standpoint.

The factors to be taken into account for the present value are fully as comprehensive as the decision of Mr. Justice Harlan in *Smyth vs. Ames*. Each piece of property is to be listed and a complete inventory taken. This includes all lands, right of way, terminals and constructions, all track, rolling stock, bridges, tunnels, buildings, shops, offices,

equipment and machinery. Each piece of property is to be listed as to its original cost, its cost-of-reproduction-new, and its cost-of-reproduction-less-depreciation with an analysis of the methods by which these several costs are determined, and the reasons for the differences, if any. To carry out this tremendous undertaking the engineering department is dividing its forces into two general divisions, the roadway and track parties for everything on the road except tunnels and bridges over sixteen feet long, and the structural parties which are to secure complete information regarding all structures such as bridges and tunnels over sixteen feet long and all large buildings.

All this applies to a physical valuation. But in the past it sometimes has been found necessary to consider other factors which are generally spoken of as intangible elements. These the commission is to investigate and report on separately so that we may have a complete account of all the elements of value.

When the task of the commission is finished which will not be for some years, we shall have a complete statement of the property of each carrier as a whole, and its property will be listed separately as to state lines. As will be noticed this conforms to the recommendation adopted by the convention of the National Association of Railway Commissioners in 1909 and presented by them to Congress. All the requisite data will be at hand for regulation on the cost basis as far as the value of the properties is concerned. This all having been done under one general supervision and with opportunities carefully to consider all sides of the question, it may well be considered fair and final in so far as the element of time shall not prove a disturbance.

But even with all these facts at hand, much will remain to be done unless happily a great deal of theory shall have been cleared up during the process of ascertaining the facts.

At the present time there is far from being unanimity as to what standard in value shall be the determining factor in rate-making. Some say that one element should be the basis, others favor another, and it is often asserted that not one but many factors must be considered. This, no doubt, is to a certain extent true, but when it is shown that different standards of valuation give differences running into the hundreds of millions of dollars in the value of a single road, we can hardly refrain from thinking that, before we have a scientific system of rate-making related to the value of the property, we at least must know what weight is to be given to each factor used in the valuation. It is scarcely satisfactory to say that this factor must be considered and that one or another not neglected. If we are to have a stable system of rate-regulation, it must be settled what weight is to be assigned each element, and under what circumstances each particular factor is to be given the predominance. If the present value is greater than the original cost, we must know which rule is to determine, or, if both factors enter in, to what extent each has effective power? Doubtless we should know all the possible factors of value; but to avoid chaos we must know how we are going to use these factors when we get them.

The various bases suggested for valuation are earning capacity, commercial value, capitalization, the cost accounts or book accounts of the companies, cost-of-reproduction-new, cost-of-reproduction-less-depreciation and original investment or cost. Some authorities would add another which they call "fair value," but as the terms are used, this latter expression amounts to practically the same thing as what is more explicitly called cost-of-reproduction-less-depreciation, and this again is termed by others less definitely but more briefly, "present value."

Among these standards, the ones most seriously advo-

cated by courts and commissions are the original investment and the cost-of-reproduction-less-depreciation. The other principles may be considered, but as a rule they are only regarded as side lights to be used in exceptional instances.

Market value is a basis which is usually roundly condemned as a criterion for rate-regulation. This may be taken as the market value of the property as a whole, or it may be piecemeal market value as shown in the selling price of its stocks and bonds. Either way in which we may take this it is very nearly the same as, or at least largely dependent upon, the earning capacity. A certain element in addition to the earning capacity may enter into the market value on account of the influence of speculation and the power which ownership may give over related concerns, but on the whole these two principles amount to the same thing. From one point of view, this would be the fairest way to value any business. It is the value in exchange, and modern economics esteems this view of value higher than any principle which smacks of the old-time conception of just price. But when we attempt to use this as a basis for valuation, where are we? We apparently are taking a beautiful spin on a circle, for we seek to base rates on a value that in turn is based almost wholly on rates. We lack the power of competition to break the circle by introducing the element of substitution of other capital goods.

The difficulty in using market value as the basis for valuation lies in the fact that the problem is complicated by monopoly. The value of an article which is easily replaceable by a similar one is quite different from what it would be if it could not be duplicated. In the latter case we should count the value at the high point to which scarcity would force the utility. But if the article could be replaced at will, no one would value it at a higher figure than that for which he could replace it. The ordinary articles which

we value fall into this latter category; they can be replaced and hence are valued at the replacement figure, and in productive goods this figure is the same as the capitalized earning capacity. Only in monopoly is there any serious infraction of this rule. It is just this monopoly advantage from which the country is trying to free itself as far as possible in railway regulation.

The matter might be allowed to rest at this, were it not for the fact that such an able body of men as the Washington Railroad Commission has advocated market value as a standard of valuation for rate-making purposes. Following the steps indicated in *Smyth vs. Ames*, they have, as quoted above,¹ "considered the cost, cost-of-reproduction, depreciation, the amount and value of the stocks and bonds, the population and density to traffic along the line, the physical characteristics of the road and every element which the commission believed an intending purchaser would consider." It is evident that this commission has considered the differential advantages which one line possesses over another, and capitalized this advantage. This will readily be seen to be capitalizing not so much the earning power or market value of a line considered by itself, as the superior advantages which one line possesses over its least fortunate rival, which is commonly called in economics the marginal line. The poorest competitor may be valued at the cost of its physical elements while the other lines in the field are given the differential advantage in addition to such a value. In very simple cases this scheme would very likely work well, that is, where lines were rivals in only one simple field; but, since this is seldom the case in railway practice where a line may have one rival in its through traffic and another in its local, it is doubtful whether this method of capitali-

¹ Page 88, *infra*.

zation would prove satisfactory in operation. It would seem to be much better to allow the more favorably situated line its advantage in higher rates of income and to base the valuation of all on the same standard. This matter will be taken up again in the chapter on returns.

The capitalization of the American railroads would seem hardly to have as much right to consideration as a standard for rate making as even the market value. The stock and bond issues have been based upon the anticipated earning power of the company, not on investment, value of property, or even actual earnings. Hence they are not of much value in determining the valuation, but they nevertheless have had, and are having, quite a part in the regulation of rates. They are not the property of the companies but the property of the shareholders, be these speculators or investors. It is doubtful public policy so to lower rates that dividends on stock already issued would be reduced below a certain level. Such a course would seriously handicap a company not only in the issuance of new securities to provide for expansion but even in providing the proper facilities to care for the existing traffic. It would seem better, as a rule, that such concerns be completely reorganized, or that restriction of rates be delayed, if possible, until the time when the value of the property was built up to equal the amount of the securities outstanding against it. It may be true, as now extensively claimed, that, taking the situation as a whole, the property value of the American railroads is fully equal to their capitalization. But there is no certainty as to the relation. And, unfortunately, the effect of reducing earnings on stock which does not have honest backing is just as serious as would be the effect of reducing the earnings on a fairly capitalized road. In careful regulation capitalization must often be considered, as will be shown later. But since this factor may have as great an effect if based on dishonest

practices as if issued in good faith, and since it is based frequently on speculative conditions, it can have no serious influence on the subject of valuation.

The use of the cost accounts, or book accounts of the past, is easily disposed of. These terms refer to the account which the books of the railway companies themselves give of the cost of the property. Their use as a basis can best be judged by the words of the Interstate Commerce Commission to Congress:

It is sufficient to refer to the well-known fact that no court or commission or accountant or financial writer would for a moment consider that the present balance sheet statement purporting to give the cost of property suggests, even in a remote degree, a reliable measure either of money invested or of present value. Thus at the first touch of critical analysis the balance sheets published by American railways are found to be inadequate. They are incapable of rendering the service which may be rightly demanded of them.¹

Thus we have seen that neither the earning power, market or commercial value, capitalization, nor the cost or book accounts can be counted as more than an incidental help to assist us toward another basis, or other bases, which shall determine the valuation, nor can the cost-of-reproduction-new be counted on as a sufficient criterion for the purpose in hand. For one reason, this would be the valuation of such a property as never did and never could exist. By the time a property is completed part of it has already begun to depreciate. Moreover, to value a property in running order at its cost new, neglecting the fact of depreciation, would be to act in defiance of the principles of accounting. In any system run on sane accounting principles, the depre-

¹ *Proceedings of the Twenty-fourth Annual Convention of the National Association of Railway Commissioners*, p. 52.

ciation which must of necessity exist is provided for and written off the accounts.

The other principles which are left, and those which are the most seriously considered at the present time, are original investment and the cost-of-reproduction-less-depreciation. In one point, at least, these are quite alike: each practically requires an inventory of the real property of the railroads and each pays more or less attention to the intangible values as well. Again, apparently the advocates of each standard sincerely want to be absolutely fair to the interests of all concerned, and not to confiscate any values which they think rightfully belong to either party. As the argument between them stands, the difference of opinion seems to be largely one of ethics, that is, to whom do certain items of possible value rightfully belong? Unfortunately, our system of ethics seems to be unable to settle the question, for each side of the controversy claims that its dictum is just. Apparently, if ethical considerations are to rule, they will need to be expanded to meet the exigencies of the situation. Perhaps it would not be too much to say that what will settle such a question, when old ethical considerations are inadequate, will be a far-sighted expediency that looks ahead to conditions as far as we can see them in the light of economic theory and of practical examples in this and other fields. Larger considerations may thus be worked out that will include and piece out what is lacking in the accepted standards.

There is another point in which these theories are alike. Each looks to the other for additional light, but says that in the long run it must be fundamentally determinative itself. The courts, especially the Supreme Court, have stood for the present value or the cost-of-reproduction-less-depreciation, but they have always said that the factor of original cost must not be ignored. On the other hand,

the commissioners who have stood out most strongly, especially during the last few years, for the theory of original investment have said at the same time that the present value was of great importance in determining valuation. But yet it is acknowledged that the theories are mutually opposed in places, and when such is the case one or the other must be determinative. Doubtless the railway world will heave a sigh of relief if the time comes when it will be settled which is to be the fundamental basis, or, if each is to be employed, when one is to rule and when the other.

It may seem not to be necessary to define these two conceptions of value. Unfortunately, there is great need, owing to the vagueness of the usage, for such definitions. As in every other complex field, the terms are used with great flexibility, or, perhaps it would not be too strong to say, looseness. The cost principle is perhaps defined best by one of its able friends, Dr. Whitten of New York, who says in his first volume:

Strictly speaking, actual cost means cost of original construction plus cost of additional betterments. It excludes all expenditures for renewals and replacements including supersession due to obsolescence or inadequacy. It includes only construction, additions and betterments that are a proper capital charge under approved accounting principles.¹

For a definition of present value it is doubtful whether we can find one better than that advanced by Commissioner Eshleman of California and approved by Commissioner Thorne of Iowa:

The engineers usually find the reproduction value new and depreciate the property to the extent they find it has come

¹ Whitten, *Valuation of Public Service Corporations*, p. 82.

about, and call that present value. That is the general definition of what they mean by present value.¹

Others speak of this basis as cost-of-reproduction-less-depreciation, which is really seen to be the same as the above. Others again speak of fair value as present value, but this term seems to be adopted as one that is broad enough to include various items which may be considered fair, and hence lacks definiteness.

As stated before, the two bases for valuation aim to consider practically the same items. It may therefore be well to go into a more detailed discussion of these items of possible value under either principle.

One of the most important elements in railway property is the land on which the lines and terminals are built. No one familiar with the railway affairs of the United States needs to be reminded of the vast areas devoted to our great systems of transportation. The amount of land so in use at the present time is great, but we are told that it will have to be much greater before the country is fully equipped with lines of communication. If the value of this land is to affect our freight and passenger tariffs, as apparently it must, it will be generally admitted to be of vital importance that a careful valuation of it be made and that this valuation be on principles that will meet the demands of the essentially dynamic conditions of present-day transportation. The valuation must be placed, as far as possible, high enough to allow for proper railway expansion and at the same time no higher than absolutely necessary for this expansion in order that the growth of the other business of the country shall not be hampered any more than is necessary.

There are several well-defined problems in connection

¹ *Proceedings of the Twenty-fifth Annual Convention of the National Association of Railway Commissioners*, p. 307.

with this part of the valuation. Here is the great tilting ground between the champions of the so-called present-value principle on the one hand and those of original cost on the other. The problem is complicated by the fact that a very great deal of the land used by the railways has been donated to them. It is further complicated by the situation where land purchased by the companies must frequently be paid for at much higher rates than similar land sold to individuals. From these conditions and others arise the questions as to whether the railways shall be allowed an income on land given to them by the public and by private individuals; whether they shall be allowed an income on the unearned increment on land; what methods shall be adopted in finding the actual present value of the adjoining land; and whether a multiple shall be added to this present value, and if so, how much of a multiple.

When we stop to consider that the amount of land given to the companies has been greater than the entire area of the German Empire, we cease to wonder at the conflict between the advocates of the rival principles. It would make a difference that could be felt whether our system of transportation should pay rent on a land area equal to Germany or whether this should go rent-free. But by no means all this land is now being used for transportation purposes. It was given as an inducement to the promoters to build the roads, and was given partly as right of way and partly in the form of land reservations suitable for settlers and speculators, which latter portions were largely disposed of in one way or another. No one questions the right of the companies to sell the last mentioned lands at a profitable figure, nor does any one question that both forms of land grant were made as an inducement to carry out the enterprises. But very many do question the right of the companies to fix rates to cover earnings on the present value of these

land gifts for right of way. This seems reasonable in the light of what can hardly be questioned, that no idea of such relation was entertained by either party to the original transaction. The right of way was given for transportation purposes, as a requisite for the service. No one seems to have thought that later the donor would be charged for the use of his gift. But, even if it had been known that an income on this land would later be demanded, it is doubtful if it would have stopped the donations. We find that in Canada the fact that the Canadian Pacific is charging for the use of donated property has not had this effect. And again, why was it right for the companies to sell the lands given for other purposes than right of way at a profitable figure if they should be denied the right of all earnings on the right of way which was just as truly given to them as an inducement to go into the enterprise? In fact the right of way has virtually been sold just as truly as the other portion of the land grants. The latter has been sold by the corporations, the former has been sold, or at least the securities based upon it, have been sold by the original stockholders of the enterprises. The original owners have in many instances at least sold their securities and pocketed the money. Their investments may be in entirely different fields at present. They are the ones who have received the value from the donations. In what way is it fair then to demand restoration, or what amounts to the same thing, from the present shareholders?

The questions of the unearned increment on land and that of the right to present value on donated land go together. To show the magnitude of the stake, two examples may be cited, as given by Commissioner Thelen of California in discussing the question:

In the Minnesota Rate Case the original cost of the terminal

properties of the Northern Pacific Railway Company in the State of Minnesota was found to be \$4,527,228. The Master allowed a return on \$17,315,869. The original cost of the entire system was found to be something over \$312,000,000, but the cost of reproduction new, which the Master took as a basis, was over \$452,000,000. The difference of \$140,000,000 represented principally the unearned increment of land and the value of donated lands. In the Western Advance Rate Case, decided by the Interstate Commerce Commission on February 22, 1911, the Burlington claimed a return on a present value of \$530,000,000. Commissioner Lane found that the original investment was only \$258,000,000, and that approximately \$150,000,000 of the Burlington's claim represented the increase in land values.¹

And again, Professor Ripley's comment on another case may be quoted.

Carried at only \$2,000,000 on the books—such being the original entry—the real estate of the Illinois Central was appraised at \$34,000,000 in 1900.²

Referring to the contention of the Burlington for a return on the unearned increment, Mr. Lane says in the opinion quoted above,

If this is a precise expression of what our courts will hold to be the law, then as we are told there is certainly the danger that we may never expect railroad rates to be lower than they are at present. On the contrary, there is the unwelcome promise made in this case that they will continuously advance.³

That there is a tremendous increment of value in many

¹ *Proceedings of the Twenty-fifth Annual Convention of the National Association of Railway Commissioners*, p. 265.

² *Pol. Sci. Quar.*, vol. xxix, p. 586.

³ 20 I. C. C. Rep., 340.

cases is beyond dispute, but to call this an unearned increment is, perhaps, rather begging the question. The custom has grown up of calling an increment of value not definitely assignable to the efforts of any owner an unearned increment. Moreover, we have the idea that earnings are and always have been, confined to what we call a fair return. There is ample opportunity for fallacy here. To begin with, earnings limited to a so-called fair return are not the usual phenomenon in frontier conditions. And our railways were built up on practically frontier conditions. People do not, as a rule, go into business under such conditions with the hope of only a moderate rate of interest on their money. The risks are great; the profits must be too. Fortunes were lost as well as made in the early days of the railroad business. Speculators in every field went into their businesses for high stakes, and the fortunate majority won them. Why not the railroads? The railroads had their share of failures. If they secured the usual rate of return in the frontier days, they took everything they could get, profits and increment. And if they did, it was but a fair division between the railroads and the farmers. In frontier days it is only the richest cream of business that attracts investment. Moreover, the profits from the increased values have been capitalized and in many cases sold. As in the case of the donated land, those who received the benefit are in great part not the present owners.

It may be asked if it is wholly fair to call this an unearned increment. In many cases the railroads were given the right of way and alternate sections of land within a certain distance from the line. These sections had been valued at \$1.25 per acre before. After the railroad was constructed the remaining half of the land within the region was sold for \$2.50, making the value of the half in the hands of the public as great, at least, as the former whole. The railroad

made the difference in value, whether it earned it, or not. The same principle is true all over the country, whether the land is donated or not—the land in the vicinity of the lines increases in value. In fact this was the purpose of the donations—*increase in the value of the land or of the business carried on in the country served by the roads.* True, there could not be the increase in value without the farmer and other developing entrepreneurs, but these receive their share in the increment in the property which they hold. Do not the railways have a part, and a large one, in increasing the values? Why then should they not have the benefit in so far as the increment affects their own lands?

Even if it be admitted that the railway owners of the past have the right to this increment in land values, this does not necessarily argue that they must be allowed rates to cover all future increases in value. The frontier days are gone, and with them the period of real risks for the railway business. Even an inventor is not allowed the profits on his patent for an indefinite period. Some one has said that, if this were allowed, the inventor of the cotton gin would probably have absorbed half of the wealth of the country. Many able men question the right of the railroads to the increment of land value in the past, and even the Supreme Court has not definitely decided in their favor in regard to this. Certainly when we come to the question of future increments, there is ample room for argument. This will be more fully discussed in the general argument as to the choice between the rival principles of original cost and the cost-of-reproduction-less-depreciation.

If present value be the principle used, the actual present value of similar nearby land must be ascertained. When original cost is the criterion, the same problem is likely to arise in the case of newly-built lines. It is quite certain to arise if there should be any question as to the reasonable-

ness of the price paid for the land, for the advocates of the principle of original cost do not aim to encourage extravagance. On first sight it might seem to be a simple matter to find these values in question; it is by no means as simple as it looks. Oftentimes sales are not sufficiently frequent in the immediately surrounding country to give any accurate idea of the market value of the varied land in use by the railroads. Again, when sales are made, it is difficult to separate the value of the improvements on the land from the actual land value itself. There are two methods of ascertaining such values, the sales method and the tax method. The sales method has been used very extensively by different states. It is undertaken by this method to ascertain the actual considerations paid in *bona fide* transactions during recent years for adjoining tracts of land. In one state, for instance, they took all actual transfers for three miles on each side of the center of the track, covering four years' time. The tax method is used in Wisconsin. They obtain the assessed value per acre of land similar to the railroad right of way, and divide by a factor representing the ratio of the assessed value of the land to the true market value. This factor is computed from records of real-estate sales and is designated as the assessment ratio; for it is a notorious fact that the actual figure at which real estate is taxed is not the real value, but it generally bears about the same ratio to the real value in the same part of the country. Doubtless this assessment ratio will not vary greatly when such a large number of instances are utilized as is generally the case in railroad valuation. Hence while sales may not be frequent enough in certain regions to give accurate data, yet by means of this ratio the value may be found from the assessment figures. By one or both of these methods it ought to be easily possible to ascertain the fair value of property at any desired distance from the railway.

But ascertaining the value of contiguous real estate does not settle the value of the railway property in question. After the actual present value of the adjoining land has been found, it is claimed that a sum must be added to represent what it would cost the railroad to secure that land for railroad purposes. This includes the severance damages, removal of buildings, etc. If the line be built right through the middle of a man's farm, the company will have to pay a considerable sum for damages, besides the actual value of the land per acre. Again, when it is known that the land is needed for railway uses, the owners will frequently demand a much higher price than would be asked in an ordinary sale, and the company must either pay this excess or else as much or more in litigation. It must be conceded that in many cases the railways now actually do have to pay more for acquired land than the actual present value of contiguous property. But while quite a multiple must be added in some cases, this is not always the case, and when it does occur, it is offset by the fact that the land which a railroad usually buys is land in a country where transportation facilities are not abundant; hence the normal price is below the general level of land where a railway is in actual operation. In short, the multiple is absorbed by the increment.

The amount of this multiple and the extent of its use are matters of great dispute. It is stated that in Wisconsin an allowance is made to cover severance charges, damages, and other elements entering into the cost of acquiring land for railroad purposes. A multiple of one and one-half has usually been applied to the market value of railroad land in cities, and in rural districts a multiple of two and one-half or three has been used for this purpose. These multiples are based on investigations of actual conditions governing the purchase of right of way in Wisconsin, and other states. It is said that in Kansas and South

Dakota at the present time the multiple ranges from two to five, the average being about three outside of the towns. On the other hand Commissioner Thelen, of California, says that "exhaustive investigations conducted by the California Railroad Commission show with reference to the railways so far examined that it has actually cost these railway companies an average of approximately 1.33 times as much in the case of country lands and an average of approximately 1.28 times as much in the case of city lands to acquire their land as the average market value at the time of similar land in the vicinity."¹

In spite of the claim that the companies must pay some multiple to acquire land this multiple is frequently denied them. In the Minnesota Rate Case² Mr. Justice Hughes, of the Supreme Court, says,

Assuming that the company is entitled to a reasonable share in the general prosperity of the communities which it serves, and thus to attribute to its property an increase in value, still the increase so allowed, apart from any improvements it may make, cannot properly extend beyond the fair average of the normal value of the land in the vicinity having a similar character. Otherwise we enter the realm of mere conjecture.

There are also some states which claim that this multiple should not be used, because where the railroad company is building through territory in which the railroad is actually needed the company is not generally required to pay any multiple or severance damage. And Mr. R. A. Thompson, formerly engineer for the Texas and the California Commissions, and now of the Federal Engineering Board for Valuation, while disputing the extent of the actual use of such multiples, adds an interesting point. He says:

¹ *Proceedings of the Twenty-fifth Annual Convention of the National Association of Railway Commissioners*, pp. 65, 271.

² Page 76a.

Contiguous lands have greatly increased in value since the advent of the railroads. It would appear highly illogical to advocate that these increased values should be multiplied by three, or even by one and one-half, and used as a basis for taxing the railroads on the one hand, or taxing the public on the other, by permitting indebtedness to be issued against it, the interest on which the latter must pay.¹

It would be interesting to know what part of the total value of the railways pertained to the land. At the present time it is impossible to do more than guess at the proportion, for this depends so much on these vexed questions of the multiple and the unearned increment. In the Minnesota Rate Case the total reproduction value of the Northern Pacific Railway's property in land, including percentages for engineering, superintendence, legal expenses, contingencies and interest during construction, amounted to more than thirty-seven per cent of the total. This looks rather large, but Commissioner Thorne draws attention to the fact that the net value of the lands in this same property, outside of terminals, and leaving out the multiple for severance charges, as well as the other above-mentioned charges, amounts to only two per cent of the entire value of the property in question. On the same basis, the original cost of the terminals would be rather less than six per cent of the same total value. These figures show at once the uncertainty and importance of these problems, though it must not be lost sight of that many of the items mentioned above in the thirty-seven per cent of the total value are usually accounted for under different headings than that of land value. The land outside of terminals would jump here from two to four and one-half per cent and the terminals from less than six to perhaps thirteen per cent under the multiple claimed, making a total of some seventeen and

¹ *Proceedings of the American Society of Civil Engineers*, Jan., 1911.

one-half per cent in all land values based on original cost. It can readily be seen that Mr. Thorne is right in this case when he says that "the question of the unearned increment does not overshadow the problem of the land multiple".¹

In addition to the various phases of the question of the land values there are three other broad divisions of the railway assets, construction, equipment and the so-called intangible values. Any one of these deserves an extended discussion but space forbids more than a brief mention of the vital features.

In the Minnesota Rate Case, mentioned above, while the terminal properties cost \$4,500,000, the amount allowed for the construction items of clearing, grading and grubbing was \$12,331,541. And the amount for ballast alone was some \$300,000 more than the present value of the land outside of terminals when the question of multiple was disregarded. Judging from these figures one would consider that the element of construction was considerably greater than that of the actual land values, and the statement is made by Professor Bemis that "there are other unearned increments that in most valuations are more important, far more important, than the land question".² Prices of materials for both construction and equipment have risen greatly in this last period of rising prices, and at the same time the price of labor has gone up. But these facts are offset, at least partially, by the increased efficiency in many lines of work.

Unfortunately, though the above figures will show the importance of this part of the valuation, very little has been written on the matter of construction and equipment as compared with the question of land values. It would ap-

¹ *Proceedings of the Twenty-fifth Annual Convention of the National Association of Railway Commissioners*, pp. 290, 291.

² *Ibid.*, p. 317.

pear from facts that may be gleaned that excess of present value in one branch of the property over the original cost was offset in great measure by the opposite state of affairs in other branches. Thus, though wages have risen, the price of excavations and fills has fallen per cubic yard on account of the advent of more modern machinery. But in some other spheres, not only have wages risen, but labor costs per unit of finished material have risen as well. And in the matter of equipment, we find the tendencies are not uniform, either. The present cost of passenger equipment per seat has increased, on account of increased space per seat, higher prices of material and more luxurious service. On the other hand, while the cost of locomotives has increased, on account of their increased weight and size, the cost per tractive pound of hauling capacity has decreased. Similarly, the cost of freight cars has risen, but their cost per unit of capacity has fallen.¹

As already brought out, there is, in the matters of construction and equipment, a problem of increment of value over first cost as well as in the matter of the land values. To be sure, this is offset in these cases very largely, if not entirely, by the fact of depreciation.

In the matter of construction the increment of value comes very largely from what is known as adaptation, or solidification of road-bed. If a road-bed were to be constructed new it would be some time before it would be in a state of as great efficiency as that of an old settled track. And this adaptation is due not alone to the effect of time. It is the result of a considerable cost that must be laid out on it during the first few years. As Mr. Riggs,² of Michigan, says,

¹ *Proceedings of the Twenty-fifth Annual Convention of the National Association of Railway Commissioners*, p. 287.

² Riggs, *The Valuation of Public Service Property*, p. 147.

There can be no reasonable objection to adding to the contract prices for grading, ballasting, etc., a reasonable amount to cover not so much the seasoning and settling of the new roadbed as the actual money disbursed in work on this new roadbed during this first three or four years of operation in order to bring it up to the proper operating condition. A very considerable part of the money spent on "maintenance of track" for the first few years after a new line is built is in reality deferred construction cost.

It would appear, however, that what expense was actually added on account of this element was provided for under the heading of maintenance, and hence fell under the heading of running expenses rather than that of capital charges. If so, Mr. Thompson, of Oklahoma, is right when he says that allowance of this item would be capitalizing operating expenses.¹

The element of appreciation in value in this, as well as in other matters affecting the value of the equipment and construction, aside from what is provided for under maintenance and improvement charges, is very indefinite. Some such items of property may be worth more now, in the sense that it would cost more now to produce them at present higher prices. These matters are so similar to the factor of depreciation—the main difference being that one is positive while the other is negative—that in the matter of accounting they partially neutralize each other, and may best be allowed for at the same time. For example, in the case of the settling of the road-bed, the actual depreciated condition is modified by the fact of settling; the road does not depreciate so rapidly in the first few years as it does later.

The factor of depreciation is one that should be allowed for, in both construction and equipment, in any physical

¹ *Proceedings of the Twenty-fourth Annual Convention of the National Association of Railway Commissioners*, p. 59.

valuation. If we were able to use the amount of the investment as a criterion of value, the matter of depreciation might not disturb us. In such a procedure, the depreciation of old elements is compensated for by the addition of new. But when we are dependent upon an appraisal of the existing property, on the basis of either original cost or present value, for the purpose of ascertaining its value we must take cognizance of the fact that certain elements of the property are partly used up. It is, of course, a patent fact that the equipment and certain elements of construction of any road are in a depreciated condition. Before a new road is fully stocked its first equipment will be partly worn out. A road under ordinary running conditions will have machinery in all stages of wear and obsolescence, for depreciation is due not only to wear, but as well to superannuation on account of new inventions, or what is known as functional depreciation. To take a simple illustration, suppose a street car line whose cars were usable for ten years had one hundred cars in stock which had been acquired at the uniform rate of ten cars a year. Obviously the cars would, on the average, be half worn out, and consequently the value would be placed at one-half the cost new. Whether the cost would be computed at present prices, or at original cost, is the point in dispute between the different principles of original cost and present value. The problem of depreciation is, of course, not nearly so simple as the above example, for it is a difficult engineering problem. However, it is principally an engineering problem rather than an economic problem. Economics must allow for the fact of depreciation, the engineers must work out the ratios.

The percentage of actual depreciation as found by the state valuation boards varies somewhat, as might be expected. But it varies surprisingly little when we think of the extreme variation in some other items and the appar-

ently different states of maintenance of the various roads throughout the country. Mr. Witt, of Kansas, says, "Well-maintained road is almost invariably about 85 per cent condition". He also maintains that all appraisals which have come within his notice are within one per cent of that figure. Mr. Swain, of Massachusetts, reporting on the New York, New Haven and Hartford, puts the depreciated value of the grand total at about eighty-six per cent of the cost of reproduction new. In the Michigan appraisal of 1900 it was about eighty per cent, and in the Wisconsin appraisal it was eighty-two and one-half per cent. These figures would denote that, while Mr. Witt's idea of eighty-five per cent within an error of one per cent is too narrow, the actual figures do not vary widely from this mark.¹

In the statement of the land value of the Northern Pacific Railway, as given above, are found the items of engineering, superintendence, legal expenses, contingencies, and interest during construction. These items with others such as discount on bonds, solidification of road-bed and working capital are usually discussed apart from the land itself. Attention has been called already to the matter of the solidification of road-bed and to the wide divergence of method in dealing with the question of contingencies. Some states allow a considerable percentage for this latter item, others disregard it entirely, and apparently no two agree. The same statement would be very largely true if applied to these other items just spoken of; there is absolutely no unanimity of opinion in regard to their treatment. And yet these matters are important and are a part of the value, whether from the standpoint of original cost or that of the so-called present value. In many cases too great amounts may have been

¹ *Proceedings of the Twenty-fourth Annual Convention of the National Association of Railway Commissioners*, p. 68.

ascribed to these costs, but costs they are in almost every case and they should not be neglected in a fair valuation.

Then, again, the subject of purely intangible value is a matter of much dispute. The most prominent items here are franchise value, value as going concern and strategic location. To these may be added others such as early years of unproductiveness, organization and good-will. These are frequently all lumped together as franchise value. There is no unanimity of procedure in regard to these any more than in regard to the slightly more tangible elements spoken of above. The general opinion in regard to the actual franchise seems to be that, if it has had an actual cost, this cost should be allowed. A franchise may have been bought and paid for legitimately; if so, while not an element of physical value, it is, nevertheless, quite truly an element of cost that should be included in a valuation. The other items, which are sometimes called in general the franchise values, would naturally follow the same rule. The value of the railway is not simply that of the physical items which go to make it up any more than a man is simply flesh and blood and bones. It means something to have the bones all put together and in working order. So, it means something to have the earth and steel and wood of the railroad organized into a system. It has cost money, and what is more, as will later be shown to be very important, organization does cost money in all new roads and extensions of the old ones. But why should we go further than original or present cost of these matters? To go any further in assigning value would be to allow value for the monopoly element, which we are seeking to eliminate, or to value the earning capacity, which has been seen to be useless for our purposes. It would seem to be a fair conclusion to say that as far as these matters cost, they would have influence in competitive enterprises, and should be allowed for in valua-

tion. If original cost is the principle adopted, let them be rated at what they actually cost. If the principle of reproductive values be adopted, let them be put down at what they would cost under present conditions.

Large as some of these items are which have been considered there is another which well deserves the important place of the last to be discussed before weighing the relative strength of the arguments for original cost and cost-of-reproduction-less-depreciation. This is the matter of surplus. It may be argued that this is not an item of cost, and hence does not deserve a place in the matters which must be considered no matter which criterion we adopt. But, whether this has been a matter of cost to the investors or not, in so far as it has been invested, the part of the property so purchased has been a cost to someone, the stockholders, or the corporation, or even the patrons. If we are to base rate regulation on the value of the property, we must consider this very large share of the assets. In fact, this problem alone gives great impetus to the movement to base valuation on the original cost, this being taken as the original investment by the shareholders themselves.

Commissioner Lane said for the Interstate Commerce Commission in the Opinion on the Western Advance Rate Case:¹

It is to be borne in mind that it has been American Railroad policy to maintain the property fully, in a constantly improved condition, both as to roadbed and equipment, out of current revenue. The carriers, even under the rules of the commission obtained only during the last two or three years, are given the widest latitude as to the charges that shall be made against the maintenance accounts. Notwithstanding the unquestioned liberality of the policy of the railroads toward themselves in charging maintenance expenditures to operating

¹ 20 I. C. C. Rep., 332.

expenses, the carriers of the United States have accumulated unappropriated surplus amounting to \$800,642,923, whereas in 1899 this surplus, as given in the books of the carriers, was but \$194,106,367. In ten years, with an increase in rate of dividend and increasing maintenance charges and a vastly increased fixed charge for interest, these carriers had accumulated a surplus of \$606,536,556 or an increase of 312 per cent of 1899, while the mileage had increased only 36 per cent.

Turning to the other great case decided at the same time, the Opinion regarding advances in Official Classification Territory, by Commissioner Prouty, we find it stated :

The president of the Pennsylvania Company testified that since 1887 his company had put into the Pennsylvania lines east of Pittsburg \$262,000,000 from earnings. During all that time this company had also paid to its stockholders munificent dividends. Now, to whom belongs this \$262,000,000, a sum which according to the statistical report of the Pennsylvania Railroad Company to this Commission for the year ending June 30, 1910, equals nearly two-thirds of the total cost of construction of the 2,123 miles owned by that company?

Suppose this Commission were required to fix a value upon the Pennsylvania lines east of Pittsburg. Could any distinction be made between this sum which has accrued from the operation of the property and what has been paid in from other sources?

We are not required at this time to express an opinion upon that point. What the claim of the railroads will be when the matter finally comes to an issue is well shown by a question which was asked upon the argument and answered by that attorney who was urging most strongly the right of the railroad to accumulate a surplus for this purpose :

Question. The popular idea seems to be that these properties ought to be physically valued, and that the rate should be determined by the value of the property so fixed. In that case, would the surplus be entitled to be appraised as a part of the value?

Answer. As of the date that such a valuation takes place, the property as it stands belongs to the stockholders. That has been in accordance with the policy of the Government, and it would take a change in the policy of the Government to change that legal situation. So I think the valuation would necessarily be on the property as it stands.

In 9 I. C. C. Rep., 382, 417, the Commission, in considering the financial condition of the Lake Shore & Michigan Southern Railway, said:¹

"The Lake Shore & Michigan Southern, on June 30, 1901, owned a majority of the capital stock of its competitor, the New York, Chicago & St. Louis Railroad Company, a majority of the capital stock of its connection, the Pittsburg & Lake Erie Railroad Company, almost one-half of the capital stock of the Lake Erie & Western Railroad Company, and \$11,224,000 of the capital stock of the Cleveland, Cincinnati, Chicago & St. Louis Railway Company, besides smaller holdings in other companies. These stocks had been acquired, in addition to the payment of dividends not less than 6 per cent, for many years, out of net earnings. During the year 1902 it purchased, apparently out of surplus, \$4,728,200 of the capital stock of the Indiana, Illinois & Iowa Railroad Company, the entire capital being \$5,000,000."¹

Enough has been quoted to show the enormous amount of the stake. Apparently this question would overshadow that of either the donated lands or the unearned increment, if they were taken separately. And if we add all these items together, it will readily be recognized that it makes a tremendous difference whether the ruling principle in valuation be the original investment of the shareholders or the cost-of-reproduction-less-depreciation. At this point there is a split in the original cost theory. As we have said before, if the matter be regarded as a valuation of the property

¹ 20 I. C. C. Rep., 269.

used by the railroad to serve the public, we certainly ought to count up the cost of the total assets, and we should not find that the property bought out of surplus was any cheaper than any other property. The only question is as to who paid for it.

The railroads, of course, assert that they paid for it, and that out of money which they might as well have handed over to their shareholders in dividends in so far as the public is concerned. Since the railroads were subject to rate regulation during this time, and charged what they were allowed to charge, they claim that it is immaterial to their patrons whether the net income was all paid out in dividends or reinvested in the extension of the property. The result might have been the same in either case. Had there been a law against the investment of surplus as capital, the money could easily have been paid over to the shareholders to be reinvested by them. The difference would have been that the shareholders would have had a greater number of securities but of less value per share. But the shareholders might not have reinvested in railway shares. They might have invested in bonds, and then the railways would not have been in as strong financial position; or they might have invested the money in other enterprises entirely, and then the patrons would not have had the facilities that they now have. Of course, the railways would not claim that the net income was more than necessary, and that the rates charged the public might have been reduced. Why should they? They were not charging more than the traffic would bear according to their view of the case. And besides, the rates, being subject to regulation, were allowed as reasonable.

Many who are not railway men regard the matter quite differently. They must admit that the property is there and that it had its full share of cost. But they say that the

cost was not to the shareholders, for they had a compensation reasonable for shareholders in a public agency. They claim that the cost was to the shipping public, in that the payment was made out of what they paid for the service. The argument is that this surplus is a sum that is held in trust by the railroads and should not be the basis for charges in the future. The railways, having originally charged enough for what even they seemed to think an ample dividend, in fact imposed a tax in addition sufficient to collect this enormous surplus which was in reality an overcharge. That it was not declared an overcharge at the time is no evidence of its fairness. People are sometimes overcharged without being aware of it. If the rates really were more than reasonable, there is a good argument against the railroads charging a return on what they formerly filched from the unsuspecting public.

The policy towards the surplus may well be different as regards past aggregations and those of the future. As regards that already collected, and leaving till the comparison of the general argument between original cost and present value the questions of practical expediency, we may say that the policy of not allowing this factor to count in valuation rests on questionable theory. It rests, for one thing, on an extreme organic conception of both the shippers and the investors. In fact, if we refused to allow this surplus of the past to be counted in the valuation we would be taking from present owners of railway securities what past owners filched from past patrons and we would be returning this, in the shape of capital goods to be used without charge, to the present patrons of the railways who never paid anything to this surplus. It is a bit difficult to see how this would mend matters. The probabilities are, judging by the history of the financial dealings of the railroads that the benefit from this surplus never seriously affected the

rank and file of the shareholders, even in the past. Those who controlled railway finance saw to it that the common stockholders who were not insiders suffered as little as possible from the evils of sudden riches from the increased value of stock, when it became known that a lump of surplus had been added to the companies' assets. We could hardly put the present directors in jail for the practices of the captains of high finance in the past. And why it would be more fair to mulct the present stockholders for what past insiders got while the public was asleep, is difficult to see. Whether it would be feasible to try to benefit the present patrons for what may have been an overcharge on past business is a matter that must also be left to later pages.

It would be out of place to go extensively into the question of future policy regarding the matter of surplus just here. It is claimed that an amount should be allowed for surplus as a foundation for credit, a guarantee fund against disaster and a reserve out of which improvements and extensions may be made. It is claimed that improvements such as track elevation, passenger stations, and safety appliances, which are supposed to be of a non-revenue producing character should be made out of surplus. Aside from the fact that, as soon as this surplus was actually laid out in physical property, the railroads would be very likely to include this in the valuation on which they demand a fair return, it is a very doubtful economic policy to do what would virtually make a tax on present business for the benefit of future patrons. To a certain extent this is necessary, but it should not be done without careful consideration.

It is thus evident that there are many elements of value in a railroad property and that there are many differences of opinion in regard to the measurement of these values. Many of these differences, probably it would be safe to say most of them, would disappear if the controversy between

present value and original cost were settled. The great problem now is as to what weight each of these rival principles shall have in valuation. It is quite generally conceded now that one or the other of these must be determinative except in exceptional cases. Each also has its right to a hearing on the cost-of-service principle.

Enough has been said in the discussion of the particular matters of the elements of land value and the surplus to show the immense difference between the results of the two lines of argument. And sufficient has been said as to the merits of the two principles in these particular matters. But the decision as to the particular items depends upon the relative merits of the two general principles. Decide the question between the principles, and the question as to these particular items will be automatically adjusted.

The objection may easily be raised that it is not a vital question which principle of valuation be adopted, that in either case fairness will be worked out in the matter of the return allowed on the valuation. It might be immaterial whether we allowed a return of five per cent on a valuation based on the so-called present value or one of ten per cent on an original cost of the amount of half the present value. The same argument has been used on the question of capitalization, and it is generally conceded that it is a matter of concern whether the stock is watered or whether it has full real value behind it. Minor differences may be adjusted in the rate of return, but, in question of valuation, it is an important matter for the guidance of railway investment and for public sentiment which base be used. Not only might economic friction distort the working out of the proper result, if the wrong base were adopted, but the question before us is on which of these bases a return should be rated as a fair return on railway capital.

In the earlier days of this movement to regulate rates on

the ability of the carriers to supply the service, the tendency was to look with favor on the principle of cost-of-reproduction or the cost-of-reproduction-less-depreciation. It was known that stocks were highly watered, that the capitalization was far in advance of what the investment had been. And yet capitalization stood in the way of regulation when there was no knowledge of the fairness of this capitalization. It was recognized that no dependence could be put on any accounts of investment that were available. The nominal capitalization was held to be unreasonable as a criterion for regulation. Public opinion was in favor of holding the railways down to a return on what it would cost to reproduce the properties as they existed. But recently people have been awakening to the fact that, with the increment in value of property that has been going merrily on and the reinvestment of surplus, such a valuation was liable to show that, under the pressure of these movements, the water which had been abundant was practically all squeezed out. There is even a slight uneasiness that the result might show that by this time the properties would cost more to reproduce than the amount they are capitalized for. This is a finding with which the shippers do not care to be confronted, and now they generally claim that what the railroads should be allowed to earn returns on is only what they originally put into the business. If it cannot be ascertained just what was originally put into the properties at least this can be estimated with a fair degree of accuracy.¹

Mr. Whitten says in his latest comprehensive book on the subject,

Prior to 1912 there were many cases in which the courts and

¹ *Proceedings of the Twenty-fifth Annual Convention of the National Association of Railway Commissioners*, p. 275.

commissions while nominally at least considering various elements of value, as a matter of fact apparently made cost-of-reproduction-less-depreciation the controlling factor. In recent years there has been a tendency to modify the reproduction method so as to bring it nearer to actual cost and to emphasize the importance of the necessary cost as a factor in determining value.¹

In the face of the many things that are said against the accounts of the original cost, it may be thought an impossibility to use this as a basis. The original investment by the security holders, or the cost of the original property, is a matter that would be almost impossible to ascertain. But the opponents of original investment avoid this difficulty. As Commissioner Erickson, of Wisconsin, says,

The books and records of a utility is not the only place where a basis for determining the original cost of the property may be had. The original cost of the property is mostly represented by the cost of the property actually in use at the time. From a complete inventory of this property such as must be had in order to determine the cost of reproduction, and which shows the year when each part of it was put into service, and from facts giving the market prices of material, equipment, labor and services of all kinds, and of other needed elements for these years, it is possible to compute the original cost of the existing property with as much accuracy as its cost of reproduction may be ascertained. When in addition to these facts full information is also available showing the size, location, growth and character of the plant and the kind of services it furnishes, the true original cost can often be more correctly obtained through these and other similar methods than in any other way.²

¹ Whitten, *Valuation of Public Service Corporations*, Supplement, p. 817.

² Erickson, "Relations between the Valuation and the Rate of Return Thereon," *Proceedings of the Twenty-fifth Annual Convention of the National Association of Railway Commissioners*, p. 438.

One of the principal arguments for the adoption of the original-cost principle is that the capital put into railway enterprise is a fixed investment; that capital is devoted permanently to the enterprise. If this be so, then, it is argued, the value of the property has no cause to change with the changing value of the property around it. When a railway is constructed, it is practically impossible to turn the land back into the market again. In many cases it is practically ruined for other purposes. If the land is utterly removed from the general market why should the general market prices affect its valuation? An illustration is given of a railway running through a fertile valley and laying claim to a valuation similar to that of surrounding lands, though it has not paid as much originally. Then the boll weevil gets into the crops and ruins the selling price of the farming land. It is pointed out very emphatically that the railway would not be anxious to change its rates to accord with this kind of a change of value. The railways will not be so ready to note a decrease in value in the contiguous property as they are an increase. If this happen to a section of a through line that gets most of its business from other parts than the section affected, it will be to the railway interest to keep up the valuation. It will not make a reduction in value for local traffic, its value will be affected without any action on its own part or on the part of the commission. Its rates may remain the same, but its value will fall off just as much as the value of the property held by its agricultural neighbors and this independently, or even in spite of regulation. Though its rates remain stable, its traffic will decrease, and consequently its returns and hence its value. What is a mining railway worth in an exhausted mining region? Obviously as much as the exhausted mines. True, the capital is fixed, if by capital is meant the capital goods. But the capital value of a railway

rises and falls, or at least certainly falls with any permanent fall in the value of the property of those upon whom it is dependent for patronage.

Another argument is voiced in the rather extreme statement of a commissioner that "if the present or the reproductive value theories are carried to their logical conclusions, rates will become so high that no one can pay them".¹ Surely this cannot be meant in the extreme form in which it is stated, for no one could possibly think, while we are dependent on our railways for the transportation which is truly the vascular system of our economic life, that rates could approach the prohibitive margin and land values still keep on rising. Even the most confirmed pessimist, if his eyes be open, must see that there is here a limit beyond which transportation rates cannot soar without reacting upon the land values not only of other property, but of the railway property as well.

However, while rates can never be so high that no one can pay them, yet they may rise so high as to be oppressive. It is to guard against this that the cost-of-service basis is being advocated for general rate schedules. The attempt is to make rates as low as the ability of the railways may allow, in order that the other business of the country may have the freest possible opportunity to expand. Such may not be the case, and such is certainly claimed not to be the case, if the railways are to be allowed a full return upon the unearned increment of their property and the property bought out of surplus earnings. Certainly the railways must have a fair return on their investment, but are the railways chartered to act as speculators in land values?

The original investment principle is not being advocated with any idea of confiscating lawful vested interests. It is

¹ *Proceedings of the Twenty-fifth Annual Convention of the National Association of Railway Commissioners*, p. 280.

being advocated as an ethico-legal idea. It is regarded as only just and fair that the shareholders of a line receive a fair return upon what they have actually and judiciously invested. When it is objected that a private citizen is entitled to the unearned increment on his land and the present value on all his goods, it is very forcibly pointed out that the status of the private citizen is entirely different from that of a railway. Private business is not subject to rate regulation at all. Commissioner Thelen, of California, has made an excellent argument on this, advancing the principle that the relation between the railways and the people is that of agent and principal. He argues that it is only as an agent of the public that the railways have the power of eminent domain. He then applies the following principle of agency:

It is a well established principle in agency that an agent acting within the scope of his authority is entitled to be reimbursed for the money which he honestly and judiciously expends for the benefit and account of the principal, together with a proper compensation for his services. As a general rule, it is a breach of good faith and of loyalty to the principal for an agent to deal with the subject matter of the agency so as to make a profit out of it for himself in excess of his lawful compensation. If such a profit is made, that agent may be held as a trustee and may be compelled to account to his principal for all profits and advantages acquired by him out of the relationship. Applying these principles to the relationship between the public and the public utilities, it seems clear that the public utilities are entitled to a reasonable return upon such money as they honestly and wisely expend for the public, but that they should not be allowed a return on the increased value of the property used in the agency.¹

¹ *Proceedings of the Twenty-fifth Annual Convention of the National Association of Railway Commissioners*, p. 273.

Going further, he makes the agent assume losses from injudicious investments, but would guarantee him against the competition of a possible cheaper or more efficient property, if his original investment was made honestly and wisely. So it is only half a game of heads you win, tails I lose, for the companies. To be sure, the risks are not so great in the transportation business now as formerly. But to a layman in the subject of law it would seem as if the very fact of making the agent assume the risks of investment, with protection only from possible rivals would decidedly modify the relation between the agent and its principal. If the agent buys the property at his own risk it ought to be with the chance of an increase, as well as with the chance of a decrease of value. There may easily arise many cases, if not at present, at least if we meet with a period of falling prices, in which investments made with ordinary wisdom decrease in value. Such examples as were mentioned above, cases of the boll weevil injuring property values and with them the traffic, of exhausted run-out mining regions, or even of railway property bought in cities which have not kept up their promise of growth, all show what may happen even in periods when prices are on the rise. If prices fall, examples may be more abundant. It would be very hard to guarantee even investment made in property with reasonable honesty and foresight. Even to maintain the rates at a standard level might not protect the railway interests. Certainly we could not consider guaranteeing the investment in equipment against the advent of new inventions. That would not be to the public interest, nor is it the policy of the commissions. The commissions are quite ready to force the adoption of new inventions even though it be at considerable cost to the railways.

There appears to be some weight in the proposal that the

railways be protected against the competition of a possibly cheaper route. To a large extent the railways are being protected against the advent of rivals, and this is of immense advantage to them. They are not in the position of those who invest in real estate with a likelihood of many rivals entering the field. The railways are given what practically amounts to the undisputed control over their field. And yet even here there are limitations. And, should very much more efficient means of transportation be discovered, it would be useless to talk of guaranteeing the investment that had been made in good faith. The only way this could be done would be to buy out the roads in such a case; and this would be practically out of the question. It will be objected that this is a purely speculative objection, that there is no likelihood of any invention revolutionizing transportation except what may grow up in the railroad business itself. There may never be anything that will wholly supercede railway transportation, though electric traction may condemn thousands of dollars worth of workable property to the scrap heap. But just this last few years, while this movement for depriving the railroads of the increment in value in their property has been becoming popular, a system of transportation has come into being, not merely with public permission, but by government action, that is a cheaper and more efficient route for a very appreciable part of the traffic formerly carried by the railroads. It is said that the Panama Canal is likely to come into competition with the transcontinental railways for twenty per cent of their business. Such a striking object-lesson shows that it is doubtful if public policy would for a moment save the agent from the destructive competition. Certainly the usual economic law which lets the fittest survive would not guarantee the investment, nor is it to be expected that public opinion would do so. While the principle was working in

one direction it would be popular. Nevertheless, as shown above, the railways are protected to a very large extent against the advent of rivals, and they are not so easily assailed by rivals as are investors in more open economic fields; consequently their risks are less. And in so far as these risks are diminished by the relation of the public, the principle of agency is carried out.

Ethical arguments might also be advanced on the other side of the question. But it would be difficult to find an argument that would settle the question. In the matter of ethical considerations, it is as a certain character in literature often said of various subjects: There is much to be said on both sides. Our ethico-legal conceptions do not fit the case. They have grown up in a different economy. And the underlying principles of justice need to have light on the situation before they can act. We are dealing here with an expanding economy, and the question is as to what share of the expansion belongs to the railroads and what part to the public in general. Justice demands that neither be deprived of what it has fairly acquired, if it be possible to avoid it, but it does not say when additions are made to the common fund that is the share of each in the expansion.

Starting from the conception that neither be deprived of what it has fairly put into its enterprise, that the railways be allowed full right in their investment at least, and that the shippers shall not have their shipping rights decreased if it be at all possible to avoid it, what can we find as to the division of the expansion which has been taking place and which we hope will continue? As has already been shown, the railways exist for the general business of the country. They are not an end in themselves. Railway expansion is necessary to provide for the traffic, but it is not even desirable that it exceed the requirements of the traffic. If the railways are allowed sufficient earnings to warrant and se-

cure this expansion, there can be little doubt but that it will be generally conceded that justice is done them. More than enough would stimulate over-expansion, and would be inexpedient as well as unjust to the shippers for whom transportation exists, for it would hamper their expansion.

Two important facts deserve emphasis. One is this fact of expansion. Our railways have had phenomenal expansion, and must have still more. They have added line to line, and property to property. New lines have been built, sometimes to be absorbed by old, and sometimes to become independent systems. In early days, much of the needed land was donated. For many years it has been bought, and at constantly increasing prices. As matters stand, different roads in the same field have acquired their land on vastly different terms. Then again, in spite of the fact that this country has about four-ninths of the total railway mileage of the world, we are far from the point when we can cry, enough. Even the populous East is not oversupplied with transportation facilities, and will doubtless need more before the population ceases its expansion. If this be true of the East, what of the West? It has been claimed that while at present we have at least \$15,000,000,000 invested in railways, it would not be extravagant to look for a necessity for at least three or four times that amount before expansion stops.

The other fact to be noted is that the railways of the country are, as a whole, so intimately bound up with each other that rates on one line can only be made in a certain close relation to the rates of the other railways. Not only do railways compete for service between the same points, but the markets which they serve, though they may be separate, nevertheless compete, and hence the rates in different regions cannot be made in defiance of each other. As Commissioner Prouty says:

The greater part of the business of the railways of the United States is subject to competitive conditions of one sort and another which are largely controlling so that the rates of one are necessarily bound up with those of another.¹

What then must be the ruling principle for valuation under such conditions of expansion where the rates on the different lines must be closely related to each other? Let us first examine the question of the property which is already in the hands of the railways; property that has been built up before this conflict between the different principles of valuation gained prominence, and property built up as largely in the absence of competition as the will of the public could command. Needless to say, under such circumstances, the railways have acquired property as it seemed to them that it would be profitable, with no thought of restriction to original cost. And again, under competition as it once existed, and as the public has hardly ceased to try to make it exist, the growth of our railroad systems must of necessity be quite largely by the building of new and independent lines.

Could our railway system expand under these conditions, if allowed merely what is understood as a fair return on the original cost? Take for example a district served by a line built some years ago on free right of way, that had bought terminal properties at very low cost before the cities were built up, and that, before regulation was inaugurated, had invested a considerable surplus in necessary equipment. With the development of the region another line became necessary to provide for legitimate business interests. Would this new line be a possibility if regulation insisted on basing rates on a fair return on the original investment? It is certain that a new line would find it very difficult to

¹ *Railway Age Gazette*, Feb. 13, 1914, p. 322.

enter the field expecting to charge more for the same services than the old line. Even if they were to serve exactly the same district, this would be impossible with any hope of success for the new venture. And if the function of the new line were partially to open up new fields, the case would be still plainer. The traffic is less in new fields and the rates, if anything, must be lower than in old fields in order that the traffic may be stimulated. The outlook would be that, if regulation had been adopted so adjusting rates that the income should only be a fair return on the money invested by the security holders as actual out-of-pocket payments, there would be no second company. Rates based on the original cost of the first company would not tempt capital into the new venture where everything must be paid for at present value. It is a very grave question whether capital would go into a venture that had even so little risk as railroading has at the present time, with the prospect of nothing more at best, than a so-called return on its own original investment. Certainly it would be impossible to get capital for a new line if the rates for the region were fixed at a fair return on the original cost of an older line built when land was either much cheaper or could be had for the asking. Of course, this applies not only to the return on land investment but on all other forms of investment with which a new line must equip itself when entering the field. If the price of construction work or of equipment has risen, the only terms on which new investment can be expected is that rates for the region be based on present prices of all these necessities for the new line. In other words, if a new line is hoped for, the rates of the old line must be sufficient to cover the present value of the old line, for this would as a rule be the best working criterion of what it would cost to construct the new property.

It would be hopeless, as seen from the statement quoted

from Mr. Prouty, to base rates on the old line on its cost and those on the new line on its cost at the same time and in the same region. In order for the new line to exist, the rates for the region must be high enough to cover the new cost. Would there be any advantage, then, in counting the valuation of the old line at its original cost and allowing for the difference, when making rates to be worked out in a higher rate of return? Obviously this might be done. But if the rates were to be the same in either case, it could hardly be any advantage to the shippers for the railway to have a high rate of return on a low nominal valuation. It would probably even be a disadvantage, for it would be a great source of worry and grief of mind to many who could never be brought to see the reason for it. The result would probably be a popular feeling that the railways of the country were earning far too much, and consequently there would be a great deal of trouble caused to the railways, a great deal of useless embarrassment. It might be argued that, if the two lines considered were rivals only in through traffic, it would be of advantage to the local trade of the road built at the lesser cost that its valuation be based on the cost. It would not be necessary for the local rates to cover present value just because this was essential for the through traffic. But since the local rates on the newer road must pay this higher rate, owing to the principle of the competition of markets, it would be a doubtful economic policy to base even local rates on one line on present value and on another line in the same general field on a very much lower original cost. What one part of the region would gain the other would lose, and it would be the one that could least afford it that would be the loser. The new line would need the benefit of local traffic more than the old one would, and it would be hard to build it up under such uneven circumstances. The through traffic of the new line

would be unduly burdened. To make this line profitable, its through rates must be higher than they otherwise would be, and consequently, as this line would be the pace-setter for rates, the region would have a greater burden than it would if the rates and traffic were more evenly divided as a result of the valuation being based on the same standard in each case. And in addition to this difficulty in fixing valuation on the prices of totally different periods of time, in the case of two lines in the same region there is a perhaps greater difficulty in the fact that different lines come into rivalry for traffic, not in one single phase of the traffic but in many. A line will share business with one rival in one part of its traffic and with others in other parts of its traffic. It may share through traffic with one line and local traffic for part of its length with another, while the rest of its local may be with still another. The outcome would be a great mixup of rate-making if costs at different periods of construction were the determining factor in the making of rates. It would probably be very difficult to find any area of appreciable extent on which rates could be based on the prices of the land-donation period, even in so far as the valuation is concerned.

It is true that a great deal, probably by far the most, of our construction work of late years has been done by extension of the sphere of established companies. But this does not interfere with the fact that a tremendously important part of our railway development from the beginning up to this time has been under such circumstances as outlined above. New roads have been built as separate units. And while the land for the first lines was donated, the land for other lines which followed, and were a necessity to the development of the country, has been bought, and bought at ever-increasing figures as time has gone on. That this has been a necessity can be seen at once by im-

aging the conditions that would exist if all the railway expansion had waited for the development of the lines in existence fifty years ago. Certainly the railway map would look different to-day had the development come only in this manner, and one need hardly fear being accused of rashness in hazarding a guess that the railway network would have been much smaller than it actually is had this been the rule. Not only are we indebted to this building of separately financed lines for our present railway facilities, but this has been the policy of the public that has been pushing the matter of regulation. The public has endeavored to maintain all the features of competition possible. It has been opposed to concentration as well as monopoly. Anti-trust acts, anti-pooling restrictions and various other devices to offset the evils of monopoly have stood in the way of the economic advantages of the amalgamation of the railway interests; such amalgamation might allow expansion into new territory on the financial backing of the established lines.

The result is that we have a system that could not have grown up under a system of rate-making allowing only what is understood as a fair return on what the security holders originally put into the enterprise with the actual additions for betterment as paid for by new subscriptions. And we could not now go back and base rates on the original cost of those roads which acquired a major part of their property in the early days. To attempt to do so would be to attempt an impossible system of rate-making. The newer and more expensively propertied roads set the pace for rate-making valuation, as in the Spokane Rate Case. It may be that in some regions lines have not been so recently built as to necessitate valuation based on value completely up to that of the present general market. But since the original cost of the early lines is so far eclipsed, and the actual cost

of even the more recently constructed lines is so difficult to ascertain, we may reasonably conclude that, for the investment up to the present, it would be much the better policy to count the present value as the fair valuation. Any discount from this could be allowed to work out in what would be a small difference in the rate of return.

If our transportation system could not have grown up under the principle of original cost, it would hardly seem feasible to go over to this principle for the system that now exists. If it could not have developed on the principle, how could such an intricate railway system be maintained on it? It is argued that railway property, once it becomes railway property, is fixed as such. Land once adapted to this use can hardly be expected to return to other uses. The great argument against valuation on the same principles as govern the price of property in the general market is the lack of transfer of property between the railways and the general market. The attempt has just been made to show that there is no lack of such transfer in one direction; that there has been such a transfer in one direction as to be determinative. Such a one-sided transfer of property is the only possible state of affairs in any enterprise which is continually expanding, and which pays for its property in the general market. The railway does not want to sell land if it can earn a fair return on what it has to offer to the public. But if the railways should be cut down to a return merely on the cost of property bought years ago which would sell for many times that figure to-day, they might want to sell. If the terminal properties were scaled down from millions to a few thousands, the railways might sell their city properties for other uses and let the cities provide for the handling of the goods as far as terminal facilities are concerned. The land covered by the Grand Central Terminal is no more unfit for other uses than is that covered by the Woolworth building.

As already brought out, to allow a valuation for past acquisitions on only what was paid long ago would be looked on as confiscation from the standpoint of the present security holders. A very important part, if not the majority, of the stock of the railroads has changed hands since they were built. The increment of land value, whether earned or not, has been added to the accepted value of the stock, or even covered by bonds, and passed on by sale to other owners. Surplus over the dividends paid has been invested and the value added to the value of the stock, or made the basis for new bond issues, and simply put into the pockets of the former owners by another hand than the one they would have used had it been devoted to dividend payments. The present owners have paid for all they got. The profits have gone to former owners and insiders, doubtless principally the latter. And the value of the land donations has gone the same way. They are no more a source of profits to the present owners than they were of loss to the original donors. The latter counted the donations as payment for the railways which they got, just as anything else they bought and paid for, and the former paid for what they own just as much as for the land bought from the farmers to-day. It cannot be claimed that we must guarantee the basis of all stock sales. That would be worse than trying to guarantee all original investment. Unfortunately, there are many securities issued and sold that regulation must overlook in so far as their selling price is concerned. But sales based on a valuation, indefinite though it has been, that has been freely allowed by the courts and advocated by the commissions and the shipping public as long as it was supposed to be to the public advantage, are surely sales that the buyers have had reasonable grounds to have confidence in. Not to stress the ethical phase of the subject, let it only be noticed that there would be great danger of a serious effect

on the future market for railway securities. To go back on a principle of valuation so long maintained against the railroads would be likely to have a most depressing effect upon the home security market and might be classed abroad with State repudiation.

The conclusion in so far as the valuation of railway property up to this time is concerned is that the principle of present value, or cost-of-reproduction-less-depreciation should rule. And it should rule in so far as all items, whether land, constructions, and equipment or non-physical elements that have cost and must cost, and are needed for present traffic requirements are concerned. Let the slate be cleared, allowing, for the past, the so-called unearned increment, and allowing the valuation on the actual property bought out of surplus earnings. It will do us no good to remember that half a century ago certain promoters were given tremendous tracts of land—unless we want to tax their descendants. But there seems to be little reason for allowing a large multiple for land condemnation in addition to the present value of the land. When we see how small the multiple actually is in the long run, and that, when paid, it is not paid generally on the value of lands contiguous to railway property, but on land at a considerable distance from existing systems and hence cheaper than what is actually contiguous to operating lines, we see the reasonableness of the decision of the Supreme Court in the Minnesota Rate Case, where the multiple was completely denied. Exceptional instances may occur, but, as a rule, justice would seem to be done the railways if they were allowed the present value on their property without the multiple at all. And as for the suppositious cases where the original cost is greater than the present value, unless it be feasible for this difference to be amortized, as is so frequently done with the discount on bonds sold below par, it would seem much better, as a

rule, to count this in with the risks of enterprise, and allow the promoters to pay for the lack of wisdom or worse in their investment. Such cases will probably be so rare under the present trend of prices that they can easily be cared for on the individual merits of the case, and will not prove a serious disturbance to the general rule of the justice and expediency of the principle of the present value as a basis for the valuation of the railways in so far as they have already been established.

Though the claim has been made that the principle of valuation for the property already invested in railroading should be the value of the property were it in the general market at the present time, yet this is by no means understood to mean that for the future railway values must necessarily expand to keep pace with the cost of reproduction. In fact the most powerful arguments for the principle of cost-of-reproduction-less-depreciation lose their force when future expansion of values is considered.

This does not mean at all that a period of cessation from railroad expansion is anticipated. Conditions are not at all likely to become static in the railway world; they are likely to be fully as dynamic as ever for some time to come. As already noted, the United States will need at least four times as much investment in transportation as the present figures show, before the country will be fully equipped. But we may not have a program of expansion by the method of launching new independent lines. If we accept railway monopoly as a fact, an economic necessity, then while not allowing it its ordinary burdensome rate-making powers we may allow it the monopoly privilege of control and operation with freedom from competition of new lines entering the field. This means that our expansions may be by the enlargement and extension of already existing systems.

This may not, at first sight, promise to make any radical

difference in what basis will be necessary for the valuation of the future. But a careful view of the case will show a very important difference between the two programs of expansion.

Expansion by the method of the projection of new independent lines is like the classic economic illustrations of the farmer extending his cultivation of grain to less fertile fields. The profitableness of each field is an entirely separate consideration. The fields may be owned by different farmers. It makes no difference. The farmers cannot increase the productivity or profitableness of the fields in use by adding other less fertile ones to cultivation. The change warranting expansion to the less fertile fields must come from an expansion of the demand allowing a price that will make cultivation on such fields profitable. This expansion will necessarily give an added profit to the owner of the first fields, but it is a profit that can come only through the medium of an expanded demand. Even though both a new and an old field are owned by the same farmer, it will not be to his profit to cultivate the less fertile field, till he can make a profit on it independently, unless the addition of the new crop increases the marketability of the old. Even though the addition of the new crop might increase the marketability of the old, a new farmer could not be expected to cultivate a new field until the new field was, through rising prices, profitable by itself. An enlarging demand would be very profitable for old farmers, but, unless the cultivation of new fields made the products of the old more marketable and the new fields were brought under cultivation by the same men, the cultivation could not be extended farther into the less fertile fields than their independent profitableness would warrant. Both economic combination and help from one unit in the marketing of the products of another would be necessary to prevent the least fertile being the price-setter for all.

So in railroading; so long as additions are made by independent lines, the latest unit, or the one provided with the most expensive land and such other commodities as are rising in price per unit of transportation, will be the line that sets the pace for the rates.

But, to return to our farmers, if we have combination of new and old land in the hands of the same farmers and if the addition of the crops on the new fields is of material assistance in marketing the products of the old, we have a different state of affairs. By means of increasing their output, they may be able to secure great economies in marketing. If this is possible it will pay them to bring new fields under cultivation that would be unprofitable if operated independently. In so far as the cultivation of new fields increases the profitableness of all the fields, it will be to the advantage of the farmers to extend their cultivation farther than they would under the previously supposed case. Under this former case, the margin of cultivation would be extended only in so far as the income from the new field alone paid for the new outlay of capital on it. Under the present method, new capital would be laid out on new fields so long as it resulted in a net increase of the income from all the fields sufficient to warrant this investment. In other words, it must only be seen to that the income as a whole is sufficient to warrant the investment of capital as a whole.

Returning to the railroads, let us see how this principle works out.

When an established railway system considers building a branch line, does it wait till it thinks that the receipts of the new line on the mere traffic carried over its own tracks will pay for the new investment? Certainly not. The branch lines are known as feeders for the established systems. A great deal of the profit from these feeders comes from the added traffic which they make on the older sections of the

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systems. If the traffic actually handled on the branch were barely sufficient to pay interest on bonds that would cover the cost of the new line, it would not pay an independent company to construct it. But if at the same time traffic originated on this line that would be carried at a profit all over a large railroad system, it would certainly pay the old system to build the new line. It would pay it to build the new line at less return from its own individual receipts than would pay the interest on its construction bonds. The business of the separate lines does not stand or fall by itself. An increase of traffic on any line increases the traffic on neighboring lines. The building of a new line means the addition of traffic to older established systems. It is not like a system of farming where the crop on each field must be considered as a separate unit that must be profitable in itself. It is like a system of farming where the profitability of all the crops and stock holds together; where grass must be raised for the stock, and stock must be kept to provide fertilizer for the orchard. The business carried on in a railway system is to a large extent all one organic unit. Investments are not made with a view solely to the profit on the particular property in which the money is laid out in the particular instance. Money is spent on ventures that will increase the business of the whole system sufficiently to warrant its investment. The business of the whole must be sufficient to provide an attractive return on the investment as a whole. The investment will naturally be increased to the amount warranted by the returns anticipated from traffic demands.

Does not this mean that, if the future expansion of our railways may come about by the development of the present system instead of by building separate new lines, the basis for rate-making may be the actual future investment, with perhaps a little leeway to cover expansion over more ex-

pensive territory? And may not the expansion come about in accordance with the same principle?

Surely expansion might come about by this method if the public would remove its objection to railway combination; an objection that does not seriously prevent monopoly, so far as it is spent in trying to stimulate railway competition. It would probably be impossible to ascertain how much of the expansion of this last few years has come about in this manner. Owing to the practice of inter-holding, and the formation of what are in reality subsidiary companies, it is hard to distinguish new companies from what are in reality forms of the old ones. But the amount of expansion that is known to have come about through the building up of the great systems of late years would easily lead to the conclusion that, were this practice fully accredited in the public estimation, we could depend on this program for the necessary railway expansion. Even new lines of considerable extent, and built into new territory as needed, would increase the profitableness of the present existing systems. We hardly need new lines faster than it will be thus profitable for the old lines to build.

By the statement that the basis for future valuation may be the actual investment, is meant that, after making due allowance for the property at present devoted to transportation, at such a valuation as would allow for its present value as outlined above, in the future we may simply add to this the amounts of actual new investment. This would allow for the necessary railway expansion of the country by the expansion of the existing systems. If it be objected that, while the companies were earning a bare return on what they already had invested, they could hardly be expected to buy new property at higher prices for the prospect of a slow addition of traffic at old rates, it must be answered that the rate of return must be sufficient to attract capital

under such conditions. Nor would this rate of return be any greater than what would be necessary for the so-called marginal line, or the most expensively built line, if this were independent of a large system, in order that it might operate and expand as its business demanded. But further discussion of this and the influence of the unearned increment on the rate of return must be left to the chapter on the net return.

This rule for valuation for the future would not involve anything that could rightly be called confiscation. It would be a generally understood program, and would be accepted as a settled fact by investors. Certainly it could work no hardship to future investors. They would invest on known terms. The returns would be according to the expectations of their investment. Neither could it work any hardship to those who would buy the stock of previous investors. They would buy the stock of former security holders with a view to future earnings just as those who would invest in new securities. The only ones who could suffer would be those who held stock when the program was changed to the basis of the principle of actual investment. These might suffer if they received too small returns when deprived of future increment. If so they would suffer in the shrinkage of returns on stock which they retained and in the shrinkage of capitalization based on such change if they sold their shares. It could be argued that, even though a certain amount of such shrinkage should occur, it would only be an instance of restrictive regulation scaling down anticipated profits. Such things are almost bound to happen. If the real social good demands such restriction, it is not held to be unjust. Such things are part of the regular risk in investment in public utilities. And if the valuation allows full present value for all investment up to the time of a definite inauguration of the other principle, there can

be no real confiscation. Anticipated profits in public utilities could hardly be counted as property. Moreover, it is very doubtful if the expectation of the increment of property value has had any serious influence on the investment in railroads of recent years. If it did influence the investment, it should be to decrease the amount of dividend required per unit of capital value. An increase of capital value would count as part of the return. But investors in railway stocks do not count on any certain rise in the price of the securities as a part of the earnings on the investment. It would be difficult to find any case where the railways discussed the earnings in which they counted the unearned increment as part of the returns of the enterprise.

Since there seem to be no serious arguments in the way of computing the valuation in so far as it changes from the present value of the property actually in use at present on the basis of the actual investment, the question is as to whether or not it would be expedient to do so. The problem as to whether or not it would be a saving to the shipping public to cease allowing the so-called unearned increments has had sufficient discussion already to intimate that there would be such a saving. But this phase of the matter cannot be closed till after a careful consideration of the problems of the return. The question as to feasibility or convenience, however, is one that presents little or no difficulty. One of the greatest objections to the principle of cost-of-reproduction-less-depreciation is the difficulty of applying it and keeping it in operation once it is applied. It is continually being said that neither the Federal valuation nor any other valuation made on this basis would be useable, for, by the time the valuation was finished, the first part appraised would need to be revalued. Such a valuation neither stays at a constant figure nor does it vary according to any schedule that could be computed. It

would be necessary to continually keep revaluing, and even then we could never be really up-to-date with the figures. But, on the other hand, once we have a valuation determined and standardized, it would be a very easy matter with the methods of accounting now in force, to keep it up to date on the principle of actual investment. All that would be necessary would be to add the new outlays to the valuation of a line or system as standardized. Once the work of the Federal Valuation Board is completed the accounting methods enforced by the Commission would provide for the future.

If once the general principles could be decided, the various elements of value would naturally be decided quite easily. But yet there would be a few points that would require particular consideration. One of these is the matter of future surplus. The railways claim the right to a surplus that may be laid out in unprofitable property, such as the grade crossings demanded for public safety. If this should be allowed on the express conditions that the value of this property should never be added to the amount used as a basis for rate-making, the claim does not require discussion here. And the question as to the expediency of supplying such needs for the future out of the rates imposed on the present, together with the question of building up a surplus to tide over lean years and give greater basis for credit, belongs rather in the discussion of the return.

In so far as the valuation of property already in the railway enterprise is concerned, it would seem best, as a rule, to disregard the matter of the multiple. As was seen, this has been very generally compensated for, to the extent that it has actually been paid, by the increased value of the property. But if future increments of property value are not to be allowed in the valuation, such multiples as must be paid to secure necessary land must be allowed in the

future estimation of value. They must be paid, and hence their cost must be provided for, or the land could not be bought.

Similarly, all intangible elements must be allowed for in so far as they are real and necessary charges. Extravagant charges may not be counted in, but all reasonable outlays must have their share in the computation. Fortunately, if future expansion be by the extension of old systems, such matters as loss from early years of unproductiveness, once they are settled for in the past, will be minimized as a problem for the future.

Fairness, expediency and convenience would seem to argue for the adoption of the principle of present value as the standard for the investments of the past, and for the principle of actual investment in addition to such a valuation as the standard for the future. Whether or not such a policy for the future will actually secure more favorable terms for the shippers can be decided more definitely after discussing the question of the fair return.

CHAPTER III

THE FAIR RETURN

THE Supreme Court of the United States said in the case of *Smyth vs. Ames*: "What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience."

This oft-quoted decision has been accused of vagueness, such vagueness as to make it valueless. Certainly the term "fair return" denotes nothing very definite to our minds; it seems impractical. But it is a very great question if the critics, with the material available at the time, could have framed a better answer to the question. Those who ask that a definite rate of interest be laid down must be ignorant of the problem before us. When we think of the number of questions involved in the problem, the conclusion is forced home that not only was it out of the question with the evidence then at hand to lay down a settled rate, but it is also improbable that such a thing will ever be possible. As shown in the preceding pages, these problems are essentially dynamic, they deal with changing and developing conditions.

The problem is not so simple as that of finding the rate of return upon the valuation of a completely isolated line and under settled business conditions. Business conditions are not settled. A legal rate of interest might be fixed as a maximum, but the market rate of interest is a thing that changes continually, sometimes widely from day to day. We must account not only for these random business changes but for

the longer time cyclical and secular variations as well. Moreover, when we speak of a fair rate, we must not forget that that means fair to the public as well as to the railway corporation. It should also be remembered that fairness is very largely an ethical conception and that the ethical conceptions worked out for simple conditions may need a great deal of development before they are adequate for these complex problems. Again, the question of surplus may involve a tremendous difficulty in the calculations, to say nothing of the complications that the increment of capital values is likely to involve, perhaps even if omitted from the criteria for future valuations. The changes in the purchasing power of money make another disturbing element. The different jurisdictions of the Federal authority and the States also enter in with the demand for a fair return in each, and the cost-of-service principle calls for a fair return in the various divisions of the traffic, such as the freight and the passenger. While all these things are to be accounted for, it must always be kept in mind that we are dealing with a railway system that should expand fast enough to provide for the expansion of traffic, and that rates should not be unnecessarily high lest the traffic be hampered on that side; nor must we do anything to unduly discourage movements for better service and more efficient management. A careful consideration of this list of questions, which could easily be enlarged, should have a calming effect upon the critics who look for the problem to be settled by a decree of the courts.

As a problem in rate regulation the one before us is an attempt to limit monopoly profits which unnecessarily restrict the amount of the business transacted. In the ordinary business of the country competition does the work which regulation attempts to do in the field of these natural monopolies. It is a principle apprehended by all that monopolies

usually reap rich harvests. The complaint generally made in such cases is that the patrons are being robbed. This may be true, but it is even more important, in the field under discussion, that many prospective patrons are entirely deprived of the service, and much business that would be possible is kept from actual transaction. The monopolies skim the cream, and leave the milk to be thrown out. As already pointed out in an earlier chapter, the attempt to adjust regulation to the cost of the whole service is an attempt to extend the service so that as many prospective patrons may be served as the ability of the railways may allow. This idea rather than any movement to deprive the companies of profits is the reason for restriction of monopoly returns on railway property.

Accurate data are not available for the returns of the railways in the early days of the business. There was no established basis on which to calculate any rate of return except the stocks and bonds. Judging by these, the returns varied within rather wide limits. In many cases large fortunes were made, and yet most of the transcontinental roads have passed through receiverships, and some of the roads of the country have been bankrupt several times. In a period when there were so many failures, it was but fair that profits, when they were made, should be large. It was not only fair but necessary, if capital was to be turned into such a business in a time of great risk, that the returns in the successful ventures should be high. No one would enter such an uncertain business without the hopes of large rewards for success. The fair return in those days was large. Not only on account of the risk must returns have been high to be fair; it was a period of rapid business expansion, and in such times the profits of entrepreneurs are large; it was also a period of frontier conditions when natural wealth could be acquired for only the price of reclaiming.

Under such circumstances it was but right that the railways which played a large part in the reclaiming should receive a substantial share in the profits.

A very large share of the returns to the early investors in the railway enterprise in the past came in the form of increasing values in the property which had been received in the form of bonuses, or had been purchased at comparatively little outlay. Frequently the stock was either sold for a mere pittance or else issued as a bonus to those who bought the bonds on which the railway was financed. But now the water has been squeezed out of the securities by means of the increased value of the properties. In many cases securities were taken up by the market at prices that in no sense represented money laid out in the property, prices that it has taken years to back up by actual property values. Had the price of the securities started and kept pace with the actual property values, the increment in value would have appeared in an increasing price, and this increase in price would have amounted to a part of the return enjoyed by those who held the securities during all this period. But the abilities of salesmanship of the promoters and insiders has been such that at the time of the original promotion and during later reorganizations the price of the securities has been based on anticipated earnings. Consequently the benefit of the increment of capital values has gone to those promoters and insiders perhaps years before it has actually appeared in the property. The result has been that a great deal of this profit has been directed rather to profits of entrepreneurs, promoters and insiders than to a return on capital as such. And this is not as iniquitous as it may seem to many. It may be that many things that were accounted honest business in the earlier days of the enterprise would put the actors in jail, should the same things be done to-day. But there was a

great deal of profit in those days that belonged rather to the promoters as entrepreneurs than to capitalists as investors. The man that made the New York Central into one system performed a service for society that deserved a return entirely separate from the capital which he had invested. And the men who were obliging enough to receive the gifts of land and other donations for the consideration of supplying railways to the frontier regions performed a service which appeared to the other parties to the transactions as worthy of the reward. One region vied with another in making these donations. It was the only condition the public saw on which they could get the desired service. The price was high, but it was paid cheerfully enough for a time. And these high profits were largely entrepreneurs' profits that were required to induce men of the needed qualities to push the enterprise to a successful issue.

But the frontier days are passing into history. Donations ceased some time ago, and speculative risks have largely disappeared with the standardization of railway enterprise. The salaried officer holds the place of the entrepreneur. The returns now are supposed to be divided between such salaries and the returns to those who invest the capital. The days of easy profits to the successful have very largely passed. Competition holds the returns down in the ordinary fields of business, and government regulation has undertaken to perform the same function for the railways in order that the other branches of industry may not be at a disadvantage.

Government regulation involving interference with the return is a matter of long-time standing. As early as 1876 the Supreme Court was asked to decide on a case where a legislature had undertaken to so regulate the rates. At that time the court considered that it was purely a matter for the legislature to handle if they so chose. Later the idea

was adopted that the court had a right to interfere with such restriction if the legislatures undertook regulation that deprived the railways of a return on their property. At first this was looked upon as any return, later it was held that in general a fair return should be allowed on property carefully invested. In some cases the court has decided upon particular rates for specific circumstances, upholding or enjoining rates fixed by the legislatures or commissions, but never has it decided upon any rate of return which should apply in general.

Among the rulings of various courts and commissions there is a great variety of opinion registered. In many cases definite rates of return have been fixed for the particular instances, but the rate held to be reasonable in one case may be held to be confiscatory under some circumstances, or unreasonably high under others. When a rate has been determined, it is always with reference to the particular circumstances in hand and is never made as a general rule. Mr. Whitten says in his volume published in 1912 that "the decisions of 1911 indicate that the Federal courts are now inclined to allow higher rates of return than formerly."¹

The courts, however, do not contend that in every case there must of necessity be a return upon property invested. Such is the rule which obtains under ordinary conditions. Unusual conditions demand special consideration. Mr. Justice Brewer said in the case of *Reagan vs. Farmer's Loan and Trust Co.*:

It is unnecessary to decide, and we do not wish to be understood as laying down as an absolute rule, that in every case a failure to produce some profit to those who have invested their money in the building of a road is conclusive that the tariff

¹ Whitten, *Valuation of Public Service Corporations*, p. 689.

is unjust and unreasonable. And yet justice demands that every one should receive some compensation for the use of his money or property if it is possible without prejudice to the rights of others. There may be circumstances which would justify such a tariff; there may have been extravagance, and a needless expenditure of money; there may be waste in the management of the road; enormous salaries, unjust discrimination as between individual shippers, resulting in general loss. The construction may have been at a time when material and labor were at the highest price, so that the actual cost far exceeds the present value; the road may have been unwisely built in localities where there is not sufficient business to sustain a road. Doubtless too, there are many other matters affecting the rights of the community in which the road is built as well as the rights of those who have built the road.¹

The courts have generally considered the fairness of the rate towards capital already invested in the business. The commissions, on the contrary, have, as a rule, considered the rate which will induce capital to enter the field. The Master in the case of *Columbus Railway and Light Co. vs. City of Columbus* refers to the latter viewpoint as the administrative standard, but holds that the judicial standard for testing the constitutionality of an ordinance must be based on the narrower grounds of prevention of actual confiscation.²

Enough has been said about the necessity for the expansion of our railroads to show the need of attention to the interests of the investors. It would not be good policy to guarantee any particular return on, or even the profitability of, each investment. There may be cases of ill-directed investment where there will be no return. But yet the return in the field as a whole must be sufficient to offset such

¹ 154 U. S., 362, 412.

² Page 59.

risks and make the enterprise attractive to prospective capital. A return cannot be demanded on the plea of investment, but investment cannot be looked for without the prospect of an attractive return. Looked at from the standpoint of the public, the return is what warrants future investment, rather than something which is due to capital already in the business. Even the courts admit that vested interests may be neglected under higher considerations. The ordinary competitive conditions show the same principle. Since capital may be ill-directed, the mere fact of investment does not necessarily mean a return. But a prospective return upon future investments is an absolute necessity that a business may live and especially that it may expand, and the main criterion by which prospective investors judge is the profitableness of the capital already in the enterprise. There are risks of failure, but these must be offset by the advantage of the whole situation. The ultimate object for which the return must suffice is the attraction of future investment, but the means by which we estimate this is the return on what is already in the business. What we are after is not so much a fair return as it is an expedient return, using the term expedient always to mean a far-reaching expediency. Legal and ethical fairness in detail is yet to be worked out for this field. No higher criterion is at hand than the highest social good. Individual interests are subservient to social interests when they conflict. The ultimate end must be to attract sufficient capital without at the same time overburdening the traffic.

Mr. Whitten expresses very clearly the principle that seems to be the most applicable here. He gives, among other possible standards, "The rate of return adequate to induce investment in a new enterprise at the present time."¹

¹ Whitten, *Valuation of Public Service Corporations*, p. 705.

The National Securities Commission said in its report to the President :

A reasonable return is one under which honest accounting and responsible management will attract the amount of investor's money needed for the development of our railroad facilities. More than this is an unnecessary burden. Less than this means a check to the development of traffic.

The Wisconsin Railway Commission says :

It is absolutely necessary that the wages paid should be high enough to attract competent workmen, superintendence and management, that the interest paid on the capital legitimately invested should be sufficient to attract the necessary capital into these enterprises ; and that the speculative or other gains should be high enough to induce employers to enter these industries as co-ordinators of the other factors of production therein, and as assumers of all risks and responsibilities that are involved in their operation. From these facts there is no escape.¹

One of the greatest complications of the question arises from the fact that any settled rate schedule will give different rates of return to the different railways in the same field. This is not a situation which is peculiar to the railway industry. Even under competitive conditions all business units do not receive the same rate of return. It may be true that the tendency is towards such a state of affairs, but the tendency works out very incompletely. The normal level towards which returns gravitate is the normal or competitive rate of interest. Yet even in the farming business, where the different advantages are largely neutralized by differences in rent, some farmers make a very comfortable living, and save money, where others only make enough for wages and interest ; and again others fail even to make a

¹ 4 W. R. C., 501.

living. The same is true in other branches of competitive industry. By reason of differences in management and by reason of unforeseen changes in the demand for the products turned out, some succeed well, others do not make interest on their fixed capital and others again fail entirely.

The railway enterprise shows* this state of affairs with great clearness. It is necessary that the rates for the same traffic be substantially the same for all lines in the same field, yet this makes it but the more certain that the earnings on these lines will be unequal. The railways cannot cut rates against each other. The very maintenance of the service depends on a standard rate schedule for all. But under these standard rates the earnings of one line may be barely sufficient to pay operating expenses while another may be paying large dividends. The necessity for mutual interdependence of rates is set forth with admirable clearness by Mr. Prouty of the Interstate Commerce Commission:

The greater part of the business of the railways of the United States is subject to competitive conditions of one sort or another which are largely controlling so that the rates of one are necessarily bound up with those of another. Nearly every station at which considerable quantities of traffic originate or are delivered is served by more than one railway. It is possible, for example, under present switching absorption tariffs in force at the city of Chicago to reach any point within the limits of that city at the same rate by any line which reaches that city. The same is true in substance of the city of New York and the great industrial district of which New York is the centre. It is also true that while two given points may each be served by but two railways, a great variety of routes between those points can be found by choosing different intermediate carriers. For example, lumber from almost any point of production in the South can reach Chicago by a variety of routes through Ohio river gateways. Now while it may occasionally happen that the rate by one route is different from

that of another, broadly speaking the rate by competing lines is the same.

He says further:

A certain amount of traffic is strictly non-competitive. What proportion this may bear to the whole I have no idea; the per cent would be small.¹

Rates must almost always be made with a certain definite relation to each other, and in general the rates for the same service must be the same. To this fact must be added another of equal significance. No two railways, generally speaking, supply the same service at the same advantage. By reason of more advantageous routes, better management, greater density of traffic, or other advantage, one road will be almost certain to have a greater net profit from supplying any service than its rival will have.

The Interstate Commerce Commission, in its decision of the Five Per Cent Increase, given July, 1914, states:

The net corporate income for the fiscal year 1913 of the carriers in official classification territory, comprised in the 35 systems, averaged 8.07% upon their outstanding capital stock, and ranged from 24.93% earned by the Central Railroad of New Jersey, to a deficit of 13.74% on the stock of the Cincinnati, Hamilton and Dayton.

The same body expresses both facts under discussion in its decision in the Spokane Case:

It is well understood that rates by all lines to Spokane from a given eastern destination must be the same. We have already held that in establishing a reasonable rate the strongest line should not alone be considered; the necessities of the weaker line must also be taken into account. In the applica-

¹ *Railway Age Gazette*, Feb. 13, 1914.

² 31 I. C. C. Rep., p. 362.

tion of this principle it is evident that a rate might be fixed which would pay a very moderate return by one line and a very handsome return by the other. Under the operation of these rates the Great Northern, by reason of its cheaper construction and its easier operation, might accumulate a surplus while the Northern Pacific did not.¹

From these two general facts, it is evident that under the same conditions the rates of return on different lines in the same general territory will differ. The schedule of tariffs must be substantially the same for all rival lines, but the resulting rates of income may differ widely. What bearing does that have on the subject of an expedient return? Manifestly, if an expedient return be any fixed percentage, when one railroad earns this its rivals will be earning too much or too little. Is it then a hopeless task to solve the riddle?

This is, as stated above, practically the state of affairs that obtains in the general economic field. Rival businesses have a differential earning capacity, and it depends upon the prosperity of the business as a whole with what member of this series of rivals the rate of return will warrant the expansion of its business. A firm that is earning enough to pay all expenses, including interest and wages of management, will be in a position to acquire more capital and extend its business. As the business possibilities increase, such a firm will be able to meet the demand for expansion. Any business continually earning less than this must eventually fall out of the race. If the weakest member of the series is earning enough to pay expenses, as above, the business as a whole is prosperous, and will be able to meet all demands in the growth of the market for its products. If more of the rivals than those who are in bad

¹ 15 I. C. C. Rep., 415.

financial condition through mismanagement or exceptional misfortune earn less than these necessary expenses, the business as a whole must decline. If, through unusual demand for the product, the poorest competitor is enabled to earn more than enough to keep going, then, under competitive conditions, others will surely enter the business till the poorest one of the enlarged series gets only his necessary expenses. Or, again, the profits in the general field may be such that all those in the field who are efficiently managed and wisely located will be kept in a prosperous condition, and other well-managed businesses may be able to enter the field as the demand grows; and yet during this expansion those that are really ill-directed will have to give place to their betters.

Is not this latter condition that in which an expedient return is enjoyed by the enterprise in question? In general, in ascertaining the expedient return, we must of necessity take cognizance of the whole situation. In the railway field no one line offers a wholly individual problem. All the railways in the field and the future needs of the traffic must be considered. If the tariffs are so fixed that those established railways that are located to provide for the demands of the country's business and are well managed get return enough to keep them prosperous, and at the same time other similarly well-directed lines may be built as there is effective demand for them in the development of trade, can we not say that the railways in question are getting an ample return? If they are getting more, it would seem to be at the inexcusable constriction of the possibilities of traffic. May they get less and still be getting enough? Is not the return sufficient if it warrants the proper maintenance and development of the systems already established, and at the same time makes profitable the building of new lines by the systems already in operation instead of by independent com-

panies? It must be brought to mind that this rate of return may not be so high as the requirements for the extension of new lines independently. Not only is the traffic less dense on new lines, but their cost is as a rule greater. Their property must be bought at constantly higher figures as the country becomes developed. If they must be allowed to be profitable for only the traffic actually carried over these new lines, their construction must be delayed till the traffic demands in the section are heavy. But, as we have already noted, these new lines mean added business for the older systems with which they connect. And if they are constructed and financed by these older systems, it will be profitable for these systems to push the construction, for the sake of this added traffic to the whole, when the new lines would be unprofitable by themselves. It is quite possible that there would be instances when new companies might be able to compete for the opportunities of new construction even when the rule was that no influence be exerted against the consolidation of lines. But if the public would accept the principle of railway consolidation and put nothing in the way of the extension of the companies, the contention is that the principles which would be operative under such a program could be made the rule. If new companies could enter the field profitably, let them do it. If the old companies neglected their opportunities for expansion, doubtless the opening would be seized by others. But why not make the ruling principle that all the well-directed systems should earn sufficient to maintain themselves and extend their activities into new fields as needed for the sake of the return thus added to the whole system?

It is manifest that, in the situation as portrayed, some of the roads or systems will get a higher rate of return than others. Some will get more than what would be necessary for them to be in a prosperous state if they were to be con-

sidered alone. There will be one or more others that will be in technical language, at the margin; they will only earn enough barely to get along and meet the traffic requirements. There may have been some mismanaged, or not rightly placed to meet the requirements of traffic, and these may not be able to escape reorganization. But the rule will be two or more railways serving each general field, the least favored of which gets just enough to meet requirements—a fair return—and the others will have a larger rate of income.

There seems to be no way in which this extra or differential return can be denied the more favorably situated road; and, as we shall see later, there is a real advantage in the fact that such a differential must exist. Some have advocated that the differential be taxed to the point of confiscation, but this would in no way affect the amount of the rates, and hence is not a question for discussion here. It is a matter of concern for us, however, that this differential should be no higher than necessary. The necessary differential is the difference between the most expensive route and the more favorable routes. Right here is another point in favor of the consolidation of lines and growth by extension of established systems. We have already discussed the advantage of this system in so far as the acquisition of property is concerned. There are other ways in which economies may be achieved by the same system. Not only by the acquisition of expensive lands may a railway be a more expensive route; by lack of density of traffic, of favorable routing and of the finer points of efficient management a railway may be less favorably situated than its rivals. Such routes, if independent, would bid for the place of the least favorable lines, and might have to be awarded the place of marginal or determining lines. But if these lines were absorbed into larger systems, the business which

originates or ends on them may be sufficiently remunerative to the main line for it to be profitable that they be run by the system on terms that would make it impossible for them to continue in business separately. If they were not a part of the system, the system would gain from the business coming in from their lines at no expense or outlay on its own part. In this way an independent branch line brings in an unearned increment of traffic to the main line with which it connects. If the branch line is a part of the main line financially, then the business is largely one organic whole, and the traffic on one part of the system increases the profitableness of the rest of the system. Following out this plan many lines that would be weak by themselves may profitably be operated by the established systems, and hence drop out of the list of those which would be marginal or rate-determining lines. It is as if the rate system rested on uneven ground the highest points of which determined the height of the rates. Leveling the highest points into the hollows allows the rate system to be lowered by just so much. The general level of the ground is the same; and so is the total railway cost. But since the highest points determine the rate-level this process at once lowers the rates and diminishes the differential earnings. This is a method of diminishing the differential returns that materially reduces the necessary height of the rates. To the extent that consolidation has been accomplished, this advantage has already been achieved.

Some enthusiastic railway investors may object that this is unfair to the railways. If the railways, in spite of public opinion, succeed in consolidation, they might be allowed the advantage arising therefrom. At least why deprive them of what the public apparently would have to pay if consolidation did not exist? The answer might be made that no patent exists on consolidation. The railways did

not discover it. There is no reason why they should capitalize it. Consolidation and monopoly are natural necessities in the railway enterprise. The advantages arising from this fact should be distributed according to the same principles which rule the other phases of the situation. If the public creates the corporations and protects them from the harrowing effects of destructive competition, the railways are placed in a position fully as favorable as the general business situation in other fields. However, this is another reason why the public should tolerate and even foster railway combination. Railway combination, under regulation, allows lower rates at the expense of unnecessary differential earnings.

The question now arises as to what is to be considered the marginal or rate-determining line. Since a route once established cannot be removed from the field as would be the case in many other industries the question is far from simple. If in other enterprises a concern falls below the point where it can obtain a profit from the prices set by the free demand and supply, it must be reorganized or go into bankruptcy. Since the price in the field under discussion is set artificially by the commissioners, these men must decide which lines shall be kept above the margin of bankruptcy.

Vested interests cannot claim that those lines which are or have been, sufficiently mismanaged to cripple their resources must be kept above that margin. Neither can they claim that lines that are disadvantageously located must be kept in the profit-earning class. These may to a certain extent be useful, but they may be too expensive luxuries for society to afford on those terms. They cannot demand rates that will make them prosperous without reorganization; they must be content with the pickings. Overcapitalized lines cannot demand to set the pace for railway rates in order to pay interest on their water. With expanding

business conditions and careful management, such lines may in time recover, but meantime the public should not, economically speaking, pay for the wastes of mismanagement.

What then determines which road is to be allowed the position of the rate determiner? This is probably the most knotty question in the whole field. Even theoretically it is almost impossible to lay down definite general principles here; and the problem may be further complicated by questions of broader public expediency than the dicta of railway economics.

What would determine this question in the field of free competition? It can safely be said that the demand for the service or product determines the margin of production; at least it is safe to say that the demand is what warrants the extent of production. And this demand is simply the expression of the element of value. Are we then in seeking for the cost of the service driven around a circle to the value of service principle? The answer is that we are driven to the point where the two elements intersect each other. Cost and value of the same product are each variable matters. In the general economic field, the rule is that the cost increases, as the products are increased beyond a certain point. This may be disputed in the railway field, but it cannot be denied that, at the very least, cost does not decrease at anything like the same rate as that in which the value decreases as any particular service is multiplied at any particular time and place. A time must come, as the particular services are multiplied, when the value will just equal what it costs to produce these services. But this applies particularly to the handling of traffic in a particular locality and period of time. We are especially interested just now in the whole railway line as a unit of service rather than in the units of traffic. And we are looking at dynamic rather than static conditions. The question is not just as to what are the de-

mands for railway service under settled conditions, as to how the demand for service will vary at a particular time and place with a change in the charge. This latter variation in demand is merely a shifting of the point where the supply cuts a settled demand schedule. What we have to deal with is a state of affairs where the whole demand schedule is moving. The demand for transportation service is growing, and the appearances are that it will grow, independently of changes in the rate of charge. As this demand grows, greater railway facilities must be provided; new lines must be added. And new lines must be added, whether by new companies or old systems, at ever-increasing costs. As the margin is extended, new land must be acquired at ever-increasing cost; and unless some unlooked-for change occurs, this will mean that the traffic cost per unit of transportation will not fall off, but will likely increase. Certainly, as Commissioner Lane says, if the railways are to be allowed a return on the unearned increment of the future, we must expect that rates will rise and not fall.¹ And it is also certain that, if expansion should come by the addition of independent lines, this cost would increase as the margin was extended. We have then a demand that is growing so that the traffic facilities must be increased whether the costs are increased or not, though at any particular time the business which is the result of this demand will fall off with any increase of the charge. There is a continued trend of expansion in the demand, but the amount of business actually varies with the rate of charge. As shown in a previous chapter, there is a limit in the rate of charge beyond which the business will so decline as to decrease the returns from the transactions. On the side of supply, the cost of running lines into newer territory, we have a curve of costs that will very probably rise as the

¹ 20 I. C. C. Rep., 340.

margin is extended. The charges cannot fall below this curve of the cost. It would be possible then to extend the margin of railway expansion so rapidly that the necessary charge to cover the increased cost would rise so high that the returns from the business actually transacted would fall off in spite of the natural rise in the potential demand. This would prove disastrous. Not only would it seriously affect the railway world, but it would be likely to induce general financial depression, if not panic. The theoretical degree of railway expansion that would be desirable would be just enough to balance the movement for expansion in the natural demand for the service. Too rapid railway expansion would, by raising the cost too high, restrict traffic expansion. Too little railway expansion would restrict the traffic by lack of facilities. A balance should be struck that would allow the greatest possible development of the traffic which is the legitimate function of the railways.

It is not an easy matter to carry out the demands of such a theoretical balance. It needs the careful foresight of the combined genius of the railway managers and the commissioners. And to this end everything possible should be done to make the interests of the railway men and the public which they serve identical. Possibly the greatest help in this direction would come, not from restriction of monopoly control, but from actual encouragement of railway consolidation. To the extent that there is competition, there is a tendency to supply facilities to take business away from, or to keep it from going to, rivals. When business cannot be acquired at the expense of a rival, the only incentive to extend the facilities will be to provide for actual new traffic. If new enterprises were prevented from entering the field to supply the needs for expansion, the result might be too little of such provision. But if public policy should go only so far as to encourage consolidated expansion, the way

would still be open for independent capital to enter the fields neglected by established systems. Without encouraging a system that would tend to bring on an extension of facilities not warranted by the demands of new traffic, it would seem highly probable that, by properly gauging the rate of return on the investment, railway building could be stimulated to keep even pace with the expanding demands of the traffic. There is great reason to hope that, if the matter of a proper rate of return is carefully worked out, the question of the extension of the margin will be attended to quite adequately by the railways themselves. It would be to their interest to provide for profitable traffic. If we could only be certain what was the proper rate of return on the marginal line under given traffic demands, it would appear that if the commissions determined what line or system of the existing net should be held to be the marginal or rate-determining one, the question of the extension of the margin would solve itself. The problem is to find this proper rate and what unit of the existing railway net should be the rate-determining line.

In the Spokane Case already referred to, substantially this was done. There were rival lines competing for the same traffic at the same rates of tariff. The commission judged that under all the circumstances the Union Pacific need not be considered in the estimate, as its business to Spokane was only a side issue. The other two lines were considered to be necessary for Spokane business. These two did not have equal advantages; where one could make a profit, the other could not. And yet the weaker was demanded by the traffic conditions in that particular field. Hence rates were so fixed that, as regards that part of the traffic which it handled, the weaker road could live and prosper. This example shows that the principle can be put into operation in regulating lines which are going concerns.

In this case one road was excluded from the determination of rates in that field, even though it was a well-conducted line. In the recent Five Per Cent Case a view of the whole situation was taken, and the determining margin was so placed as to exclude certain lines that, on account of mismanagement, were not considered as fair criteria for the fairness of rates. There seems to be no great difficulty here. All lines which are necessary for the existing traffic and are fairly capitalized and carefully managed are included in those above the margin, and the weakest of these would naturally be the marginal or rate-determining line. If, then, expansion to meet trade demands may come from the development of the existing systems, and if the proper rate of return to warrant such expansion can be ascertained, the problem before us seems capable of solution.

The situation is that in almost all districts of the country there are several rival lines or systems. Of all those which must be kept in good running condition without reorganization, the weakest is the one which sets the pace for the tariffs. A certain so-called fair return must be allowed to this line; the others will get more. But the fact that the others get more does not make the tariffs any higher. To lower the tariffs would deprive this marginal road of its fair return and, by causing it to go out of business, would deprive the shipping public of needed facilities for the transportation of their goods and the traveling public of their service. The question, then, for the rate regulator is as to what is the fair or necessary return for this weaker or marginal line.

If we had a settled rate of interest for all capital, this might be expected to meet the requirements of the case. But we do not have such a thing, nor if we had, would we be sure that it would, in the face of railway conditions, be sufficient to attract the necessary money to the line in ques-

tion. However, a settled rate of interest is out of the question; we not only must suit the return to the particular enterprise, but we must also allow for temporary, cyclical and secular changes in the general market rate.

The minor fluctuations in the rate of interest are not a cause of much trouble. They offset and balance each other. The causes of difficulty are cyclical and secular changes.

It is a well-known fact that even the steadier rates of interest vary widely from year to year. One year they will be high; two or three years later they may have materially declined. So far we have not analyzed these changes sufficiently to be able to account for them, much less to predict them with any degree of accuracy. But yet in rate fixation, which usually applies for a term of several years, care must be taken to allow a return that will cover the average of the changing conditions. To this end a surplus should be permitted to accumulate in good years, to offset the evil years. If rates are fixed to allow only the average rate in a good year, the railroads will find themselves in difficulty when hard times come. It is claimed that this is partially the trouble back of the late five per cent cases. One fact that helps to make this problem easier should be noted in passing. Earnings are the product of rates and the amount of the traffic; and in good years, when interest is high, the traffic is larger and hence railway earnings are higher. It will be remembered from an earlier discussion of this relation between the density of traffic and the net earnings that though a continued increase in density might not give greater net earnings covering a period of years, yet the expansion of a business boom would show itself in an immediate increase in the returns.

The secular changes produce rather a different situation. They cannot in any sense be averaged. Cyclical changes, as the name indicates, bring the rate back to the starting-point

and they do this within a time that will allow a view of the cycle; a few years completes the phase. Secular changes may strictly speaking be cyclical, but if so, the cycle is so long that we cannot tell whether conditions will ever come back to the starting-point or not. For the practical purposes of rate regulation, these changes may as well be assumed to follow a straight line without return to the place from which they started. These secular changes in the rate of interest are worked out in the change in the purchasing power of money. It may be safe to say that they appear also as the change of valuation of the property when the valuation follows the principle of present value, for then the railway value follows the general trend of the market. If the principle of present value be adopted as the rule for the valuation of all property already invested, it may be assumed that the investors have received compensation for the change in interest from what it was at the time of their investment. The correspondence between the change in the interest rate and the change in property value may be very rough, but the latter would be a sufficiently good covering for the former to provide for the interests of those who invested in the past. If for future policy the actual investment be adopted as the basis for valuation special attention must be paid to provision for such trends of the interest rate. No attempt can be made to guarantee the rate of interest for the future that existed when the investment was first made; railway investors must take such changes as they arise, as do the investors in other fields. But steady trends of prices will affect the rate at which capital will freely enter the enterprise.

The risks of the enterprise also affect the necessary rate of return. In other fields entrepreneurs are satisfied with the prospect that only the moderately successful should be fairly prosperous if there be a chance for excellence to win

profits enough to offset the risks and losses of failure. It is a game of speculation in which the merely fit survive, the unfit perish, and excellence reaps the fatter harvests. This would be the case in the railway field under the conditions as considered. Those who had made unwise ventures or had mismanaged would be weeded out; the ones barely worthy to persist would be allowed to stay and expand; and those who, by foresight or for other reasons, had hit upon a fortunate location and had managed the business rightly would be rewarded for their abilities. Here is seen the actual advantage, even to the public, of the differential return to the more fortunate lines or systems. If no one were allowed to earn more than the so-called fair return, the risks of being below the margin with no hopes for extra-marginal profits would deter investors from putting money into the railroads. But if success is allowed the reward of the differential return, investors, who are always hopeful of success, will run the risks of failure. If no line is allowed more than the marginal fair return, this return must be greater than it would be were the differential allowed. The differential reduces the fair return to a minimum. Consolidation and freedom from competition will also operate in this same direction. The freedom from risks which goes with monopoly will tend to make investment attractive at a lower actual rate of returns. And as pointed out before, combination not only gives greater freedom from risk but smaller differential returns on the more fortunate lines. Consolidation cuts down the differential, but at the same time decreases a certain need for it.

The question of incentive to efficient management and economies of operation has its answer anticipated in the preceding remarks. The rival lines are in competition, but only in the sense that at the standard rates they are bidding together for traffic by the inducement of better facilities.

They are competing for better relative position in the differential series of lines. The line that offers the best facilities gets the largest share of the traffic, and hence a larger share of the profits and a greater differential return than its rivals. And the line that, by efficient management, is most economical gains thereby larger profits from the gross earnings. Unless a line has a very serious handicap in its relation to its rivals, it may reasonably hope to improve its condition by efficiency, economy and good service. Even if the marginal line it may hope to move up from the foot of its class and leave this less enviable position to a rival. Thus the differential earning capacity is a benefit to the public rather than an evil.

The element of risk and the incentive for better management being provided for in the differential situation, what is the proper rate of return for the marginal line that will induce a sufficient investment in the enterprise to meet the requirements of expanding traffic? What is the proper principle according to which the return should be estimated? Several criteria have been offered to solve this question. The best discussion is given by Mr. Whitten in his volume published in 1912:

(1) A fair rate of return at the time the original investment was made. The pioneer who undertakes the manufacture of a new commodity expects if successful to secure for a time what are practically monopoly prices and monopoly profits. His chief reward comes during the period before his success has induced others to follow his example. There is practically no legal authority for this standard.

(2) A rate of return adequate to induce investment in a new enterprise at the present time. This rate prevails in competitive industry. This seems to be the standard that finds most favor with the state regulatory commissions, (e. g. Spokane Case). On the other hand the courts have usually

adopted a rate of return lower than that which would be produced by the application of the above standard. In *Columbus Railway and Light Company vs. City of Columbus* the special master refers to this as the administrative standard but holds that the judicial standard for testing the constitutionality of an ordinance must be based on narrower grounds of prevention of actual confiscation.

(3) The market rate indicated by the income basis on which the securities of the company are bought and sold. This corresponds to the rate of return that would make the market value of the securities substantially equal to the actual investment. It is the rate of return that would make the market value of the property substantially equal to the fair value of the same for rate purposes. The question is what return do actual investors at present demand when purchasing the stocks and bonds of the company. There is no direct judicial precedent for the use of this method in a rate case. It seems probable, however, that some such mental process as this has influenced the numerous decisions of the courts holding 5% or 6% a fair return or at least as a non-confiscatory return.¹

Closely in line with the third standard suggested by Mr. Whitten is one suggested by Professor Bemis in regard to public-service corporations. He says:

In the case of a large, old, and well-established enterprise like the Chicago Telephone Co., the proper test would appear to be such rate of return as would render possible the sale of additional stock and bonds when needed from time to time for extensions. In other words, the rate should be such as to keep the securities at par, or slightly above. The market for the securities of a well-known company is highly competitive. If investors are willing to buy stock on a 6% basis, and the company insists upon paying 8% dividends, the in-

¹ Whitten, *Valuation of Public Service Corporations*, pp. 702-7.

vestors will quickly run up the price to such an amount, say 133 $\frac{1}{3}$ %, as will net the investor only 6% on what he pays for the stock. We may argue that the business is such that the investor ought to have 8%; but the investor, having his own ideas on the subject, insists upon buying on a 6% basis, or whatever may be the actual market quotation. The problem before us now is not so much an ethical problem of what a company ought to receive, as it is what return, as a matter of fact, will tempt the investor to furnish the money needed for the growth of the business. If the lesson of the stock market point to 5% on bonds and to 6.5% to 7% on stock as sufficient for this purpose in the case of the Chicago Telephone Company, then such rate of return is reasonable.¹

Manifestly, if this line of reasoning were applied to the railroad situation, allowance would have to be made for the fact that the securities do not always correspond closely to the value of the property as it would be allowed by any valuation board. It might be possible to make this allowance, and utilize the suggestion of Professor Bemis. Once the value of the property was ascertained, the ratio of the value of the outstanding securities to this standard valuation could be established, and, instead of keeping these securities at par, they could be maintained at this ratio to the standard valuation. It would be a slightly cumbersome method, but it might secure the results for which Professor Bemis argues, the same results, in fact, as those which are aimed at under the third standard suggested by Mr. Whitten, *viz.*, the return which the purchasers of securities demand on the money they invest.

The first standard suggested by Mr. Whitten might apply to a municipal utility, but it is not what we are looking for in the railway field. It would be impossible to segregate

¹ Report on the Investigation of the Chicago Telephone Co., submitted to the Committee on Gas, Oil and Electric Light by E. W. Bemis, October 25, 1912.

the earlier investment from that of the present and give one a different return from the other. Just because a part, possibly a small part, of the total was invested earlier at a higher rate than the present necessities demand is not a sufficient reason that all future investment must be allowed such a return. On the other hand, if the original investment had been made at a lower rate than the present would demand, it would be impossible to finance the present needs on the terms of this standard. Neither is the second standard thoroughly suitable to the case in hand. As we insisted in the discussion of the valuation, why make the necessities of a hypothetical situation the criterion for the treatment of an actually existent situation that is quite different? Moreover, this criterion involves a principle which we have been arguing against. The attempt has been made to show that what we want is really not the establishment of new enterprises at the present time, but the extension of those already in existence. The return necessary may be quite different under the different principles. The return necessary for a new enterprise would likely be appreciably higher. If so, why allow it? Doubtless one reason why the commissions have argued for this standard—which may be more applicable in the case of municipal utilities—is that, contending as they do for the principle of original cost in the valuation even of property invested in more favorable times, they see the necessity for a decidedly generous rate of return.

We return to the third standard suggested by Mr. Whitten, the same as that advanced by Professor Bemis, with the modification demanded by the disparity between the par value of the securities and any reasonable valuation of the property. This standard demands a return which the purchasers of securities require on the money invested in the development of the established systems. And a very rea-

sonable criterion is proposed to measure this requirement. The proposal is to allow such rate of return as would keep the market value, as shown in the sales of the stocks and bonds, substantially equal to the fair value of the property as established under accepted principles of valuation. The purchasers of new issues of securities must share equally all the advantages and disadvantages of the former security owners. They will enjoy exactly the same return as goes to the old securities on their market value. And the return which goes to the old securities on their market value is what the investors show to be the necessary rate of return. This does not mean that the securities must be kept at par. It only means that they must be kept at the ratio to par which would make the sum of their values equal to the standard valuation. No difficulty should arise here as regards stock. If the company were capitalized at twice its real value, the stock would be rated at fifty; and new stock would be worth the same, would sell at fifty, and receive an income on such a value, which income would be one-half what the market would allow on property worth the full hundred. This ought to work quite smoothly if the principle adopted for future valuation be the actual investment, the investment of money. A difficulty would be experienced if the bonds were held below par, as they must eventually be redeemed at par. The discount on bonds sold below par must be made up in some manner. It would certainly appear as though such bonds as have been honestly and wisely issued against the property should be kept up to par value, and, if so, sufficient returns on the property should be allowed to secure this end. It must be remembered that all this applies to what has been termed the marginal or rate-determining system; once this system is selected, the return on the other systems does not directly affect the rates. The conclusion as to this system tends

towards such a return as would allow the wisely issued bonds to be maintained at par and the stock at such level as the ratio of its par value to the real property value would warrant. In this way the return on the present property is made the criterion for the necessities of further investment.

The discussion would be quite incomplete unless notice were taken of the compound question whether or not, in order to ascertain the proper return for the railroads, a valuation of the property is actually necessary, and if so, whether or not it would make any difference if this valuation were placed at a high or low figure, so long as due compensation for this be made in the rate of return. May we not avoid the expensive and troublesome valuation altogether, and simply allow a return sufficient to provide the necessary funds for expansion? Is it essential, if valuation be made, on which principle it should be carried out; would not the unfairness be eliminated in working out the return?

The answers to these questions go largely together. There seems to be no other way than by the means of valuation to ascertain what would be sufficiently large earnings to attract the necessary new funds. Reasons have been shown why the capitalization cannot be used as a criterion for rate of earnings. And if this also be thrown out, there is nothing left to refer the earnings to as a rate. They would simply be earnings in a lump sum. Unless some new system of accounting be devised, some valuation, whether based on capitalization or other standard, is necessary, if for no other reason than as a guide to the companies in the extension of their business and to the investing public in their purchase of securities. Valuation on some standard or other is necessary as a measure of railway ability to supply the service. And the attempt has been made to outline what system of valuation does show this railway ability. It is important, for the sake of the investors, that the return

be based upon a valuation worked out on a principle that really shows forth this standard. It is fully as important for the shipping public, in order that they may have the greatest possible facilities for their traffic at the least possible cost. It is important for all, in order that the distrust, suspicion and uncertainty which have marked the situation up to the present be removed. If once it be settled on what basis the railways shall be allowed to earn a return, there seems to be little question but that investments can be secured on better terms, and the actual rate of return will be lower.

There is another reason for valuation, and one based on principles which will properly relate the value of the railway property to the general markets. The law requires that a so-called fair return must be allowed in each sphere of the railroad's activities, the state as distinguished from the interstate. There is also more or less necessity for the same distinction between the earnings on local and through traffic. And the only way in which it may be told whether a proper return is being secured in each of these spheres is by knowing what value of property is devoted wholly or in part to each of these phases of the business. There seems to be little question as to the desirability of valuation on sound principles, at least until some still undiscovered theory of earnings is brought to light.

It may be questioned here whether the fact of allowing or not allowing the so-called unearned increment for future valuations will affect the problem of the necessary return at the margin. It may be argued that to leave out this increment in the valuation means that the rate of return will be changed by just so much; that nothing will be saved by disallowing this in the value, for it will appear in the return. Investors in other fields are receiving the benefit of this increment of capital value. Then since the railways are

financed in competition with other enterprise, it is reasonable to suppose that what other enterprises get the railroads must be allowed to get. The truth of the situation seems to be that the influence of the increment in capital values works only one way in the railway field. In a field in which there is no friction or leakage of any kind, the increment affects the situation in two ways. When it is once established in the capital value, the capital demands higher return. But while it is coming in, it is a part of the return, and under free competition diminishes the rate of return which must be obtained in the shape of earnings. A steady rate of increase in property is just as good as a similar amount of earning on the property. In periods of expansion land is invested in for the increment of value rather than for the rental at the time. In fact, a great deal of land is held in the cities at a positive outlay for taxes in order that a profit may be realized from the increment in capital value. But nothing is heard of this side of the question in the pleadings for greater railway returns. Nothing is heard of the increment until it is a thing of the past and the attempt is made to include it in the capital value as a basis for a higher amount of return. What becomes of this value while it is being accumulated; or who gets the benefit of it as it comes in would be difficult to say. At least it does not seem to be counted in the rate of return enjoyed by the security holders. Why then should it be used as a basis for higher returns once it has been capitalized? If it were actually counted while it was a part of the return, it would make a difference on the rate of return allowed from earnings. It would diminish the necessary earnings. But there is no evidence to show that it has this effect. Possibly one reason for this is that it is uncertain whether it will ever be allowed as a part of the capital on which earnings in the future will be rated. Whether this is the

case or not, it certainly seems as if the unsettled principles of valuation and the return thereon were very disadvantageous to the end of securing the greatest facilities at the lowest rates of charge. The roads insist upon the principle of the higher standards of value, while the investors fear the application of the lower standards.

One other reason may be emphasized against the adoption as the policy of the future of a principle increasing valuation by more than the actual investment. As has already been noted, the business on a railway system is practically an organic thing. The traffic which originates in one place makes the rest of the system more profitable. Similarly, the securities are all part of the same system. The earnings of the new investors cannot be higher than those of the old. It may be necessary that the new property get a slightly higher rate of return than the old. To allow it an increased income corresponding to the increase in property values would be tantamount to allowing the unearned increment on all the property. If the new property stood by itself, this would be necessary and the owners of the old would have their earnings increased by just so much. But if the new and the old owners were shareholders in the common lot, there would be no necessity for such an increase in the rate of return. A slight increase in the returns for all the shares, if combination were a fact, would cover the necessities for expansion onto higher-priced land just as well as a large rise, in the case of the earnings on an independent new line. The unearned increment need not be allowed on all property; only on what has actually been purchased at the higher figures. Expansion of consolidated systems would leave out the necessity for the unearned increment on all property, and allow the railroad system to be pushed to a higher margin.

The conclusions which are ventured on this question of

the proper return to the railways as publicly regulated monopolies are as follows: The return should be based upon a careful valuation of railway property, the so-called intangibles as well as the physical elements. This valuation should follow the principle of the cost-of-reproduction-less-depreciation for the property invested in up to the time when the valuation is standardized and the rule for the future established. After establishing such a valuation for the property on hand, the principle for the future should be to maintain this valuation at the figures worked out—providing for the replacement of worn-out elements—and to add to this amount what from that time on is actually invested in the enterprise. In the light of the facts ascertained by this valuation, it should be decided which system in the field operates at least advantage while still socially necessary and managed with reasonable care, and on this system what is counted as a necessary return should be allowed. This necessary return is what is necessary to warrant investment in needed betterments and extensions of the system, and may be judged by the marketability of the securities at their proper ratio to the valuation of the property. It is hoped that this plan would provide expansion of our railway net as the expansion of traffic warrants it, but no faster. And rates based on such a plan, while fair to the railways, would not unnecessarily burden the shipping public or unduly limit the expansion of traffic.

CHAPTER IV

REGULATION OF PARTICULAR RATES

REGULATION, to be complete, must cover the adjustment of particular rates. It is not sufficient that the system of rates as a whole should be so regulated that a proper return and no more be earned by the railroads. The rate structure as a system should be based on the ability of the railroads to supply the service, but the work of the commissioners does not end there. Regulation of the rates charged by the railway monopolies, to repeat, should consider the proper relation of the particular rates to each other and to the return demanded by the enterprise. As Commissioner Erickson, of Wisconsin, says :

A rate schedule to be fair and just should not only yield the required amount in revenue, but each particular rate in it should have a proper relation to all the other rates. That is, the charge on each article or shipment should cover the cost of transportation and contribute its just proportion of the interest on the investment. This proportion in turn depends upon the cost of transportation and on the value of the service or of the articles shipped.¹

The system of regulation being worked out by the commissioners under the name of the cost system, while not depending wholly upon costs as the criterion of fairness, nevertheless says that the first thing to be considered is the cost of the particular class of service in determining the fairness of the rate upon this class. For this end, of course, they

¹ *American Economic Association, Publications, Third Series, 1908, p. 96.*

are required to ascertain the approximate cost of each such class. As Commissioner Staples, of Minnesota, says:

In order to fix rates upon the cost basis, it is necessary to determine the approximate cost per unit of traffic as well as to weigh these costs for each class of the traffic in proportion to the value of the articles contained in each of these classes.¹

And Commissioner Erickson says:

That part of the cost which should be borne by the freight traffic is distributed between the various classes and commodities on the basis of cost, and this cost per unit of transportation is then weighted, so to say, on the basis of the value of the articles transported.²

Thus we see the necessity of ascertaining the cost per unit of transportation on the various classes of traffic in order to put the principles of the commissioners into operation. But we are told that no method has ever yet been devised, or is likely to be devised, by which the actual cost of transporting any particular commodity can be ascertained.

In this connection Professor Ripley may be quoted:

So many expenditures are incurred indiscriminately on behalf of the service as a whole—being an indispensable condition for operation of the property at all—that no logical distinction of expenses even as between passenger and freight is possible. That being so, how futile it is to expect to be able to set off the expenses due to any particular portion either of freight or passenger.³

Mr. Carl C. Wright, General Solicitor for the Chicago and North-Western Railway Co., says:

¹ *Proceedings of the Twenty-third Annual Convention of the National Association of Railway Commissioners, 1911, p. 33.*

² Letter of December 15, 1911. (Private correspondence.)

³ Ripley, *Railways; Rates and Management*, p. 70.

No definite means or accepted method of determining cost charges as related to each commodity has been found. Our road has, like other railroads, been striving to find some accurate basis for determining cost charges in relation to each commodity for its own information. I have not yet thought that we had any data which are sufficiently clear or conclusive, or which can be successfully supported, in use in determining the rates. It must, of course, depend upon very many arbitrary divisions and, as there are so many items of cost which are apparently indefinite and in regard to which it is impractical to measure them in dollars and cents, no definite statement can be made, and perhaps never will be made.¹

Following out the same line of thought, Mr. Peabody, Statistician of the Atchison, Topeka and Santa Fe Railway System, says:

No method has as yet been devised, nor is there any probability that any method will be devised, by which the actual cost of transporting any particular commodity can be ascertained, as distinguished from the cost of transporting any other commodity. We are able to ascertain approximately the average cost of transporting all commodities, but even that affords no criterion for determining the reasonableness of any rate.²

In spite of the criticisms launched against the principle of segregating the costs of the particular services, the commissioners are not discouraged. They do not claim that all the railway costs can be accurately allocated to the particular elements of traffic. But they do claim that a sufficiently large proportion of the total costs can be allocated to be of great value in the regulation of particular rates. And in spite of their protests against this principle, the railway

¹ Letter of November 25, 1911. (Private correspondence.)

² Letter of November 25, 1911. (Private correspondence.)

men, by its extensive use in their arguments against restrictive orders of the commissions, weaken the strength of their objections.

Moreover, the attempt is not made to carry out the segregation of costs to each particular service. It may cost more to handle a certain kind of freight in the summer than in the winter. But, unless in such cases of extra service as icing, no attention is paid to these differences. Perhaps no two shipments of the same class of goods over the same routes would have exactly the same cost if the details of each shipment were gone into. Certainly the value of service of these different shipments would show considerable variation, but no attention is given to these minutiae. Under the law, as it exists, there is to be no discrimination between members of the same class. Each shipper of the same class of goods must pay the same for similar services under similar conditions. Hence we are not in any way called upon to determine the actual cost of each particular shipment. What must be done is to ascertain with a reasonable degree of accuracy the average cost of each particular kind of service. How broad this latter term, particular kind of service, should be is a matter of dispute. In so far as this depends upon the classification commodities, it is generally agreed that at present there is too much differentiation. There are too many rates based upon such a distinction. The great reason against rating the differences between the particular service within each class is that, in order to avoid discrimination between shippers, it is essential that all members of the same class be treated alike. It has been found that, if differences be allowed between these shippers within a class, the principle will be abused. Instead of basing the difference on either cost or value, it will very generally be based on favoritism, or the ability of the patron to demand a preferential advantage. The law has

very wisely been made stringent against giving different rates to patrons in the same class, and consequently there is no use in trying to determine the differences in cost. It is also considered that there is no great advantage in having a very great multiplicity of classes. The result is that, while, according to the advocates of the cost principle, it is necessary as far as possible to ascertain the average cost of shipment per unit of all traffic within each of these classes, there is no need to go into differences within rather large classes. The attempt of the commissioners is to allocate the costs of these classes as far as possible and weight them in providing for such part of the railway return as can not be so allocated.

The greatest difficulty in the way of the segregation of transportation costs lies in the fact that so large a proportion of railway costs cannot be said to be due to the carriage of any particular element. Many expenses accrue just the same, whether any traffic is carried or not. The interest on the capital, the taxes, and a large part of the maintenance expenses are said not to depend at all on the amount of the traffic. Another large part of the expenses can scarcely be assigned to any particular part of the traffic; there are costs that might cease largely if the traffic ceased; but it would be very hard to determine which part of the traffic caused them. The rails, if not used, would deteriorate to a certain extent. However, since a very small proportion of the American rails rust out it seems quite safe to say that rail expense is an element of cost that is due to traffic rather than to a deterioration that goes on irrespective of traffic. It is a much more open question as to the up-keep of ties and ballasting and the general road bed; but judging from the greater amount spent on these items by roads of dense traffic, we may safely charge this element of cost to general traffic wear. Buildings are another class of ex-

pense that can only with difficulty be allocated to any particular phase of the traffic, except that we know quite largely whether the freight or the passenger service causes the outlay. Then again, the salaries of some of the officers could hardly be classed with any division, even in some cases with freight as distinguished from passenger service. There are many parts of the salary and wage expense, such as the pay of the office men, the switch men and station men, which can with difficulty, if at all, be assigned to any particular element of the traffic. The general class of costs which do not increase with increased business could hardly be expected to be allocated to any particular element of traffic. Some of these, it is claimed, should not be classed as traffic expense at all. Neither can the expenses which do increase with traffic growth but only with general growth—as for example rail expense—be assigned to particular elements of the traffic. What is everyone's business is no-one's business. Those costs which go on irrespective of whether there is any traffic or not, and those which apparently are not caused by any particular traffic, are called joint costs.

Besides these joint costs, all admit that there are costs unquestionably assignable to particular classes of traffic. The cost of purchase and up-keep of coal cars undoubtedly belongs to the coal traffic. The cost of live-stock cars belongs to the live-stock business. And the maintenance of the passenger accommodations pertains to the passenger traffic. There are many elements of cost that can easily be assigned to the particular class of traffic that has caused them, so easily assigned that even a tyro in the art of accounting could see where they belonged. And since the cost principle does not propose to segregate costs to any finer degree than the classes, it is assumed that all that it is necessary to do with these costs is to average them per unit of traffic within the class.

Just what part of the railway cost is strictly joint, and what part is easily assignable to particular elements of the traffic, it would be difficult to tell. It is safe to say that these two together would not make up nearly all the cost. Besides these, there are many costs which cannot be so easily allocated; costs which some claim are joint and others contend can be assigned to the elements of traffic by the use of careful cost-accounting methods. A great difference of opinion is expressed in regard to these costs. Professor Ripley claims that probably over one-half of the expenditure for freight and passenger business is entirely joint;¹ if this be so, what must be the case in the divisions of the freight business? But many other authorities, particularly the commissioners, take an entirely different view of the matter; they claim that, with the application of modern cost accounting methods, the greater part of the costs can be allocated. And, of course, the commissioners consider that such part of the cost as can be allocated should be borne by the particular traffic in question.

If we regard only instances of declining traffic or static conditions where there is neither increase nor decrease, it would be rather difficult to disagree with the objections against apportionment of more than the bare movement expenses to the various elements of traffic. If traffic is increasing, we may be able to tell what elements occasion part of the increased outlay besides the movement charges and the cost of equipment strictly pertaining to particular traffic. But if traffic is falling-off seriously, returns must be obtained in any way possible. Equipment that may be used for various kinds of traffic will be requisitioned under such circumstances, for any use that can be made of it. But such conditions do not attain prominence in this country.

¹ Ripley, *Railways; Rates and Management*, p. 69.

There are periods of depression, but on the whole we have steady expansion. And expansion of any element means that if this continue, equipment must be provided for it, and the outlay in office expenses and terminal facilities may even need to be increased. In cases of increments of traffic which do not appear to increase the joint expense, or necessitate an increase of capital it is claimed that it is profitable to haul them for little more than the bare movement expense. A famous example is coal. It is claimed that this is an extra traffic which cannot be asked to bear any particular share of the joint burden or expense. But how can this possibly be true in the case of the Pittsburgh and Lake Erie and the Pennsylvania Railroad? Here a large part of the traffic is coal, and it can hardly be doubted that it is the presence of this traffic that has necessitated the increase of the capital to provide for quadruple tracks on certain sections of these systems. Moreover, each of these companies is quite prosperous. This but illustrates a principle. The business of our railroads is in a growing state. And in such a state of affairs, each increment of traffic contributes to the necessity for an increase of the joint expenses of the road. The question is as to whether or not a cost accounting system can tell what this contribution is. One extra passenger may not be noticed, but a regular addition of fifty will necessitate another car, and maybe another brakeman. The increase of business is continually causing greater joint movement expense, and is even necessitating the larger investment of capital. Since this is so, it does not seem to be absurd to claim that to each class of traffic corresponds a certain part of not only the movement expense, but the capital charges as well. The question remains, can this part of the expense belonging to the different classes of traffic be ascertained? If this can be done, it should affect the rate, according to the views of the com-

missioners. And the commissioners contend that such cost accounting is a reasonable possibility. If they are right, it is a comparatively simple matter to distribute such charges and say what part each unit should bear in addition to its fair share of the strictly joint costs.

In regard to the separation of expenses between freight and passenger service, President Burr, of the Convention of the National Association of Railroad Commissioners, in 1911, said, in the annual address from the chair:

The first block of the primary expense accounts is "Maintenance of way and structure accounts." Practically only the primary account, "Repairs and renewals of buildings," can be kept separate by cost accounting methods. In the next block of expenses, "Maintenance of equipment," all these expenses, save those of, "Work equipment," can be by proper methods of cost accounting, definitely located to freight or passenger. It will be necessary for a large number of carriers to keep track of engine repairs as between freight, passenger and switch engines. This is done by some carriers, but not all. In the next block of expenses, the "Traffic expenses," it is necessary for the carriers to apply the principles of cost accounting, and to determine the amount of energy expended in the traffic department into freight and passenger business, respectively. This can be accomplished by railroad companies requiring the proper report as to the time expended by joint agents and officials in each class of service. The next block of expenses is "Transportation expenses." The bulk of these expenses can be determined with great accuracy between freight and passenger. Some few of the expenses, such as despatching trains, operating interlocker, block, and other signals, and crossing flagmen and gatemen may have to be divided upon a more or less arbitrary, but perfectly obvious basis, not arbitrary in the sense of unreasoning assignment, but arbitrary only in so far as to slight variations of factors upon which they depend can be considered an arbitrary matter. The next

block of expenses, "General expenses," are susceptible of division between freight and passenger, with a degree of accuracy which is practical in all its points. The only block of expenses, therefore, which requires more than ordinary care in the division of its primary accounts is the first block of expenses, "Maintenance of way and structures," and even here the operation which causes the wear or the destruction of the facilities, which destruction it is necessary to renew or replace, can be determined and application of the resulting factors made.

President Burr also discusses the application of cost accounting to other divisions of traffic. He maintains that cost accounting is necessary to determine the proper expenses to each State, the proper freight and passenger expenses, the proper amount chargeable to interstate and intrastate passenger, the proper amount chargeable to interstate and intrastate freight, and to determine the expenses proper to any class of traffic whether interstate or intrastate. He then says:

These five questions are daily before some court or commission of the United States, and it seems, therefore, absolutely essential that cost accounting should be applied to all railway accounts, and that if we are to determine these matters justly and intelligently it must be so applied.

In the conclusion of his speech he says:

To state that there is an insuperable difficulty in determining these matters is an insult to our intelligence, as well as to that of our railway friends. The vifility, resourcefulness, and brains of this present generation have not fallen into decadence.¹

¹ *Proceedings of the Twenty-third Annual Convention of the National Association of Railway Commissioners, 1911, pp. 24-27.*

The Interstate Commerce Commission seems also to consider it quite possible to allocate the costs to the different services with a reasonable degree of accuracy. The two great decisions given on the schedules of freight charges in 1911 are generally admitted to have been based largely on cost, and the cost as it was distinguished between freight and passenger service. Commissioner Lane said in one of these opinions, the *Western Advance Rate Case*:

While we find the carriers contending uniformly that in the making of a reasonable rate the cost of service is a practically negligible factor, yet the contention is herein made that the carriers should be allowed to increase their rates upon that ground. In short, that addition to cost of service justifies increased rates. It becomes of immediate importance, therefore, to learn what we may as to this factor in the problem. That the railroads are not indifferent to this element is shown by the fact that some of those of the highest grade keep such figures. It would be remarkable indeed if, in this time when all great business enterprises make analyses of costs, our railroads should keep no such accounts.

When we have sought to learn the cost of railroad service, a twofold answer has been made: (1) That rates were not, and could not be, made with reference to cost, because some traffic could and should bear a higher rate than other traffic; and (2) because it was impossible to allocate to the different services rendered their proper share of expenditures. The first of these answers we have considered above. As to the second, it has been testified by an official of an important carrier that it was entirely feasible to absolutely segregate about 51 per cent of the cost of operation between passenger and freight traffic; that about 29 per cent was subject to some arbitrary division, but that for all practical purposes it would be accurate; and that only the remainder, or twenty per cent of the whole, had to be determined upon an arbitrary basis. So that it was regarded as practicable by statisticians

to leave but a very narrow "twilight zone" between the actual cost of moving a ton of freight and the statistician's estimate; and this estimate, it was thought, would not vary 5 per cent from actual cost. This is readily apparent from the fact that of the total operating expense on most of the roads substantially 50 per cent is chargeable to "conducting transportation," 25 per cent to maintenance of way and structures, and 25 per cent to maintenance of equipment. There is no difficulty in segregating the cost of maintenance of equipment as between passengers and freight. Likewise the 50 per cent under the head of conducting transportation is easily segregated, excepting as to some station, yard, and similar expenses, which constitute a small proportion of the total. Thus practically 75 per cent of the entire expense is taken care of. The expense of maintenance of way and structures can not be allocated, and this has to be divided arbitrarily. Moreover, that it is not impracticable to estimate cost of railway service is evidenced by the fact that we have before us the cost figures of both the Santa Fe and the Burlington lines.¹

Other commissioners might be quoted to support the same view, but enough has been given to show the trend of thought among these experts. It is considered possible to separate the costs of freight and passenger service with a reasonable degree of accuracy. It is not claimed that there is an absolute exactitude in this allocation of costs. It is doubtful if economic laws when allowed to work naturally, do so with any absolute exactitude. We usually find a zone of indifference. So we should not be disturbed if we found a similar twilight zone in artificial regulation. Suffice it to say at the present time that very important decisions have been rendered both by the Interstate Commerce Commission and by the various state commissions, where such

¹ 20 I. C. C. Rep., 357-8.

separation of the costs of the freight and passenger service has been the underlying principle upon which the decision stood or fell. Cases have been argued by the shippers on this basis; the railways have used it in a great number of their defences; the commissions have based regulation of rates upon it; and the courts have sustained the principle.

But this is only a beginning of the question. The second problem that must be solved, before even passenger-rate disputes can be finally settled, is the separation of accounts between state and interstate business. It has been said that none but German metaphysicians would attempt to cope with this problem. But since they are otherwise occupied at present, America herself must solve this problem growing out of the artificial economic barriers supported by the Constitution. Even though the commissions wished to avoid the question and fall back on the value-of-service principle, they would still be forced by the railway man's plea of confiscation to consider this troublesome point as in the Minnesota Rate Case. By our constitutional principle of the separation of powers, no state commission can pass a ruling interfering with interstate business. This artificial boundary cannot be overstepped. State business must stand on its own feet. The railway must be allowed a fair return on its state business as well as on its interstate business. As Commissioner Fairchild, of Washington, says:

Every time a state commission attempts to fix a rate and the railroads do not desire to acquiesce in that, we are at once taken into the United States courts on the proposition that the railroad is being deprived of its property without due process of law, and the question immediately arises which is tried by the courts, "What is the value of the property of the railroad within the state given up to and used for the benefit of state business?"

The same commissioner gives as his opinion that the most

important element in making the division between state and interstate, the most controlling element under all the circumstances, is the cost of the service.¹

Commissioner Burr regards this as a less intricate problem in cost accounting than the divisions of the expenses between freight and passenger traffic, his optimistic account of which has already been quoted. His opinion is that there is only a small percentage of operating expense which must of necessity be joint to two or more States, these costs occurring almost entirely in terminal and in the maintenance of equipment items. Each of these expenses can be readily, and should be, divided between the States according to the factor of use applicable in each case.

In the discussion by the American Economic Association in 1908 following Commissioner Erickson's paper quoted above, it was pointed out that, "Rate making on a basis of cost of service requires that the state commission should separate intrastate from interstate traffic, and while to some extent arbitrary, this can be done closely enough for practical purposes."²

It would seem from the statements of the various commissioners that with the proper application of cost accounting, this problem of separating state and interstate accounts could certainly be solved as well as that of the distinction between freight and passenger service. If these problems can be settled, it is a comparatively simple matter to adjust passenger rates with reference to the cost of the service, and we would be in a fair way to the adjustment of freight rates, or at least the determination of the cost element involved in the rates.

¹ *Proceedings of the Twenty-first Annual Convention of the National Association of Railway Commissioners*, 1909, p. 313.

² *Publications of the American Economic Association*, Third Series, vol. ix, p. 102.

The next question to consider is the cost of conducting each particular class of the service within these broader divisions. The local must be considered as compared with the through service. The relation of rates to distance must be worked out. The comparative costs of transporting the various elements of traffic must be determined. And to do this we must find the cost of hauling traffic between the terminals, and we must ascertain the terminal expenses. Rates cannot be determined simply on the basis of cost per ton mile. If all freight were homogeneous, or equally costly to handle, we should have to find the cost per ton-mile for actual carriage; that is, the share per ton-mile of engine and car expenses for the up-keep of the road, the wages of the men, and the earnings on all the property involved in the movement of freight. All this is proportionate to distance, although it is relatively greater for local traffic than for through traffic, the proportion depending, among other things, upon the relative amount of the two kinds of traffic on the road in question. Besides these movement expenses there are the terminal expenses, which may be the same for the same kind of freight moved one mile as moved one thousand miles. These latter expenses are not affected by distance, but are constant per unit of the same kind of traffic. The cost of handling any unit of a particular kind of freight includes the two elements, a constant terminal cost and a movement cost depending upon the distance.

It is, of course, very evident that we here again encounter the same difficulty of allocating joint costs. But we are assured by Mr. Erickson that, upon a close and detailed examination of the nature of the various items, it will be found that in this case also the common expenses may be fairly and equitably distributed.

Mr. Erickson shows roughly how these costs are determined in practice. He shows that to find the costs of mov-

ing any unit of traffic, the costs per ton or per hundred-weight, the best method by which to approach the matter is to ascertain the cost of handling the loaded car. Freight is ordinarily handled and moved in car-load lots. The terminal charges can be pro-rated on the number of cars when we allow for differences in size of cars, *etc.* These charges appear to be a sort of weighted average for each car. "When the cost per car, in turn, is pro-rated upon the gross weight, or on the weight of both car and the load, we obtain the cost per gross ton. The figures thus obtained furnish a basis upon which the cost per unit of the terminal expenses may be determined for light as well as for heavy loads."¹

The actual movement expenses on the road are not much, if any, more complicated. We must first ascertain the cost of the broader divisions of traffic as a whole and then average this per unit, always remembering that the average must be weighted. As shown above one necessity of weighting the average per unit is the weight of the car; more strictly, the proportion of the net weight to the gross weight. The gross weight incurs the cost, the net weight pays for it.

Another matter necessitates the weighting of cost averages, in fact, to a good degree, takes it beyond the operation of averages in that it produces actual expense. This is the adjustment of the expenses between way and through traffic. The former is, as a rule, the more costly. Way freight trains stop at practically every station on their run to unload or take on freight, and therefore make much less mileage in the same time as through trains. In fact, the latter usually make twice as much mileage in a given time as the former. Then again they require more men to operate them and handle the goods. Starting and stopping involves more wear and tear and fuel. And with it all, they

¹ *American Economic Association, Proceedings, 1908, p. 97.*

haul less net weight per car than through traffic. Investigations have revealed that the movement expenses per unit of traffic are often from two to three times as great for way-freight as for through freight.

We are in the midst of our difficulties now. The problem of classification confronts us. No one seriously considers making a flat rate on all commodities. This is charged against the advocates of the cost principle, but it is a charge that falls wide of the mark. It is erroneous on two counts. First, the cost per unit of transportation is not the same on all commodities. And, secondly, if the cost were the same, the commissioners say flatly that they would not make the rate the same, but would weight the charges according to the value of the goods or the demand for the traffic.

That the cost per unit is not the same for all classes of goods is very evident to even the tyro. Who would say that the cost per unit of ton-mile on steel rails, shipped by the whole train load, and sent through to suit the convenience of the rest of the traffic, was the same as on freight which is highly perishable and must be rushed through at high speed in expensive refrigerator cars? Even the cost of hauling coal and coke differ widely. The railroad that accepts a consignment of coal at Pittsburgh for the West knows by the weight at Pittsburgh that that is what it will have to carry to the destination. But a load of coke which must be accepted at the dry weight at Pittsburgh may be very much heavier before it gets near the West, if the season is rainy. These are but samples of some of the more obvious differences in the cost of transportation of different commodities. There may be certain fundamental costs per unit of traffic that are uniform for all classes of traffic, but beyond these fundamental costs are very many additional costs that make the necessity in point of cost for our commodity tariffs.

This estimate of the costs of the various classes of the freight traffic is not arrived at by means of a separate study of each such element. It could hardly be denied that there are insuperable obstacles in the way of such independent determinations of the costs of each element. But it frequently is possible in large measure to find the comparative costs of handling the separate elements. And when the cost of the total service is known, it is not an impossible task to estimate the costs of the particular elements by dividing the total costs according to the comparative costs. Estimation of the costs of the particular elements of traffic has been carried out in numerous rate cases. But this estimation has been made by the use of the comparative costs. As Professor Hammond says in his review of the "Railway Rate Theories of The Interstate Commerce Commission":

Our review of the cases in which differences in the costs of service have been cited by members of the commission as reasons for differences in rates shows that the commissioners, as well as the traffic officials of the various railroads, have made much greater use of the cost-of-service principle than their preliminary utterances would lead us to expect. It has not been by means of a direct determination of the costs, however, that the commission has sought a solution. The method followed, as we have seen, has been that of comparison. The method of comparative costs does not yield absolutely accurate results but it is sometimes sufficiently accurate for practical purposes and we must remember that economics, like law, does not concern itself with trifles.¹

Such excellent testimony to the value and feasibility of the cost principle in this connection is made by Commis-

¹ Hammond, *Railway Rate Theories of the Interstate Commerce Commission*, pp. 68, 188.

sioner Meyer of the Interstate Commerce Commission in a paper which he read before the American Economic Association in 1913 that we cannot forbear quoting from it rather extensively. After saying that "Perhaps the most important single factor, now unknown, which will enter into the consideration of railway rates in the future is that of the value of the property", he states:

A second factor equally fundamental with the value-of-the-property factor, which I believe will be employed very much more in the future, is that of the cost of the service. A very great variety of statistical analyses have heretofore been made, but systematic efforts directed toward the ascertainment of the approximate cost of the service have, generally speaking, been strangely neglected. A small minority among those dealing with rate problems have long advocated it, but their plans have been thwarted by the skepticism and unwillingness of a persistent majority. There are those who have opposed the development of statistical investigations along the lines of cost because they assert the results are bound to be misleading and unreliable. Others confess a fear that information of that kind will be misused. Others declare that it will result in the establishment of rigid distance tariffs, with attendant chaos in the industrial world. Still others maintain the view that the cost of the service has nothing to do with the rate either in general or in particular. The combined weight and influence of all these objectors has thus far been sufficient to obstruct substantial progress.

It is a fact of common knowledge that so-called cost accounting has been applied to every important branch of industry except steam railway transportation. A prolific literature upon the subject has been produced within the last decade, and competent specialists in all branches of business are prepared to give these principles practical application. The railways themselves have made limited application of the principles of cost accounting to more than one-half of the railway mileage

in the United States. They declare, however, that this has been done for internal corporate administrative purposes rather than with a view of assisting in the establishing of just and reasonable rates. The difficulties of separating operating expenses among the various branches of the railway business are as apparent as the benefits of the final results are clear to those who are willing to undertake the task. It is perfectly obvious that controversy respecting the apportionment of maintenance-of-way items, for instance, can never end. Is this, however, sufficient reason for refraining from undertaking a work which is so promising in beneficial results? There exists surprising similarity in the methods employed by different railway companies in apportioning certain common or overhead expenses. This similarity appears to have been brought about without previous conference and agreement and is apparently the result of similar conclusions arrived at by men working at the same problem independently of one another.

He then goes on to show the necessity for cost accounting to arrive at proper and just solutions of such transportation problems which are active at the present time as the express business, the railway mail pay and the state passenger rate cases.¹

Thus we see there is abundant evidence for the conclusion that the majority of the running expenses of the railways can, with proper cost-accounting methods, be allocated to the various elements of the traffic. These are items of cost that are caused by the traffic; the traffic is that by which they exist. Besides these, there is another very important matter of cost, that for which the traffic exists, namely, the profit upon the railway property in general, or the fixed invested capital. It is not so easy to allocate this part of the cost as it is the costs of operation. A small part of this also can be immediately segregated, that profit,

¹ *American Economic Review, Supplement*, vol. iv, p. 74.

namely, upon the property used peculiarly by the element of traffic in question. For example, the passenger service must pay not only for the wear and tear on its engines, cars, terminals, *etc.*, but it must also pay the interest upon all this property devoted exclusively to its use. And, to quite an extent, this can be carried to minor divisions of traffic, as the patrons of the Pullman cars pay the added cost of the Pullman equipment, and the dining-cars pay their own costs and interest from their own earnings. But there is a certain total fixed capital invested in the business as a whole upon which profits must be earned, irrespective of what kind of traffic is handled. The interest on the securities issued to cover the purchase of the right of way is a large item, and an item that must be made up irrespective of the differences of the traffic. This capital is entirely fixed; returns must be obtained on it from the traffic as it may be possible; no particular element of traffic is responsible for any particular share. Then again there is capital that is fixed from the standpoint of the investors in the sense that it has been invested in the railway property, but it is invested in property that is not permanent; it is permanent investment only as a reinvested depreciation allowance maintains the amount of capital in the business. As renewals are going on all the time this capital is not necessarily fixed in any one branch of the service. The traffic in each branch of the service must earn sufficient to warrant keeping this capital in the equipment belonging to this service, or it will be shifted to another branch of the service. This is certain to happen if the company maintains proper accounting methods. Consequently it is true that there should be a very close connection between the earnings of any particular branch of the traffic and the return necessary on the equipment which handles it. The interest on securities covering the equipment for one branch of the service

should not be paid by the earnings from another branch. If any branch of the traffic cannot pay the interest charges of its equipment, it stands to reason that any company maintaining a cost-accounting system would decrease the relative investment in such equipment. Capital may not shift in large masses, but, as renewals and extensions are apportioned, that branch of the service which is most profitable will undoubtedly be increased in capital at the expense of those less profitable. The return on all capital invested is that for which the traffic is handled, rather than costs caused by the traffic, as viewed from the standpoint of the railways. But all such investment as is made in property assigned to the use of any element of the traffic must just as truly look to the particular elements of traffic for the return as must the actual movement charges. Under proper accounting methods much of the capital charge may be allocated to the elements of service just as truly as the running expenses.

The contention of the commissioners who advocate what is known as the cost principle is that all costs—capital charges and running expenses—which may be allocated to the several elements of the traffic should be borne by the element in question. Their conclusion seems very just. Any other system of charges taxes one branch of the traffic for the up-keep of another; a result that would be very hard to justify. It would appear much fairer that each element of traffic should bear its full share of such elements of the cost as may be due to it. The different businesses of the country would then be independent of each other as regards their transportation costs, just as they are in other costs of production. Each product would pay its own cost and the laws of supply and demand would not be disturbed. The result in the transportation charges would not be a flat rate for equal distances on all commodities, but would be a

differential rate, compounded first of terminal and movement charges. It would be further differentiated by the variant elements of cost such as the distinction between local and through traffic, in short, differentiated by all general elements that make the cost per unit of transportation greater or less.

We are told, however, that many articles of traffic could not bear their full share of the costs. This statement unfortunately is made in line with the assertion that in the cost principle we would have the same rates for all classes of commodities, and consequently falls rather wide of the mark. As pointed out, movement expenses are often two to three times as great per unit for way freight as for through freight. If this be so in this distinction of traffic, certainly there would be quite a wide difference between the real costs of shipment of different commodities. Fortunately, the items that cost more to ship are those which it is agreed are able to bear the relatively greater cost. Quite possibly one reason why all admit that these commodities can bear more charge is that they have had to and hence it is proved that they can. The question is whether or not the commodity in question can bear its full share of costs, be this above or below the average, without causing the amount of traffic to fall off.

It seems somewhat strange that in this light the commodities said not to be able to bear their full costs are those which apparently would not suffer a serious falling-off of traffic at a fairly high rate. Many of the items mentioned are either necessities or are commodities on which the tax would be easily shifted and would be borne by the final consumer. They are commodities on which our large roads live and prosper. A notable example is coal, which is rising in price independently of transportation costs; furthermore, there is no decrease in its consumption, nor are the poor

suffering from cold more than formerly. It seems, on the other hand, that this traffic must be quite profitable at present rates, in spite of the fact that it is said that it must be hauled for less than its share of the cost of service. Attention is directed here to the large proportion of traffic in coal and the similar traffic in iron on our very prosperous systems, the Pittsburgh and Lake Erie and the Pennsylvania Railroad. One is reminded of the shopkeeper who sold his goods below cost, but made money because he sold so many of them.

Take again the example of sand for building. If this is not already bearing its full share of the costs, what is to hinder it doing so? Suppose that this rate were doubled. Would the freight rate on the sand be sufficient appreciably to discourage building? Or would the poor man use fresh butter, or eat unsalted porridge, if the rates on salt were advanced? And yet these are some of the commodities that we are told could not bear their full share of the costs, were rates to be so fixed.

There are some cases where, to build up a new line of traffic, it would pay any railroad to grant exceptionally low rates in order to get a new business on its feet. It would even pay the other members of the shipping public to encourage such a procedure. If this traffic would be able, in time, to take an appreciable share in the up-keep of the strictly joint costs, it would be socially expedient that it be stimulated in its early growth by a rate even less than the extra cost to haul it. But such cases are exceptions, and should be so treated; they do not disturb the rule. Then, again, there are other instances where a service may be performed at less than what would be its normal cost. There are cases where a line of traffic may be picked up to fill cars returned from regular traffic, cars which otherwise would return empty, and traffic that could not afford to pay for

the movement of the cars, were it not for the fact that they were going anyway. In such a case, carrying this traffic at a low charge really helps rather than taxes the standard traffic. But if this back load increased so much that it became larger than the standard load, the circumstances would be materially changed. It would require its own special service and car movement, and in such a case it could not look to the other traffic to pay the lion's share. Clearly, while cases exist to quite an extent where it is expedient to haul a certain traffic at a low rate, yet this is a principle of charge that must be decidedly limited, or, instead of aiding the rest of the traffic, it will be a tax upon the latter. And moreover, many such cases are really not exceptions to the rule. The traffic can, and does, pay for the actual cost entailed by it. But while it is what may be called a subsidiary traffic, it does not demand special equipment, and hence need not have such costs rated to it.

The balance of argument and evidence goes to show that the rule should be that each element of the traffic should pay for all the costs that may be assigned to it by a careful accounting system, and that the proportion of costs which can be so allocated is not only larger than many would have us suppose, but the outlook is that, as accounting methods are improved and put into application, the sphere of strictly joint costs will be continually reduced. There is a large and growing proportion of the costs which should be assigned to the particular elements of traffic, and form a minimum below which the rates should not go except in unusual instances. In addition to these assignable costs, it is held that the strictly joint costs should be divided up somehow on the principle of value. In addition to the differential allowed on the principle of cost, there is another differential added on the principle of value.

It should be brought to mind that no differential is al-

lowed on the difference of value or of cost within the classes of service. To allow such a differential would not only be almost impossible of application, but it would be so very liable to abuse that it is held to be illegal. When we turn to the broad divisions of traffic, there seems to be little attempt to differentiate on the principle of value. It appears from the opinions handed down on the separation of accounts between passenger and freight service that the attempt here was made merely to ascertain, so far as possible, the true expenses of each branch of traffic, and then to divide up the remaining doubtful expenses and the interest in the same ratio as that already worked out from the other expenses, or to apportion them on the basis of the train mileage. In fact, several methods have been tried, and it is claimed that they work out about the same. We cannot compare the value of the passengers versus that of the freight, and it is only in a very general way that the value of the two services may be compared as in the Wisconsin decision in *A. E. Buell vs. Chicago, Milwaukee & St. Paul Railway Co.* Should we attempt to establish such a division as the freight versus the passenger on the wealth or ability to pay of the ultimate consumers of the freight and that of the passengers, the very probable outcome would be that the differentiation would be in the wrong direction. Instead of the wealthiest class of patrons paying the most, they would pay the least. The freight charges are ultimately paid by the consumers of the goods, and while goods are consumed by all, yet the rule can safely be held to be that these consumers as a class are not as wealthy as the patrons of the passenger service. The simple reason is that the people who travel most are above the average in means, while the freight is ultimately used principally by the masses. The freight is paid first by the middlemen, but it is shifted to the ultimate consumer. This fact by itself

makes it easier to burden the freight traffic more than the passenger. The rate is paid on the freight long before it gets to the consumer; it is assimilated into the total price of the goods, and the ultimate payer, not being present when the railways are paid, gets but a poor opportunity to object to the payment. He does not realize what elements enter into the price of what he buys. But the passenger pays for the ticket himself, and uses it himself. And he is ready to object, and object strenuously. He can, moreover, make his complaint heard more readily than the one who bears the burden of the freight charge. The very fact of his being relatively better able to pay makes him relatively better able to register an effective protest. When a differential beyond cost is allowed in this division of the traffic, the tendency will be, both economically and politically, to make the less able pay more, rather than less, of the joint burden. Consequently, it is socially expedient that the element of value should be kept in the background in the adjustment of the relative burden between the freight and the passenger traffic. What elements of the cost cannot be allocated by the principles of accounting may be apportioned on a more or less arbitrary basis, following out the lead which the cost principle gives. Then the ultimate payers in the two classes will be likely to be dealt with more equitably.

The division between the state and interstate business is also beyond the easy application of the principle of value, and the division here that meets with most favor seems to be the one based as far as at all possible on the cost of the service and the relative amount of the property involved in each service. Not so with the through versus local traffic. Here, as in the case of the rates on different commodities, great attention may be paid to the relative value of the different services. And the advocates of the modi-

fied cost basis claim that this difference in value should quite largely affect the proportion which each element of traffic should pay toward the interest on vested capital and other strictly joint burdens on the business as a whole. As already quoted, "The charge on each article of shipment should cover the cost of transportation and contribute its just proportion of the interest on the investment. This proportion in turn depends upon the cost of transportation and on the value of the service or of the articles shipped." Is not this as much as to say, let each element pay for what expenses it incurs, let it pay for such part of the capital as it can be judged distinctly to use, and let the remainder of the interest on the vested capital and other strictly joint charges be borne according to the unit of value, rather than unit of weight or transportation?

And yet these statements as to the use of the value principle in regulation are very vague. It might be supposed that the value of the goods and the value of the transportation service performed upon them were identical, or at least proportional. But these two values may be entirely different. The price of the goods to the ultimate user may be almost entirely made up of the transportation charge, as in the case of sand or other goods which cost very little at the point of shipment, but cost an appreciable amount to transport. On the other hand, the transportation charge may enter very slightly into the ultimate price, as in the case of jewelry and other luxuries. And doubtless what is meant by the value of the goods is the price, for value is rated at the margin of value, and this margin of value is the price. Moreover it is not at all self-evident that the value of the goods should rule. What the patrons pay the railways for is not the goods themselves but the service of transportation performed upon them. This is but a part of the total utility, the part which is found in place utility, and, as we

have seen, this has no definite relation to the utility of the complete economic good.

The value of the service is also an indefinite matter. As we saw in discussing the value of the service as a whole, the value is quite indefinite, except as we mean marginal value; and marginal value is simply the result of setting the price (where competition does not enter the case). The value of the service is the marginal value. And the marginal value is the price which is artificially fixed. Shippers will avail themselves of the service up to the point of profitability under the rate as fixed. The marginal value is useless in regulating the rate; to attempt to so use it would involve a circle of causes and effects.

A better way to treat the matter is to say that the differences that must be allowed in the rate beyond the differences in cost should be based on the differences of demand. The greater the demand per unit of any commodity the more people are willing to pay for it. To be sure, the demand varies with the price, but it is not just what the price is. The real problem here, and apparently the solution of the problem of rate differentials is how the demand varies with the change in the price or rate charged.

There can be no question but that the function of the railroads is to supply the service of transportation. Since this is so, the end should be to supply the greatest amount of service possible. And to supply the greatest amount of service possible, the rates must be adjusted with regard to the comparative demand for the different services. For this end the important thing is not so much what the demand is at any one fixed price, but how the demand would vary with a change in price. It is a well-known fact that the demand for various articles and services varies quite differently with the different articles and services. One service will have a greater variation of demand with a change

in price than another will. In fact, within reasonable limits the demand for some services varies but little with a change in price, while with other services the variation is great; that is to say, the demand is elastic in the latter case. Does that not give us the main part of the solution for the differential division of the strictly joint costs?

The principle is that those services which have the most elastic demand schedule, which fall off the most with an increase in price, should bear relatively less than services which will fall off but little in their use by an increase in price. The end of the railway function and its regulation is to serve the public as much as possible. As much of the offered traffic should be handled as possible. Within reasonable limits any kind of traffic will move to a certain extent, whether the rate on it be raised or lowered. But the amount handled will vary with the rate imposed, and it will vary more in the case of some traffic than in the case of other kinds. In most cases, almost all cases, the amount handled will fall off with an increase in price, and increase with a decrease of charge. But the charge cannot be placed so low that the railway will not get a fair return. The charge is a necessity. Then let it bear on the different elements of traffic so that they will have equal opportunities to expand. And this result is not attained by an equal charge per unit of transportation, or per unit of value of the goods handled. The equality for expansion depends rather on the different demand schedules for the different services; and the services being the place phase of the ultimate utilities, the demand schedule for the service is similar to the demand schedule for the good in question.

There is a decided difficulty in arriving at the demand schedules for these services or the goods into which they enter. And yet it would seem to be possible to overcome this difficulty within a practical degree of accuracy. Under mo-

nopoly price-making the variation in demand is one of the chief elements in determining the level of price. As we have seen, the monopoly price is set by raising the price to the point where the falling-off in the business handled offsets the increase in price per unit. This is done in the case of each commodity. If this principle can be used to get the greatest return for monopoly, it ought to be reasonably workable to secure the greatest amount of business possible. It requires a great deal of care to ascertain the demand schedules for different commodities, and it cannot be expected that it can be done to a point of very fine precision; but that is not necessary to make a workable system of rate regulation. Such a scheme of rate-making is truly in accordance with what the traffic will bear. Let us not say that it is a system of what the traffic will bear, for that has been used so much to cover up the similar phrase, "all the traffic will bear", that it might convey a bad impression. Let it rather be expressed as a system based on the relative ability of the different elements of traffic to bear the charge.

Just how does such a system work out? Take the example of the comparison of any two classes of service. The comparative rate adjustment between the two could be said to be worked out when any change in the rates, even though adjusted in such fashion as to give the same total return, would diminish the amount of traffic handled in the two classes of service. The reduction of traffic in one would be greater than the addition of traffic in the other, while the change in rate would not make a change in the total return. But we would not rate the traffic in such a measurement simply on the basis of a unit of transportation, but rather on the value of the goods carried. The criterion would be the change in the total value of the goods handled. It is not only that we want more goods shipped. We want more value transported. It is worth more to society to have some goods

shipped than it is others. And the best way in which we can measure such comparative value is by the standard that our ordinary price-setting mechanism puts upon them. The differential accorded to value can be said to be awarded to social advantage when any disturbance of rates that would merely affect the relative burden on the different classes would cause a diminishing of the traffic as measured by the value of the goods to the consumers.

Just here comes in the weight to be given to the value of the goods. Goods of low value might be able to bear a high rate without any more diminishment of the traffic than in the case of goods of high value. The goods of high value might have an extremely elastic demand schedule, while the traffic in the cheap goods might fall off but little with an increase in the rate. But if they each had an elastic demand, the variation in the traffic would be felt more severely in the case of high-priced goods than in the case of the cheap ones. The difference would of course be in direct ratio to the price of the goods, as fixed in the ultimate market. And since most goods have an elastic demand schedule, the value of the goods has a very important place in rate regulation.

This argument does not mean that we give up the cost principle in so far as it can be applied. Both cost and value principles are needed to make a fair system of rate regulation. The background of cost is needed to work out the return needed on the traffic as a whole, and the cost is needed as the principal feature in the adjustment of rates between entirely different spheres of transportation where the comparative demand schedules can not be well worked out, and where the admission of a differential on the value side would probably lead to abuse or an exact reversal of the principle. Cost is also needed as a minimum, in so far as it can be ascertained, below which individual rates should

not be placed unless in exceptional instances. But, in addition to this, the value principle is needed as it is worked out in the differential demands for the different classes of traffic with possible changes in the rates.

Another question arises, as to whether the differential due to demand should have as its base line the cost minimum, or whether the rate as a whole should be worked out on this principle and the cost minimum be used as a necessary limit below which no rate should be allowed. An argument could be raised on either side, but since it is generally conceded that any class of service should be handled if it pays what can be ascertained as its cost and merely enough more to induce the railway to handle it, the probabilities are that it would be best that the whole rate should be apportioned according to the demand. The rates would then vary upward from the lowest cost ascertainable on any class of traffic to much higher rates on goods which could bear the higher rates as well as the goods of less demand could bear their low rates. And the difference between the differential rates so established and the particular cost of the various elements of traffic would provide for the costs which are strictly joint. The complete fair return on the whole business would be made up, but the pressure bearing equally on all would win a greater part of the burden of the joint costs from the traffic which would be least affected by a high rate.

It would be exceedingly interesting to compare this theoretical view of the case with the actual rate situation in the United States, but that would necessitate a work of greater extent than what has already been attempted in these pages. However, it is hazarded that the theory would fit the situation fairly closely. While the zone system would afford spectacular examples of a more or less justifiable application of the principle of setting certain portions of traffic

aside as a class by themselves, the disturbing elements of competition with outside carriers, such as waterways, by their effect on the elasticity of demand for the traffic in question, would correspond quite closely with this theory, and the difficulties in regard to the different abilities of the various classes to bear the charges are provided for with as few exceptions as is usually the case with any theory.

CONCLUSION

THE thesis advanced in the beginning of this study was that the railroad enterprise is properly a monopoly. Monopoly being generally considered to be an evil, the quest has been to find principles upon which the railways may be regulated to avert the evils of monopoly in our transportation service. These evils are chiefly an unnecessary maintenance of price and the consequent restriction of the possible service. The undertaking has been to outline principles of regulation upon which this price maintenance and restriction of service may be minimized, and upon which the rate-making basis may be made the ability of the railroads to give the greatest and cheapest service possible without violating their legitimate interests, instead of their ability to win the greatest return for themselves.

An incidental principle has been brought out in the treatment of this general question. It has been pointed out that railway monopoly is not just a necessary evil to be tolerated lest we plunge into worse evils. Railway monopoly, in so far as this means combination of control and financial administration, is a positive social advantage beyond any results which might be hoped for under a system of competition, even though competition were practicable in this enterprise. Under a competitive system, which might be imagined with the destructive effects eliminated, owing to the necessary interrelation of the rates on all lines, the basis for the rates would have to cover the lesser ability and larger costs of many independent small lines. But under the combination which rules under the monopoly system,

owing to the organic nature of the business and the mutual helpfulness of the business on the various parts of the systems, the basis for the rates on a large system which would include these weaker small lines would be the profitableness of the whole system considered as a single unit. The resulting rates would be considerably more moderate than if raised to make profitable the business on each weak side line considered by itself, as these were pushed independently into new territory. The fact of concentration under monopoly has meant a great saving, a saving which in the long run must work a great advantage to the interest of the public as well as to that of the railways.

The only reason to fear monopoly in this sphere of our economic life is that it may get so powerful as to be beyond the power of public control, or that we may not be able to work out principles and methods whereby we may keep this line of investment on a parity with other investments, having only its due share of the expansion and profits of the country's business. But the recent history of the question should quiet our fears as to the impossibility of maintaining the public control, provided we can work out the proper principles of procedure; and these principles are not impossible of attainment. We can regulate the monopolies.

The need of applying regulation that will reduce the rates and extend the service to the ability of the railways to supply the same is increased by the marked tendency of late years for railroad business to depart from the sway of the law of diminishing costs. Since the year 1906 the railways of the East have given evidence of comparative freedom from the operation of this law, and as this state of affairs extends over the country, increasingly greater need will be found for supplying by governmental authority the incentive to keep the rates down and provide for expansion of the traffic which formerly came in great measure from the operation of this economic law.

The greatest difficulty in attempting to base rate regulation on the ability of the railroads to serve comes from the difficulty in determining which should be the marginal or determining line. Under competition, as we ordinarily understand it, the determining margin is found by the entrance and exit of enterprises with the variations in demand for the products of the business and the variation in ability of the different enterprises to weather the storms of economic life. But it is almost out of the question for a line once established to be withdrawn from the business; the right of way is condemned and the property ruined for other uses. Fortunately we do not want a withdrawal from the business. The need for railways is continually growing, and we may expect it to grow as time goes on. The only reason for railways being below the determining margin is lack of foresight in establishing them where they are not needed, or mismanagement. Lines so situated cannot be allowed to determine rates for the transportation system at large. If they cannot persist as organized under rates that will be fair to other lines, they must be allowed to reorganize on a new basis that will meet the conditions of the country's needs. But all lines which are placed with a view to the needs of traffic and that have been carefully managed must be allowed to earn a fair return, that they may keep up their service and expand as the development of business conditions warrants such expansion. The margin is an ever-advancing margin, one that will keep pace with the march of the traffic expansion that is continually going on. And it is believed that this margin will advance to meet the needs of traffic if a fair return be allowed on the property already invested in carefully situated railway systems. This return is held to be sufficient when it allows a sale of securities in the open market, in competition with other enterprises, at rates which are proportional to the

amount of securities and the value of the property which they represent. And the value of the property for rate-making purposes, it has been maintained, should be rated on the principle of the cost-of-reproduction-less-depreciation for what has already been devoted to the business; but for the future, dating from a valuation of existing property on the above basis, all actual investment of capital should be added to this established valuation, and the standard valuation of property should be this established valuation made by the Federal commission plus such additions as will accrue from increased investment. The argument is that, if combination of the railroads be allowed, there will be no need for the valuation to expand with the increasing value of the surrounding property. The newly-purchased property must be rated at the price necessary to obtain it, but the old property does not need to follow such expanding values.

This is the principle of establishing whole-rate systems on the cost of the service as a whole, though it differs more or less from the widely variant views of the commissioners who advocate the principle of cost. In addition to establishing the total-rate systems on the cost situation as a whole, an attempt has been made to show how the individual rates may be made to conform to such a system. The principle advanced here is that the costs of the individual services, in so far as they can be ascertained, and this is much farther than some would allow, should be established as a minimum for such rates; that the greater divisions of services should have their contributions to the total cost divided as far as possible on the basis of cost, but that the rates on the minor divisions of the service should be differentiated not only on the principle of cost but also on the principle of demand, in order that the various divisions of traffic may have an equal opportunity to expand according to the elasticity of the demand for them. It is

hoped that in this manner the monopolies may be restrained from exercising the power ordinarily within the reach of such favorably situated enterprises, that is, the power to fix their prices so as to get as much as possible out of their enterprise. The railroads are the servants of the public, and while we want to be very fair to them, we want the regulating principles to be such that we may get the greatest possible service from them, rather than they the greatest profit from us. It may be, it probably will be, that we cannot thereby keep rates from rising as the railroads expand, as their equipment grows more crowded, and as their property includes more and more of purchases made at greater prices. But it is to be hoped that we may in such a way keep the rates down as far as the ability of the roads to supply the service will allow. And this is as much as could be hoped for under a system of government ownership or an ideal but impracticable system of competition.

VITA

THE author of this monograph was born at Somerset, Nova Scotia, January 7, 1887. At this place he received his early education, completing the high school work in 1902. Six years later he entered Geneva College, Beaver Falls, Pa., from which institution he was graduated in June, 1912. The following year he spent two terms studying at the University of Glasgow. The year 1913-14 he attended Columbia University as University Scholar, and the year 1914-15 as Garth Fellow in the same institution. While in Columbia he studied under Professors Seligman, Seager, Mitchell, Moore, Clark, Chaddock, Josef Schumpeter of Gratz, Karl Rathgen of Hamburg and G. G. Huebner of Pennsylvania in Economics, Professors Giddings and Tenny in Sociology, Professors Cattell and Thorndyke in Psychology, Professor Shotwell in History and Professor Beard in Public Law. He also attended the seminar in Economics under Professors Seligman and Seager. He received the degree of A. B. from Geneva in 1912 and A. M. from Columbia in 1914. He is now Instructor in Economics at the University of Minnesota.