

THE S I S

on

THE VALUATION AND DEPRECIATION OF PUBLIC UTILITIES
OPERATING IN RURAL COMMUNITIES

Submitted to the

OREGON STATE AGRICULTURAL COLLEGE

In partial fulfillment of the requirements

For the Degree of

MASTER OF SCIENCE

by

Lee Willoughby Stebbings

June, 1930.

APPROVED:

Redacted for Privacy

Professor of Agricultural Economics.

Redacted for Privacy

Chairman of Committee on Graduate Study.

ACKNOWLEDGEMENT

The writer wishes to take this opportunity to express his sincere appreciation to Professor Milton N. Nelson for his helpful advice and kindly criticism, and to Mr. Merrill and the men of the Mountain States Power Division of the Byllesby M. and E. Corporation for their friendly cooperation during the writing of this thesis.

TABLE OF CONTENTS

Preface

Part I. Introduction

Chapter I. Opportunities in the Valuation Field 10 p.

Chapter II. Essential Factors in Valuation Procedure 28 p.

Part II. The Legal Basis

Chapter I. The Legal Trend in Utility Valuations 59 p.

Chapter II. Developments Affecting Reproduction
Valuations 22 p.

Chapter III. Rate Base Rulings and a Recent Rural
Community Rate Case 65 p.

Chapter IV. Rate Base Decisions Affecting Particu-
lar Utilities 45 p.

Part III. Valuation Accountancy Progress

Chapter I. Utility Property Accountancy and Val-
uation 50 p.

Chapter II. Depreciation 75 p.

Conclusion

Appendix A. A Rural Electric Property Valuation

Appendix B. A Typical Gas Property Valuation

Appendix C. The Improvement Requisition.

THE VALUATION AND DEPRECIATION OF PUBLIC UTILITIES OPERATING IN RURAL COMMUNITIES

PREFACE

The contents of this thesis are distinctly limited in scope to research relative to the problem of utilities operating in the agricultural sections of Oregon. The writer has in mind the type of public utility linking small towns and branching out into rural communities. The example of a typical valuation offered in the appendix concerns a prominent cheese producing center.

During the college year of 1929-30, the writer was associated with the Chicago valuation engineer and crew of the Syllsby Management and Engineering Corporation, while bringing the valuation of the Mountain States Power Division up to date. This crew was engaged in mapping, charting, inventorying, and appraising certain rural extensions and farm towns to include additions, replacements and betterments.

There were several objects in view among which may be enumerated:

1. The exercise of the perpetual inventory in operation policy of the holding company.
2. The checking of extensive replacements since the previous valuation.
3. The Oregon State Commission wanted the facts.
4. The Holding company required accurate and recent capitalization data for financing purposes.

5. The large budget of the operating manager needed supporting statistics.

6. The Chicago office was outlining a five year policy of strategic future development.

Valuation data is correlated with charts, trends, prices, rates, capitalization, construction statistics, and the five year forecast. This field is relatively new, and the literature is not extensive. Consequently, it was necessary to study in the private library of the holding company, and to examine the extensive files, accounts, and interdivisional reports. It was necessary to review original source material such as Commission and Court decisions, annual reports and their uniform classification of accounts for public utilities. A few secondary sources of the last decade contain academic and theoretical sketches of valuation work. This material has been most carefully omitted, and a modern working set of valuation principles set forth in a unique and clear manner, all fully supported by Commission and Court decisions for which specific references are given. A critical study of tangible and intangible capital and overhead costs in their relation to valuation, depreciation and rate-making has been made. The exhibits tracing installations and removals through the fixed capital accounts will not be found in any secondary sources, likewise the treatment of reproduction cost in relation to wage and price trends.

5. The large budget of the operating manager needed supporting statistics.

6. The Chicago office was outlining a five year policy of strategic future development.

Valuation data is correlated with the five year forecast. Charts, trends, prices, rates, capitalization, engineering construction statistics showing real and projected consumption in detail are collected with respect to the territory served.

The valuation field is relatively new, and the literature is not extensive. Consequently, it was necessary to study in the private library of the holding company, and to read the files, accounts, and interdivisional reports. It was necessary to review original source material such as Commission and Court decisions, annual reports and their uniform classification of accounts for public utilities. A portion of the research is of interest to the general student of public utility economics, other portions have significance only to those specializing in valuation work. Undoubtedly, the whole matter will be subject to extensive change or revision. In any case, the writer expects to engage in further research in public utility economics, in order to comprehend the great holding company as a national organization.

PART I - INTRODUCTION

CHAPTER I

OPPORTUNITIES IN THE VALUATION FIELD

Valuation and Appraisal Defined.

VALUATION is from the Latin root *valere*, to be worth. An article, substance or mixture, such as air, i.e. free goods, may have intrinsic utility without having exchange value. From the standpoint of economics, the exchange or market value of anything is the quantity of any other thing that would be given in exchange for the commodity. Valuation refers to the art or practice of estimating fair exchange worths of specific properties.

APPRAISAL, from the Latin root *precium*, refers to the fixing of a price or sum which the owners accept for a property. In economics, price is the amount of money that would be given in exchange for one unit of wealth, meaning all useful material things owned by human beings. Value and price are related but value may be expressed in terms of any kind of wealth, property, or service, while the price of things is always expressed in money; secondly, value is a term used for any quantity of good, while price relates to one unit. Illustration: If a factory sells for \$500,000, the value of the factory is said to be \$500,000, or as a large unit, its price is \$500,000; however, instead of saying that the price of ten tons of coal is \$100, one should indicate that the value of the coal is \$100 when

priced at \$10 a ton. Inventories of dissimilar property may be priced giving a monetary value total, thus making it possible to keep accounts of wealth, property and income.

Appraisal includes the tangible property, while a valuation adds to that value the intangible assets, and presents the total value of the utility or industrial as a going concern. This distinction is based on the latest corporation usage and upon the Latin origin of the words.

Levels in the Art of Valuation

(1) Informal valuations, resulting from a process of haggling in the exchange of ordinary property, requires an exercise of judgment on the part of buyer and seller, each taking into account his knowledge of the property, of personal necessities or desires, and of prevailing exchange conditions, but the computations are relatively elementary. These valuations are authoritative and binding, mainly by mutual acceptance of a contract, oral or written.

(2) Formal valuations are based on the procedure of specially qualified and experienced valuers for use in actual property sales, the determination of rents, taxed or fair commodity prices. Mathematical computations of greater complexity and frequently of a technical order are required. If technical, the mathematical computations may be non-engineering or engineering in character. The actual formal valuation is not computed by mathematical formula

but is based on expert judgment.

When formal valuations are made for the purpose of facilitating the sale exchange of property other than public utilities the valuation ordinarily must be accepted by the seller and the buyer to make it authoritative. In some cases, as in the settlement of estates, the authority may be vested directly in the courts. For some purposes other than exchange certain public officials (as for example, in valuations for taxation) have the final authority, or final decision rests with the courts. In valuations of public utilities for many purposes final authority is vested in the courts, though legislative bodies may, subject to constitutional limitations, prescribe methods and create commissions with extensive authority.

(3) Industrial Valuation. This comprises the art of estimating the fair exchange worths of specific properties in cases where professional industrial knowledge and judgment are essential. Examples include valuations of mines, factories, buildings, engineering constructions of all kinds and public utilities. Computations of varying complexity generally are necessary in industrial valuation work. Nevertheless, as in all valuations, the actual final estimates of fair exchange worth are not computable by formulae, but must be based upon judgment; in industrial valuations, in large degree upon the engineering judgment of industrial engineers.

The Development of Industrial Valuation The art of industrial valuation has developed mainly within the last thirty years. Prior to this period there practically was no such art, although engineers, economists and the courts were being drawn into active participation in formal valuation work; which, however, still was mainly the province of the merchant, the accountant and the financier. The literature of industrial valuation, though now quite extensive, dates almost entirely since 1900.

Industrial valuation is still in the formative stage. Engineers, accountants, economists, and lawyers continually are studying the various phases of the art, publishing their views in technical periodicals and in books. The United States, as well as most of the states, have established Commissions to regulate the various public utilities, and such Commissions are publishing their opinions and decisions in regular annual reports. The state and federal courts, which are the final arbiters in public utility valuations, have handed down a mass of decisions, which show a gradual evolution toward the development at some future period of a set of clearly formulated fundamental valuation principles.

Many of the methods and even the fundamental underlying principles of industrial valuation are still in controversy. The student of the art must remember this situation constantly, maintaining an open state of mind in consider-

ing all controverted questions.

Doubtless owing to the formative situation described above, engineers in general are not nearly so well informed on valuation as the rapidly growing and already great importance of the art demands. Very few of the engineering colleges have placed the subject in their curricula. The many engineers who find valuation an important part of their professional work usually must begin their work from a practical rather than a scientific starting point. Many engineers of high standing in valuation work have given study to the art first when called upon for responsible service in some actual valuation. Until comparatively recently, valuation has been thought of too much as a mere process of preparing property inventories and making ordinary engineering estimates of cost.

The Professional Practice of Industrial Valuation

Professional engineering knowledge and judgment alone are not sufficient in valuation work. Industrial valuations must conform to the same fundamental economic and legal principles which govern other valuations. Hence the qualified valuation expert must have special valuation training and experience. He should have a good working knowledge of accountancy, as applied to such commercial undertakings as mining, manufacturing, and public utility management, as well as the fundamental principles of economic science. He should be thoroughly familiar with the many court decisions

on valuation cases and understand clearly the underlying legal principles.

At the present time there is a new era of greatly widened recognition of the value of engineering service. The engineer frequently is called upon for public service of the broadest and most responsible character, requiring the soundest economic and sociological judgment. Moreover, the great industrial and financial organizations of the country are calling more and more extensively for technically and broadly trained and experienced engineers to serve as responsible officials, and are demanding engineering qualifications for an increasingly large proportion of their salaried employees. Every engineer today must face the probable possibility that at any time the greatest opportunity of his life, for service and reward, may prove to be of such nature that a thorough understanding of the methods and fundamental principles of industrial valuation will prove invaluable, perhaps indispensable.

(1) Engineering Executives. Engineers more and more frequently come eventually to fill responsible executive positions in all lines of manufacturing and other industrial undertakings, and in all such cases a knowledge of the principles of valuation would seem important, often essential.

(2) Consulting Valuation Engineering. Consulting engineering firms and individuals often find engineering val-

uation work an important and remunerative part of their practice.

(3) Salaried Valuation Engineers. Great utility companies universally keep on their technical staffs salaried engineers, devoting their entire professional services to valuation work, frequently moving from one property to another with subordinate staffs.

(4) Valuation Engineers in the U. S. Civil Service. The Bureau of Valuation of the Interstate Commerce Commission consists of a large number of engineers who study cost data and related work pertaining to railroad valuation. They prepare exhibits from underlying data for presentation in hearings, and investigate special problems in railroad construction.

"An act of Congress requiring the Interstate Commerce Commission to value the property of all common carriers doing an interstate business was passed in March, 1913. The greater part of this enormous task consists in assembling a wide array of facts. In connection with this work the engineering section of the Bureau of Valuation makes a complete inventory of all physical property of railroads other than land, including such items as grading, track, bridges, locomotives, cars, motors, work trains, and other rolling stock, office and roadway buildings, shops, power plants, tools, machinery, elevators, docks, and telegraph and telephone lines."

"Valuation of natural resources: One hundred valuation engineers, specializing in coal, general mining, non-metals mining, oil and gas, pulp and paper, timber, etc. and in the appraisal of industrial properties, public utilities, patent values, and land values are employed by the Bureau of Internal Revenue of the Treasury Department. The work involves estimation of the quantity of natural resources in place; the theoretical and market values of the natural resource in place, and its products; the value of equipment ordinarily used in the discovery, exploitation, and utilization of such natural resources; the cost of development, exploitation, and utilization of such natural resources; and also the determination of obsolescence and rates of depreciation. In connection with the solution of such problems, conferences in Washington or in the field are frequently required between the valuation engineers and representatives of the taxpayers. When litigation ensues, the engineers contribute materially to the preparation of legal briefs and to the presentation of evidence pertaining to engineering questions." 1

(5) Engineering Graduates. Recent graduates frequently find ready entrance, wide experience and increasing salaries in this interesting field. This work appeals to young men with a considerable leaning toward the business

1. See pp. 16, 17, 20. Form 2599. Oct. 1928. "Opportunities for Engineers in the U. S. Civil Service."

side of engineering.

Classes of Property Requiring Valuation Three main classes of property require valuation:

(1) **Industrial Properties Dependent on Specific Deposits of Raw Materials** such as Mines, Quarries, Timber Properties, Oil Properties, and Some Manufacturing Properties; The characteristics of this class of properties are: First, that all or at least an important part of the property is used up by operation, without possibility of replacement, so that valuations must be predicated on limited productive lines; second, that they are not subject to close governmental regulation of product prices. The prices of products are assumed to be determined competitively, but in fact frequently are established by more or less tacit, widespread agreement of producers.

(2) **Manufacturing Properties Not Dependent on Specific Deposits of Raw Materials.** The characteristics of this class of properties are: First, that with proper replacements their productive lives are not limited; Second, that they are not subject to close governmental regulation of product prices. The prices of products are assumed to be determined competitively, but in fact frequently are established by more or less widespread tacit agreement of producers.

(3) **Public Utility Properties.** The characteristics of this class of properties are: First, that they are of a

public character, though in the majority of cases not publicly owned; second, that with proper replacements their service lives are not limited;* third, that their products are services, for immediate use by the public where produced; fourth, that they often are natural monopolies, hence non-competitive; fifth, that in general their service prices are subject to strict governmental regulation. A public utility is an industrial concern which is of a public character, requiring special grants by the public of rights to conduct its business, to use public property, and often to condemn private property for public use; it is devoted to the production, not of commodities to be sold on the general market, but of services for immediate use by the public where produced.

It will be noted that industrial properties are of (a) private character (b) public character; each of which may be of (a) limited service life, (b) unlimited service life.

* There are a few exceptions to this rule, as in the case of an electric light and power plant serving a mining or lumber community which must abandon its location when the mineral or lumber is exhausted.

CHAPTER II

ESSENTIAL FACTORS IN VALUATION PROCEDURE

In valuation work it is assumed justly that all sums of money paid should begin at once to earn at fair rates additional sums annually for the payee, which otherwise the payor would have received. It is perfectly apparent that a given sum of money in hand on a given date is worth more than the same sum not to be received until a later date, yet not only laymen, but sometimes engineers, in their discussions on valuation, and lawyers, in their examinations of witnesses in valuation cases, at times have become confused because of overlooking this elementary fact.

Valuations for sales or mergers of properties therefore must be as of definite dates.¹ If the date of payment is not the same as the date of transfer of the property the amount of the valuation must be increased when the date of transfer antedates, or decreased when the date of payment antedates, by a sum sufficient to allow a fair rate for the earnings and the earning on the earnings during the interval between the date of transfer of the property and the date of payment therefore. The amount of such increase or decrease is to be calculated by compound interest.

1 Note the consideration given the date in the valuation examples given in the appendix.

Similarly, the dates of all expenditures made in constructing and enlarging the property must be taken into account, making reduction to a common date by the principles of compound interest, except as earnings are taken into consideration correctly in the accounts of yearly operation.

Judgments of value are more or less consciously based on various factors, such as the following:

1. The actual original cost of the property, corrected for depreciation and intangible elements to give the actual investment in the property. This is of no great value in the case of large properties, but is of some value in the acquisition of small ones..

2. The reproduction cost of the property, based on present prices, and corrected for depreciation and intangible elements.

3. The earning value of the property as compared to physical value and its possible future net income.

4. The market value of the property, in comparison with the actual prevailing sales value of similar properties, or as represented by the market prices of the stocks and bonds of owner companies.

5. The service worth value of the property, or its value as determined by the reasonable worth of its services to customers.

6. Future developments or projects.

Physical value must not be confused with real value, for intangible value is just as real as physical. Physical value is synonymous with tangible value, which is the value of that property which can be touched.

There is greater difficulty in making fair estimates of the intangible¹ than of the physical value. Valuers should be very careful both to include all real intangible values and not to include any unreal values. The intangible values included should be such only as are capable of clear explanation and of reasonably accurate estimation.

Some of the factors which may be considered in a valuation include:

1. The original cost of the property, its depreciation and its intangible elements of value, based on original cost prices, and the actual and the "prudent" investment in the property,

2. The estimate of actual cost, historical cost, probably because the estimate is based upon a history of prices prevailing at the date of the installation. This is sometimes used when the actual cost cannot be obtained from the books or records. This term, however, has frequently been considered as synonymous with original

1 The Public Service Commission of Oregon has defined each fixed capital account in the "Uniform Classification of Accounts," effective Jan. 1, 1925.

cost, although this does not seem to be a correct use of the term. Historical cost may be more or less than original cost.

In some cases it appears that the term "Historical Cost" has been used when cost has been arrived at by ascertaining the actual cost where possible and supplementing where actual cost could not be obtained by estimates of cost on the historical basis.

Historical cost, like original cost, when used for the purpose of aiding in determining the value of the property at the date of the valuation, does not mean the cost of all construction, since the beginning of the industry, but the cost of so much of the property as is found in place at the present time.

3. The reproduction cost of the property, its depreciation and its intangible element of value, based on prices prevailing in the present and expected to prevail for a considerable future period.

4. The capitalized value of the estimated average annual future net earnings of the property estimated as likely to prevail for an extensive future period.

5. The stock and bond value of the property, which represents its market value.

6. In some cases, the service value of the property, which is its value based on the reasonable worth of its service to customers.

7. All other factors pertinent to the determination of value, including "working capital," comparisons of the property with other valuations of similar property, the general trend of business conditions, the general trend of prices, and other factors.

The general process for the valuation of a specific property includes:

1. The preliminary general examination, survey and study of the property and its history.

2. The complete, accurate, highly detailed inventory of the entire property.

The items should be arranged in related groups. In each group the items should be arranged in tabular form convenient for calculations, with items of the same character and the same age put together.

The age in service of each item must be determined and shown.

The general condition of each item of property must be determined by direct observation and noted.

3. The thorough study of the owner company books and other records in order to obtain:

Data of the items of the original property, including their costs.

Data of all items of enlargements and other improvements of the property, including their costs.

Data of all retirements of items.

Data of all replacements of items, including their costs.

Data of the original costs all items of property which are now a part of the property.

Data of the organization of the company, its stocks and bonds, and its promotion, franchise and other preliminary costs.

Data of the costs and income of the company during the period of construction of the property.

Data of the book values of the property, year by year.

Data of the yearly incomes of the property, each year of its history, in detail as to items.

Data of the yearly operation costs of the property, each year of its history, in details as to items.

Data of yearly depreciation reserves, each year of the history of the property, in detail as to items.

Data of yearly dividends, interest payments, surplus reservations and other financial transactions of the company, each year of its history.

4. The series of formal investigations of the value of the property from different points of view, as follows:

(1) The Original cost value, including:

Physical Value

(a) The original costs new of all inventory

items of physical property.

(b) The depreciations to date of valuation, determined on the basis of their original costs new, of all inventory items of physical property.

Intangible Value

(c) The "original preliminary expense" of the company, prior to construction, including promotion and franchise costs.

(d) The "original going concern costs" incurred by the company during its early years of operation in securing and developing the business to a paying basis.

(e) Good will and other intangible values (such as extra construction expense,) if any.

(2) The Reproduction Cost Value, including:

Physical Value

(a) The reproduction costs new, based on present prices, of all inventory items of physical property.

(b) The depreciations to date of valuation, determined on the basis of their reproduction costs new, of all inventory items of physical property.

Intangible Value

(c) The "reproduction preliminary expense," which a company organized now would have to spend prior to construction, including promotion and

franchise costs.

(d) The "reproduction going concern costs," which a company organized now would have to incur to secure and develop the existing business.

(e) Good will and other intangible values, if any.

(3) The earning value, based on the capitalized value of the probable future average yearly net earnings of the property.

(4) The stock and bond value. This corresponds to the "market value" ¹ of ordinary property.

¹ The market value of security issues is not considered a fair or controlling test of the value of property for rate-making purposes. The market value of stocks and bonds is a mere indication of the public estimate of the value of the utility property contributing to the income, which may comprise property not used by the company in rendering its service. Stock and bond quotations go up and down at times without much reference to their intrinsic value or the value behind them. *Des Moines Water Co. v. Des Moines; Southern P. Co. v. Bartine.*

(5) In some cases only, the service worth value. This is the value of the property determined from the standpoint of the reasonable value to customers of its service.

(6) A study of all other factors affecting the value of the property, such as:

The working capital which must be kept on hand to meet daily exigencies of payments.

The values established in accepted valuations of similar properties.

The general trend of prices.

The business outlook, general and for this property.

Deciding upon the fair value of the property, giving fair consideration and due weight to all factors affecting value, in the light of the results obtained in the separate investigations of value outlined.

No fixed rule will apply correctly in determining the weights to be given the respective results obtained by the respective investigations, for such weights will vary with different properties, and with the legal decisions of each state.

Earning values, for example, may often be of primary importance in determining the values of properties of private character, but can be given only comparatively small weight in fixing the values of public utilities,

because their earnings are subject to regulation by the public.

Reproduction cost values are often given great weight in fixing the values of public utilities, but a railway line about to be abandoned for lack of paying business might have little, if any, other than salvage value.

Original cost values represent closely the actual investments in the properties, to which some authorities would give great weight in fixing values, but investment often differs widely from true value. There is the extreme case to consider when the cost was nothing.

Some of the most important elementary general principles of valuation generally accepted may be stated summarily as follows:

(1) In making a valuation every factor affecting the value must be given fair consideration and reasonable weight. Repeatedly the courts use such expressions as "fair value" and "reasonable rates." In specific court decisions mention is made of various factors which must be taken into account.

(2) A large amount of engineering work must be done in making a valuation of a large industrial property. The minutely detailed inventory of the property requires much engineering knowledge and skill and frequently the extensive use of engineering plans and specifications.

The cost of constructing and reproducing the plant must be estimated in great detail, in much the same way in which other engineering estimates are made. The value finally adopted must be capable of clear and full justification in a court of law and therefore must be based in the main upon expensive and reliable data and careful and accurate computations. The courts frown upon guesses.

(3) Nevertheless the final value adopted must be determined by judgment rather than by mechanical computation. The valuator must be prepared to testify under oath, if need be, that, to the best of his knowledge, he has given careful and fair consideration to every factor which affects the value, and that in his best judgment he has ascertained and reported the actual fair value of the property.

(4) There are numerous particulars in which valuers (and even courts) still may differ. The valuator must be familiar with the differing opinions still held on disputed valuation questions, and the arguments put forward on each side. He must not blind his judgment by a partisan attitude on any disputed question.

(5) Valuers must be careful not to permit themselves to be prejudiced in any way in favor of either the owner or the purchaser, although one of these may be the client who pays for the valuation.

(6) Though comparatively few cases require actual

litigation, the courts are the possible final arbiters in a large proportion of valuations, including all those of public utilities. Great weight is given in the courts to precedents established in former decisions, which, though not immutable, are changed only with great reluctance.

(7) By the continued study and practice of engineers, economists, accountants and financiers, and by repeated court decisions, a body of more or less formal and definite rules and methods already has attained an extensive development in valuation work. It is essential that the expert valuator be thoroughly conversant with all this body of valuation principles, including its limitations and uncertainties. A few of the most important decisions by the United States Supreme Court in valuation cases are briefly outlined and discussed hereinafter.

A precise and reliable determination of the reasonable worth to the public of public utility services is usually difficult, if not impossible, owing to the fact that in most cases such utilities are natural monopolies, not subject to competition. There are some exceptions to freedom from competition.

In the determination of reasonable worth to the public of public utility services there are two types of cases:

1. Reasonable worth of public utility services de-

terminated by competition.

3. Reasonable worth of public utility services determined by commissions and courts.

Examples of such cases included the following:

1. Railways cannot charge more than "the traffic will bear," because with higher rates freight and passengers will seek other means of transportation.

2. Competition between railways, interurbans, buses and trucks and private vehicles may operate to limit transportation charges.

3. Competition between street cars, buses and private vehicles may determine the reasonable worth to the customers of street car service.

4. Competition between public gas and electric companies and between public companies and private lighting and heating plants may establish the reasonable worth of lighting and heating service to customers.

5. Competition between steam and water power and between private and utility power plants may determine the reasonable worth of power services.

In all cases where the reasonable worth of public utility services to the public can be ascertained from competitive prices, the worth of service value may be estimated by simply determining the "earning values" of

such utilities with rates equal to reasonable worth of services to customers.

In cases where the reasonable worth to the public of public utility service is not determined by competition the principle governing in such cases is stated very clearly by Judge Savage of the Supreme Court of Maine, in instruction 13, 14, 15 in the case of Topham Water District vs Maine Water Company, as follows:

"13. In estimating the value of a public service to the public or the customers, one of the elements necessary to be considered is the expense at which the public or customers, as a community, might serve themselves, were they free to do so, and were it not for the practically exclusive franchises of the supplying company. Water is to be regarded as a product, and the cost at which it can be produced or distributed is an important, though not the only, element of its worth.

"14. The worth of a water service in such connection is the worth to the customers as individuals, but as individuals making up a community of water takers.

"15. Communities are entitled to the benefit of existing natural advantages. If there is more than one source of supply, other things being equal, the community is entitled to have the least expensive one used, and the supplying company is not entitled to charge an enhanced rate, based in part, least, upon the cost of

using a more expensive source."

In the majority of valuation cases, only sufficient investigation of worth of service value need to be made as to show that it is not materially less than the fair value of the existing property as determined from other points of view.

In cases of utility properties very unwisely designed or extravagantly built or overbuilt, their service worth values may be estimated as follows:

1. Prepare general plans (only in sufficient detail for reliable estimates of cost) of the best "approved" utility plant, all engineering and economic and other pertinent factors properly considered, to supply the public utility services in question.

2. Estimate the "reproduction cost value" of this "approved" utility property (including intangible elements), both new and in the average future depreciated condition which will best represent its future service.

3. Estimate the average future yearly depreciation costs of this "approved" utility property.

4. Estimate the average future yearly future operation costs of this "best" utility property.

5. The reasonable worth to the public of the yearly public utility services in question may be claimed plausibly to approximate the sums of:

- (1) The "reproduction cost value" of the "ap-

proved" utility property, in its average future depreciated condition, times the fair rate of return.

(2) The average future yearly depreciation costs of the "approved" utility property.

(3) The average future yearly operation costs of the "approved" utility property.

6. The service worth value of the utility property in question may be claimed plausibly to be equal to:

$$\underline{5(1) + 5(2) + 5(3), \text{ just above}}$$

The rate of fair return.

This is the capitalized value of $5(1) + 5(2) + 5(3)$ and is the "earning value" of the existing utility property with rates sufficient to secure the yearly income indicated in 5, just above.

The use of estimates of service worth value estimates is subject to important limitations.

1. The property to be valued is the actual, existing public utility property, not a substitute, even though the substitute should be approved as better for the purpose.

2. All data of an "approved" substitute plant are pure estimates, not so reliable as the data of the actual, existing property.

Service worth value estimates will be of importance mainly in valuing:

1. Public utility properties whose value is dim-

inished by developments of later competing methods of meeting the same needs.

Flagrantly unwisely designed and constructed public utility properties.

The prudent investment in an industrial property is the total investment therein which has been made wisely, in accordance with sound business judgment and in the light of the best information available at the dates of investment. Extravagant or foolish investments in the property are the fault of the investors, who are not entitled to remuneration for the consequences of their own mistakes.

There are those, including some present United States Supreme Court justices, who argue strongly for making the "prudent investment" ¹ the main if not the sole factor in valuations of railways and other utilities subject to public regulation.

However, the majority opinions of the United States Supreme Court have held consistently that original cost (which indicates investment) is only one of the factors which must be considered in valuing utilities and in particular that reproduction cost must also be given due weight.

1 Can a state substitute prudent investment for present fair value as the basis of rates?

The Special Master in a recent case arising from a

rate order by the Massachusetts Department of Public Utilities said that to hold that a state in the exercise of the power of regulation may substitute something else for the value of the property which has been determined to be the measure of the constitutional protection would seem to nullify the protection even though that something else be the amount prudently invested, for, ex hypothesis, the amount of prudent investment differs from the present value of the property, or no question arises. He stated that the suggestion that the prudent investment theory is only a means of determining the present value of the property lacks reality, for it is avowedly a means of escaping from taking present value as the rate base.

The Special Master said further: "The decisions of the Supreme Court, which are controlling this Court, have clearly established the constitutional right of a utility to be protected against regulation which will prevent it from earning a return based upon the present value of its property. This constitution is a restriction on the power of the state to regulate, and I am unable to see that the restriction is any less effective against a regulation by definition or determination of the rate itself." *Worcester Light Co. v. Attwill* (Fed.)

In answer to a claim of confiscation because of low rates fixed by a Commission, it is contended that there has been established within a state a practice by which

the rate base is largely affected if not practically controlled by prudent investment. Does this effect the right to a fair return on fair value?

The Special Master in a recent rate case based on the allegation that rates fixed by the Massachusetts Department of Public Utilities were confiscatory refused to agree with this contention. He stated that the opinion of the statutory court rendered in connection with the issuing of a temporary injunction seemed to have disposed of this question adversely to the contention of the Commission representatives, in *Worcester Electric Light Co. v. Attwill*, (Fed.)

Must a utility require competitive bidding on construction work?

The Massachusetts Commission held that the fact that a contractor has been employed for construction work without competitive bidding did not show that capital had not been honestly and prudently invested, it appearing that the cost was not excessive by a comparison of unit costs with similar work for similar companies. The Commission said the company had proceeded upon the theory commonly practiced in ordinary life, that it could get better and cheaper service by dealing with one contractor, in whose honesty and capacity it had confidence, rather than by adopting the system of competitive bidding; and that while such a practice by a utility was bound to lead to

constant criticism, in the particular case it had not necessarily resulted to the disadvantage of the company. The Commission further stated, however, that speaking generally they thought better results were obtained from competitive bidding. *Sullivan v. Hingham Water Co. (Mass.)*

When may extra equipment not be deemed stand-by equipment?

It appears that stand-by equipment must be available for substitute use in an emergency. In a case before the Montana Commission, artificial gas apparatus was excluded from the rate base of a natural gas utility where it appeared that the property was of no present value to the utility, that few, if any, of the materials necessary for its operation were kept on hand, and that before it could be put into service three or four days must elapse. The uselessness of the apparatus as stand-by equipment was also indicated by the fact that the utility had endeavored to sell the water gas apparatus. *Billings v. Billings Gas Co. (Mont.)*

Property is excluded from the rate base on the ground that it is not used and useful. Is the deduction of the basic value of that property sufficient without deducting allowances for intangible items?

The New Jersey Commission has sustained a contention that the deductions for property not used and useful are inadequate when the basic figures represent value of the

items in question without the additions for such intangibles as going concern value. For this reason the Commission made additional deductions representing the intangible allowances. Re Lakewood Water Co. (N.J.).

PUBLIC SERVICE COMMISSIONS CANNOT BASE
THEIR VALUATIONS ON CAPITALIZATION OF INCOME.

If an electric light and power company in the absence of public regulation had a gross revenue of \$24,000,000, operating expenses and depreciation of \$12,000,000, and a net income of \$12,000,000, capitalization at 8 per cent would make the market value of the corporation \$150,000,000. If the commission accepted \$150,000,000, but held that 6 per cent was a fair return, it would then reduce the price or rate on electric current to 87.5 per cent of the old rate, which would yield 87.5 per cent of \$24,000,000 or \$21,000,000 gross revenue and \$9,000,000 net income, or 6 per cent on \$150,000,000. If the stock market capitalized \$9,000,000 at 8 per cent the total is \$112,500,000, 6 per cent of this amount capitalized by the stock market at 8 per cent again scales down the value. The valuation of the property and the income would be a variable approaching a limit of zero but never reaching it. If the commission decided 8 per cent was too low a return on the valuation, and increased the rates to 10 per cent, the larger net earnings would be reflected in a greater stock market valuation, which would then be accepted by the commission as cause for another increase in rates. This process would be limited by the loss of customers who would continue to buy electric current, otherwise earnings and valuation would approach infinity.

Under the Valuation Act of 1913, the I. C. C. has been making a "physical valuation" of all railroads. The public service commissions must do something of the same kind. Public service commissions may:

1. With the aid of engineers, economists, statisticians, and others, estimate the cost of construction on the basis of the costs of labor, materials, supplies, etc., at the time of construction. Since there are no adequate records of the costs of these things in all localities ten to fifty years ago this method is not satisfactory.

2. With the aid mentioned, they may estimate the cost of duplicating the existing plant at the present costs of labor, materials, supplies, etc., making due allowance for depreciation. If the level of prices is higher than when the plant was constructed, the valuation will be above the actual cost of investment; if the price is lower the valuation will be below the actual cost of construction.

The I. C. C. has been using 1914 price levels. Land values are troublesome, as the land may have cost little and now is higher. If a valuation were made, say in 1913, and rates fixed to yield 6 per cent, the following factors will upset calculations:

1. A general rise or fall in prices.
2. A general rise or fall in interest rates.
3. Rising land values.

4. Industrial developments resulting in a decreased demand for the product or services of the regulated companies.

Illustration: Consider the following data:

Value of the			Yield per share	Market P.	
Property:	\$10,000,000	\$100,000	\$1,000,000 at 10 per cent	\$10	\$150
With 5 per					
cent bonds					
Outstanding:	6,000,000		300,000		
Net Earnings					
at 10 per cent			700,000	7	105
Gross earnings					
at rates to					
yield 6 per cent			600,000	6	90
Deduct charge of					
6 per cent bonds			300,000		
Net earnings at 6 per cent			\$300,000	\$3	\$45

It will be seen that regulation of rates to yield 6 per cent instead of 10 per cent on the valuation leaves a recent purchaser of shares, who bought on the old earning basis, robbed.

The range of rates approved by court decisions in utility cases apparently is from 5 per cent to 10 per cent with most cases between 6 per cent and 8 per cent.

The rate which will be held confiscatory, and thence justifying enforced increase in rates, is lower than the rate which will be held so high as to justify enforced reduction in rates.

The fair rate of net return is lower for safe and stable enterprises than for those involving business risks.

In general, the fair rate of net return is equal to:

$$r_f = r_i + r_g \text{ where}$$

r_f = fair rate of net return

r_i = prevailing rate of interest on good safe bonds

r_g = additional rate which will furnish a satisfactory guarantee or assurance against the business risks of the enterprise.

The fair rate of net return applies to the fair value of utility properties, not to the investment.

The principle, as stated by the U. S. Supreme Court in 1898 in the case of *Smyth vs. Ames*, and as since up-

held in many court decisions, is that:

"What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience."

This principle is subservient to the principle that the public is entitled to demand that no more be exacted from it for the services rendered by a public utility than the services are "reasonably worth."

Valuation for rate making will be more fully discussed in a later chapter.

Legal battles are still being fought over valuations, but tend to diminish with a better understanding of economic principles, uniform accounting control by commissions budgetary control of fixed capital expenditures by managers, and the investment by the general public in the stocks and bonds of public utilities.

Through the "improvement requisition," to be described later, the depreciation accountancy, and subsidiary liability accounts, the mechanism is provided for increasing or decreasing the valuation with the trend of the times. The valuation engineers of the operating division are constantly at work checking, mapping, inventorying, appraising, and cooperating in every way with the accounting division in the practical control of fixed capital.

Reinstatement of value and appreciation under the re-

production cost theory has not been an altogether welcome adjustment of asset values to many utilities confronted with recent heavy depreciation charges, interest, and higher fixed charges. War-time values result in added costs, increased taxes, insurance costs, depreciation, and dividend requirements that in some cases have caused very serious results and the recent wholesale retirement of capital with a consequent shrinking of the surplus.

It is one of the purposes of state regulation to secure an accurate record of the cost of utility property in service and through the supervision of security issues to maintain a safe relation between the investment and the capital liabilities. During the four years ending with 1927 all the Byllesby subsidiary corporations made charges to retirement reserves for property withdrawn for service the amount of \$35,372,135. An abandoned street railway representing an investment of \$1,276,000 was written off under the supervision of the railroad commission, and outstanding capital reduced accordingly. In 1929 the western division operating in rural communities, took a depreciation charge of a quarter million dollars.

PART II THE LEGAL BASIS

CHAPTER I

THE LEGAL TREND IN UTILITY VALUATIONS

The Development in the United States of the Legal Principles of Utility Valuations.

The development of the legal principles of utility valuation has been comparatively recent. Its history in the United States may be classified in periods, and briefly discussed, as follows:

During the first period, 1830 to 1870, steam railways were developed in the United States as private enterprises, from mere experiments to a position as the leading internal transportation agency of the country. The railways operated under franchises. Some seven railroad commissions--six in New England and the other in New York--were established between 1844 and 1869. There was, however, no real public regulation of railway rates.

Local public utilities developed in moderate numbers during the same period, supplying water, gas and street car services. These operated under franchises, some of which were of the nature of contracts with the public to supply the services at stated prices. There were no utility commissions with authority over such local utilities, and they were not subjected to public regulation of rates other than the requirements stated

in franchises.

Thus, there was little or no development, prior to 1870, of the legal principles of utility valuation.

The second period, 1870 to 1890 was marked by great railway expansion, accompanied by wild speculation, many unjust rate discriminations, and much political interference in public affairs by railways. These abuses aroused widespread public discontent, which culminated in the so-called "Granger Laws" designed to control railway rates by state legislative acts, and in the establishment of additional railroad commissions with broadened powers. In 1885, there were 27 states with railroad commissions.

In 1887, Congress established the Interstate Commerce Commission, with comparatively limited powers, which were greatly enlarged in successive acts in 1906, 1913 and 1920.

Local utilities continued to increase in numbers and electric utilities began to make their appearance. In 1885, the first state commission having jurisdiction over local utilities was established in Massachusetts, to regulate gas and (after 1887) electric service.

During the period from 1870 to 1890 many utility cases reached the U. S. Supreme court, and a number of principles of law were enunciated, which established fully the legality of governmental regulation of utilities, and otherwise clarified the situation.

Two important cases are:

Munn vs. Illinois, 94 U. S. 113, in 1876.

Stone vs. Farmers' Loan and Trust Company 116
U. S. 307, 1881.

During the third period, 1890 to 1905, the right of the public to regulate public utilities became fully established and widely recognized. The numbers and the powers of railroad and other state utility commissions were increased. There were many conflicts between the utilities and the public, some political and some legal, which brought a number of cases to the courts, leading to decisions of the U. S. Circuit Courts of Appeal and the U. S. Supreme Court establishing some of the most important legal principles of utility valuation.

Four important cases are:

1. Chicago, Milwaukee and St. Paul Railway Company vs. Minnesota, 134 U. S. 418, 1890.
2. Reagan vs. Farmers' Loan and Trust Company, 154 U. S. 362, 1894.
3. National Water Works Company vs. Kansas City, No. 469, 470 (62 Fed. Rep. 853,) in 1894.
4. Smyth, Attorney General, et al vs. Ames et al, No. 49-51 (18 Sup. Ct. Rep. 418) 1898.

During the period from 1890 to 1905, some of the most important of the legal principles of utility valua-

tion were established.

In a series of decisions, culminating in *Smyth vs. Ames* in 1898, the U. S. Supreme Court established the principle that utility owners can obtain from the courts protection against unjust laws or utility commission orders for inadequate rates.

The decision, in 1894, in the *Kansas City Water Works Case* established the principle that proper allowance for intangible going concern values should be allowed in determining the fair values of utility properties.

The celebrated decision in 1898 in the famous case of *Smyth vs. Ames* has ever since been the recognized fundamental authority for many of the most important legal principles of utility valuation. This decision has been quoted as the fundamental authority in other court decisions in very great numbers of cases.

During the fourth period, 1905 to 1914, there was continuing development of the legal principles of utility valuation, including especially the principles that utility owners are entitled to collect sums from customers sufficient to make good all depreciation losses of value (besides paying operation costs, including repairs) and providing a fair net return, and that actual depreciation losses of value must be deducted in determining the fair values of utility properties.

The reproduction cost new less depreciation method

of estimating the value of utility property became highly developed during this period although recognized as only one way of securing data helpful in determining the value. Until after 1914, it did not give results varying greatly from the actual cost or investment.

Three important cases are:

1. Knoxville vs. Knoxville Water Company (29 Sup. Ct. Rep. 148) in 1909.
2. Willcox et al. (Public Service Commission of New York) vs. Consolidated Gas Company, No. 396-398 (29 Sup. Ct. Rep. 192) in 1909.
3. Minnesota Rate Cases, 230 U. S. 252, in 1913.

During the fifth period from 1914 to 1930 the World War caused violently fluctuating increases of utility property construction cost prices and operation costs prices, which culminated in 1920 when they averaged 251 per cent of those of 1913. They then fell to 175 per cent in 1922, but rebounded again to a level which has ranged from 215 per cent in 1924 to 206 per cent in 1927, all as compared with average 1913 construction prices.

Reproduction Cost vs. Prudent Investment

As a result of the violent changes in price levels between prices prevailing since 1922, the latter more than double the former, many commissions, including the Interstate Commerce Commission, and some courts, including a respectable minority of the U. S. Supreme

Court, have sought to substitute a method of valuation of utility properties which makes their values substantially equal to the "prudent investments" in their properties for the rule laid down, in 1898, in *Smyth vs. Ames*, that all factors affecting value must be considered and given "such weight as is just and right" in each case.

Prior to the World War, many public utility valuations approved by the courts established fair values closely approximating their reproduction costs new less their depreciations. Such practice would at the present time establish values for those portions of utility properties installed prior to 1918 approximating double the actual investments in them.

Since the World War, many utility owners have fought strongly to secure valuations based substantially on the costs of present reproduction to secure these large increases of value over actual investment. There are other utility owners who foresee the danger that, if, and when, future construction prices recede materially below the present level, a situation may develop such that reproduction cost values will be lower than actual investments in utility properties.

As regards the "prudent investment" theory of valuation, the U. S. Supreme Court has upheld, in divided opinions, it is true, the principle that "Such weight as is just and right in each case" must be given to repre-

duction costs of utility property, and has overruled valuations where neglect of this principle would make a decisive difference in the rates of actual return on the value.

Two most important cases are:

1. Southwestern Bell Telephone Co. vs. Missouri
262 U. S. 276, P.U.R. 1923 C, 193, in 1923.
2. St. Louis and O'Fallon Railway Co. et al vs
United States et al No. 131 and 132, U. S.
Supreme Court, 1929.

The O'Fallon case has been called "the biggest lawsuit in history," for the reason that it is a test case which may determine the policy of the Interstate Commerce Commission in fixing the values of all the railways of the United States, and it is conceivable that their total value might be raised as much as \$15,000,000,000 over the total by methods, advocated by the Interstate Commerce Commission, heretofore, which would approximate the actual prudent investments in railway properties.

However, the U. S. Supreme Court has not at any time set up any formula for determining what weight should be given to reproduction cost in valuing utility property, other than the rule laid down in Smyth vs. Ames that the weight shall be such "as is just and right in case." Apparently no other rule is possible. The weight which should be given reproduction costs may well be very great

in some cases, but should be practically nothing in the case of a railway about to be abandoned for lack of paying business.

Deductions From The Value of Utility Properties on Account of Depreciation

Not content with striving to establish the present reproduction cost as practically the sole standard of value of utility property, thereby increasing greatly the values of much utility property, many utility owners have argued strenuously in recent years against any deductions from utility property values on account of depreciation, although at the same time they demand rates which will provide revenue sufficient to recoup all depreciation losses. The claim is put forward that every utility property which is maintained in as high a state of efficiency as practicable is "as good as new", and that no deductions should be made from its value on account of depreciation.

The courts seem still to adhere to the rule laid down in 1902, in *Knoxville vs. Knoxville Water Company* and in 1913, in the *Minnesota Rate Cases* that all actual depreciation losses of value should be deducted in determining the fair value of utility properties.

The courts require that the depreciation deducted shall be only the actual depreciation, such as can be ascertained by actual examination by qualified observers

and proven in court by their evidence, and not merely "theoretical" depreciation, such as might be calculated by an accountant without engineering training, who perhaps had never even seen the property in detail.

Synopses of Some Important Court Decisions in Utility Valuation Cases

Synopses will be presented herein of a few of the most important court decisions in valuation cases.

Kansas City Waterworks Case. National Waterworks Company vs. Kansas City; Kansas City vs. National Waterworks Company.

U. S. Circuit Court of Appeals, Eighth Circuit, July 3, 1894. No. 469, 470 (62 Fed. Rep. 853.)

In this case the franchise, which was about to expire, provided for purchase of the waterworks by the city in case of failure to renew the franchise. Nevertheless the city planned to build a new waterworks of its own, refusing either to buy the existing waterworks or to renew the franchise. The company preferred to continue to own and operate the waterworks rather than sell. The decision was on an appeal from the lower court.

The court required the City to buy and the company to sell the waterworks for a price of \$3,000,000. The opinion was written by Mr. Justice Brewer:

The court arrived at this figure by adding to the "cost of reproduction" of the physical plant a material

allowance for "going value." It intimated that it would have considered the "original cost" of the plant if the facts had been available, which was not the case. (The cost of reproduction was abnormally low at the time owing to a business depression.) The company urged that the earnings be capitalized, thus allowing a large franchise value, which the court refused. The city urged that only the bare cost of reproducing the physical plant be allowed, which request also was refused. The court stated that "the original cost cannot control, for original cost and present value are not equivalent terms." The court took into account the amount of bonds and other liens against the property and the "entire history of the transactions between the company and the city," and stated that it decided upon a valuation of \$3,000,000 (the lower court had adopted \$2,714,000 and the company had claimed \$4,500,000) "after much discussion, comparison of figures and readjustments."

Smyth vs. Ames. Smyth, Attorney General, et al vs. Ames et al. Same vs. Smyth et al. Same vs. Higginson et al.

U. S. Supreme Court March 17, 1898. No. 48-51 (18 Sup. Ct. Rep. 418.)

The decision in this case of "Smyth vs. Ames" is the most famous yet made by the Supreme Court of the United States. It laid down general principles of valuation of

utilities which have prevailed to the present time, and have just been reaffirmed by the U. S. Supreme Court (in 1929) in the O'Fallon Railway Case. Both valuers and the courts themselves refer to this decision in support of their conclusions more frequently than to any other.

In this case (which was appealed from the Circuit Court of the United States for the District of Nebraska,) suit had been brought in behalf of the railways against the Attorney General and other officers of the State of Nebraska for the purpose of preventing the enforcement of the Nebraska law of April 12, 1893, to regulate railway rates, on the ground that such law was unconstitutional, because, contrary to the 14th amendment to the Federal Constitution, it would deprive the railway companies of their property "without due process of law," and would deny them "the equal protection of the laws."

The U. S. Supreme Court ruled that the Nebraska railway rate law was unconstitutional, thereby deciding that U. S. courts will intervene whenever unreasonably low utility rates are prescribed, on the ground that unreasonably low rates would take private property without due process of law. This precedent had been set already by the same high authority, and has been followed since in all United States Courts.

That part of the opinion which deals with the basis of determination of fair value and of fair rates is the

most famous. It may be said to be the foundation of much of the valuation practice which has prevailed since 1898. The passage most often quoted is as follows:

"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 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 permanent improvements, the amount and market value of its bonds and stock, 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 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."

Note the expression "fair value" in the fourth line. This expression recurs frequently in valuation treatises.

The student should commit to memory the last two sentences, exactly as they appear in the opinion. They are quoted very frequently.

Here first seems to have been stated a comparatively definite basis for valuations of utility properties in the United States. The opinion was written by Mr. Justice Harlan.

The attention of the student should be given very carefully to the principles enunciated, which may be summarized as follows:

(1) Charges to the public shall not be greater than the services are reasonably worth.

As a corollary, the fair value of the property is not higher than is consistent with the principle.

(2) The company owning the utility (subject to the principle enumerated in (1) just above,) is entitled to ask a fair return upon the fair value of the utility property devoted by it to the public service.

It must not be forgotten that this right is subject to the limitation that no more shall be exacted from the public than the services rendered are reasonably worth.

(3) In order to ascertain the fair value every pertinent consideration must fairly be taken account of, among which pertinent considerations the court enumerates:

(a) The original cost of the original property

and of all permanent improvements.

(b) The present as compared with the original* cost which required the consideration of both appreciation and depreciation, and has led to the development of a process known as the "cost of reproduction new less depreciation" method.

(c) The earning capacity and the operating expenses, which together fix the net earning capacity. The operating expenses here mentioned should include annual depreciation.

(d) The amount and market value of the stocks and bonds.

(e) The court stated: "We do not say that there may not be other matters to be considered in estimating the value of the property."

(f) In addition, it is to be noted that the court stated: "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

* The words "appreciation" and "depreciation" are not used in the Smyth vs. Ames decision, and are introduced above into the explanation by the writer to show how the "present as compared with the original cost of construction," which is mentioned by the court, and "the sum required to meet operating expenses," also mentioned by the court, may be computed.

by it are reasonably worth."

It is hardly too much to say that the whole development since 1898 of formal processes for making valuations of public utilities has been based in the main upon the *Smyth vs. Ames* decision, as written by Mr. Justice Harlan.

Knoxville vs. Knoxville Water Works. Mayor and Aldermen of the City of Knoxville, Appt., vs. Knoxville Water Company. U. S. Supreme Court, January 4, 1909 (29 Sup. Ct. Rep. 148.)

Mr. Justice Moody wrote the opinion of the Court. The circumstances are stated by him as follows (in part):

"This is an appeal by the city of Knoxville from a decree of the circuit court of the United States for the eastern district of Tennessee. The appellee is a public service corporation, chartered for, and engaged in, the business of supplying that city and its inhabitants with water for domestic and other uses. The cause in which the decree was rendered is a suit in equity which was brought by the company on December 7, 1901, against the city to restrain the enforcement of a city ordinance fixing in detail the maximum rates to be charged by the company. This ordinance was enacted on March 30, 1901. The bill contained many allegations, which have become immaterial by the decision of this court in *Knoxville Water Co. vs. Knoxville*, 189 U. S. 434, 47 L. ed. 887, 23 Sup.

Ct. Rep. 531, in which the validity of the ordinance was sustained, except so far as it might confiscate the property of the company by fixing rates so low as to have that effect. The latter contention alone was left open to the company, and to it the remainder of the bill is mainly directed. The allegations in that regard are, that the rates fixed by the ordinance were so low that they denied to the company a reasonable return upon the property employed in the business, and thereby took it for public use without compensation, in violation of the 14th Amendment to the Constitution of the United States. After answer by the respondent and replication by the complainant the cause was referred to a special master, whose report was confirmed by the court.*****

The special master reported:

Fair Value, March 30, 1901,

without deduction for depreciation \$608,427.95

Gross income, April 1, 1900 to

March 31, 1901 88,481.89

Operating expenses, April 1, 1900 to

March 31, 1901 34,750.19

Income under ordinance rates 70,857.75

Net income under ordinance rates,

without providing for depreciation 36,106.84

This is less than 6 per cent, whereas the master considered that 8 per cent (including 2 per cent for de-

preciation) would be fair.

The circuit court ruled in favor of the water company, holding the ordinance confiscatory, and issuing a permanent injunction against its enforcement.

The Supreme Court reversed this decree, and remanded the case to the court below with instructions to dismiss the bill without prejudice.

This decision of the Supreme Court is based mainly on two conclusions:

First, "The courts should not enjoin the enforcement of a municipal ordinance fixing maximum water rates on the ground that such ordinance is invalid under United States Constitution, 14th Amendment, as confiscatory, unless the confiscation is clearly apparent." (Quoted from Syllabus 7.)

Second, "A deduction for depreciation for age and use must be made from the estimated cost of reproducing a waterworks plant when determining the present value of the tangible property for the purpose of testing the reasonableness of rates fixed by a municipal ordinance."

(Quoted from Syllabus 2.)

On the first of the above conclusions, the courts reasoning was stated in the opinion, as follows:

"There can be at this day no doubt, on the one hand, that the courts on constitutional grounds, may exercise the power of refusing to enforce legislation; nor, on the

other hand, that power ought to be exercised only in the clearest cases. The constitutional invalidity should be manifest, and where that invalidity rests upon disputed questions of fact, the invalidating facts must be proved to the satisfaction of the court. In view of the character of the judicial power invoked in such cases it is not tolerable that its exercise should rest securely upon the findings of a master, even though they be confirmed by the trial court. The power is best safeguarded against abuse by preserving to this court complete freedom in dealing with the facts of each case. Nothing less than this is demanded by the respect due from the judicial to the legislative authority. It must not be understood that the findings of a master, confirmed by the trial court, are without weight, or that they will not, as a practical question, sometimes be regarded as conclusive. All that is intended to be said is, that in cases of this character this court will not fetter its discretion or judgment by any artificial rules as to the weight of the master's findings, however useful and well settled these rules may be in ordinary litigation. We approach the discussion of the facts in this spirit."

On the second of the conclusions, the reasoning of the court, because of its importance, is given at length from the opinion as follows:

"The first fact essential to the conclusion of the

court below is the valuation of the property devoted to the public uses, upon which the company is entitled to earn a return. That valuation (\$808,000) must now be considered. It was made up by adding to the appraisement in minute detail of all the tangible property, the sum of \$10,000 for 'organization, promotion, etc.' and \$80,000 for 'going concern.' The latter sum we understand to be an expression of the added value of the plant as a whole over the sum of the values of its component parts, which is attached to it because it is in active and successful operation and earning a return. We express no opinion as to the propriety of including these two items in the valuation of the plant, for the purpose for which it is valued in this case, but leave that question to be considered when it necessarily arises. We assume without deciding, that these items were properly added in this case. The value of the tangible property found by the master is, of course, \$808,000 lessened by \$70,000, the value attributed to the intangible property, making \$538,000. This valuation was determined by the master by ascertaining what it would cost, at the date of the ordinance, to reproduce the existing plant as a new plant. The cost of reproduction is one way of ascertaining the present value of a plant like that of a water company, but that test would lead to obviously incorrect results of the cost of reproduction is not diminished by the de-

preciation which has come from age and use. The company contends that the master, in fixing upon the valuation of the tangible property, did make an allowance for depreciation, but we are unable to agree to this. The master nowhere says that he made allowance for depreciation, and the language of his report is inconsistent with such a reduction. The figures which he adopts are those of a 'fair contractor's price.' The basis of his calculation was the testimony of an opinion witness called by the company. That witness submitted a table which avowedly showed the cost of reproduction, without allowance for depreciation. The values testified to by him were adopted by the master in the great majority of cases. The witness's valuation of the tangible property was somewhat reduced by the master, but the reductions were not based upon the theory of depreciation, but upon a difference of opinion as to the reproduction cost.

"The cost of reproduction is not always a fair measure of the present value of a plant which has been in use for many years. The items composing the plant depreciate in value from year to year in a varying degree. Some pieces of property, like real estate for instance, depreciate not at all, and sometimes, on the other hand, appreciate in value. But the reservoirs, the mains, the service pipes, structures upon real estate, standpipes, pumps, boilers, meters, tools and appliances of every

kind begin to depreciate with more or less rapidity from the moment of their first use. It is not easy to fix at any given time the amount of depreciation of a plant whose component parts are of different ages, with different expectations of life. But it is clear that some substantial allowance for depreciation ought to have been made in this case. The officers of the company, *alio intuitu*, estimated what they called 'incomplete depreciation' of this plant (which we understand to be the depreciation of the surviving parts of it still in use) at \$77,000, which is 14 per cent of the master's appraisal of the tangible property. A witness called by the city placed the reproduction value of the tangible property at \$363,000, and estimated the allowance that should be made for depreciation at \$118,000, or 32 per cent. In the view we take of the case it is not necessary that we should undertake the difficult task of determining exactly how much the master's valuation of the tangible property ought to have been diminished by the depreciation which that property had undergone. It is enough to say that there should have been a considerable diminution, sufficient, at least, to raise the net income found by the court above 6 per cent upon the whole valuation thus diminished. If, for instance, the master's valuation should be diminished by \$50,000, allowed for depreciation, the net earnings found by him would show a

return of substantially 6.5 per cent."

The decision in the Knoxville case has been presented herein in considerable detail because of its important bearing on the question of whether to make deductions for actual depreciation in determining the fair value of utility property. It was the first decision in which the position of the United States Supreme Court on this question was clearly announced.

On the same day on which the Knoxville decision was announced (January 4, 1909,) the U. S. Supreme Court, in the case of Consolidated Gas Company vs. Willcox (218 U. S. 19,) in also reversing a lower courts decree of injunction against a regulatory ordinance, did so without discussing depreciation deductions although the master in that case made only a limited "deferred maintenance" deduction. This fact has been used by those who argue against the legality of depreciation deductions as argument to offset the principle, so clearly announced in the Knoxville decision, that deductions for all actual depreciation losses "must be made."

With the decision in the Knoxville Water Case as precedent, deductions for depreciation were made in a number of decisions of federal and state courts following 1909.

In 1913 another notable decision requiring deductions for depreciation was made by the U. S. Supreme Court in

the "Minnesota Rate Cases."

The Minnesota Rate Cases. Simpson et al, constituting the Railroad and Warehouse Commission of the State of Minnesota, vs. Shepard, 230 U. S. 352, June 9, 1913.

These were rate cases, between the Minnesota Railroad and Warehouse Commission and certain railways, including the Northern Pacific and the Great Northern. The railway companies sought injunctions against the enforcement of schedules of rates prescribed by the commission, on the ground that they would be confiscatory within the meaning of the 14th Amendment to the Constitution of the United States.

The opinion of the U. S. Supreme Court was written by Mr. Justice Hughes.

The syllabus of the decision summarized some important general features, as follows (see report of American Society of Civil Engineers Committee on Valuation, Transactions, Vol. LXXXI, 1917, p. 1401):

"For fixing rates the basis of calculation of value is the fair value of the property of the carrier used for the convenience of the public." (Smyth vs. Ames, 169 U. S., 466.)

"There is no formula for the ascertainment of the fair value of property used for convenience of the public, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts."

"Assets and property of a carrier not used in the transportation business cannot be included in the valuation as a basis for ratemaking.

"Property of a railroad company cannot be valued for a basis of rate-making at a price above other similar property solely by reason of the fact that it is used as a railroad, and increases in value over cost cannot be allowed beyond the normal increase of other similar property."

The following extracts from the actual opinion are illuminating.

"It is clear that in ascertaining the present value we are not limited to the consideration of the amount of the actual investment. If that has been reckless or improvident, losses may be sustained which the community does not underwrite. As the company may not be protected in its actual investment, if the value of the property be plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership and it is that property, and not the original cost of it, of which the owner may not be deprived without due process of law. But still it is property employed in a public calling, subject to governmental regulation, and while under the guise of such regulation it may not be confiscated; it is equally true

that there is attached to its use the condition that charges to the public shall not be unreasonable.***

"The increase sought for 'railway value' in these cases is an increment over all outlays of the carrier and over the values of similar land in the vicinity. It is an increment which cannot be referred to any known criterion, but must rest on a mere expression of judgment which finds no proper test or standard in the transactions of the business world. It is an increment which in the last analysis must rest on an estimate of the value of the railroad use as compared with other business uses; it involves an appreciation of the returns from rates (when rates themselves are in dispute) and a sweeping generalization embracing substantially all the activities of the community. For an allowance of this character there is no warrant.

"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 market value of land in the vicinity having a similar character. Otherwise we enter the realm of mere conjecture.***

The Minnesota Rate Cases decision reaffirmed the Knoxville vs. Knoxville Water Company decision that all

actual depreciation losses of value must be deducted in determining the fair value of utility property. Justice Hughes said:

"The property other than land, as the detailed statement shows, embraced all items of construction, including roadbed, bridges, tunnels, etc., structures of every sort, and all appliances and equipment. The cost of reproduction new was ascertained by reference to the prices for such work and property. In view of the range of the questions we have been called upon to consider, we shall not extend this opinion for the purpose of reviewing this estimate, or of passing upon exceptions to various items in it, as their disposition would not affect the results.

"The Master allowed the cost of reproduction new without deduction for depreciation. It was not denied that there was depreciation in fact. As the Master said, 'Everything on and above the road-bed depreciates from wear and weather stress. The life of a tie is from eight to ten years only. Structures become antiquated, inadequate and more or less dilapidated. Ballast requires renewal, tools and machinery wear out, cars, locomotives and equipment, as time goes on are worn out or discarded for newer types.' But it was found that this depreciation was more than offset by appreciation; that 'the road-bed was constantly increasing in value'; that it 'becomes

solidified, embankments and slopes or excavations become settled and stable and so the better resist the effects of rains and frost'; that it 'becomes adjusted to surface drainage, and the adjustment is made permanent by concrete structures and rip-rap'; and that in other ways, a road-bed long in use 'is far more valuable than one newly constructed.' It was said that 'a large part of the depreciation is taken care of by constant repairs, renewals, additions and replacements, a sufficient sum being annually set aside and devoted to this purpose, so that this, with the application of road-bed and adaptation to the needs of the country and of the public served, together with working capital....fully offsets all depreciation and renders the physical properties of the road not less valuable than their cost of reproduction new.' And in a further statement upon the point, the 'knowledge derived from experience' and 'readiness to serve' were mentioned as additional offsets.

"We cannot approve this disposition of the matter of depreciation. It appears that the Master allowed, in the cost of reproduction, the sum of \$1,613, 612 for adaptation and solidification of road-bed, this being included in the item of grading and being the estimate of the engineer of the state commission of the proper amount to be allowed. It would seem to be inevitable that in parts of the plant there should be such deprecia-

tion, as for example in old structures and equipment remaining on hand. And when an estimate of value is made on the basis of reproduction new, the extent of existing depreciation should be shown and deducted. This apparently was done in the statement admitted by this company to the Interstate Commerce Commission in the Spokane Rate case in connection with an estimate of the cost of reproduction of the entire system as of March, 1907. (See 15 I.C.C. Rep. 395, 396.) In the present case, it appears that the engineer of the state commission estimated the depreciation in the property as between eight and nine million dollars. If there are items entering into the estimate of cost which should be credited with appreciation, this also should appear, so that instead of a broad comparison there should be specific findings showing the items which enter into the account of physical valuation on both sides.

"It must be remembered that we are concerned with a charge of confiscation of property by the denial of a fair return for its use; and to determine the truth of the charge there is sought to be ascertained the present value of the property. The realization of the benefits of property must always depend in large degree on the ability and sagacity of those who employ it, but the appraisement is of an instrument of public service, as property, not of the skill of the users. And when part-

ticular items are estimated as worth so much new, if in fact they are depreciated, this amount should be found and allowed for. If this is not done, the physical valuation is manifestly incomplete. And it must be regarded as incomplete in this case. Knoxville vs. Knoxville Water Company, 213 U. S. 1-10."

Although the Knoxville Water Case and the Minnesota Rate Cases decisions of the U. S. Supreme Court seem to uphold so clearly the principle that all actual depreciation losses of value must be deducted in determining the fair value of utility property, a strong effort has been made in recent years by some utility owners, supported by some writers on valuation, to establish the counter principle that no depreciation deductions for rate making purposes shall be made so long as the property is in good efficient condition, which condition they characterize as "as good as new."

There have been many decisions by the U. S. Supreme Court, other Federal Courts and various state courts in which depreciation deductions in particular cases have been made since the Minnesota Rate Cases decision.

At the same time, there have been several cases in which the U. S. Supreme Court, without special discussion of depreciation, has not overruled valuations in which little, if any, deductions were made for depreciation.

In recent decisions clearer distinction has been

made between actual depreciation losses of value, proven by the actual evidence of qualified experts who have actually examined the particular property, and purely "theoretical depreciation," such as might be computed by an accountant who is not engineer and who may never have seen the property.

The writer of this text agrees with the opinion of the Standing Master in Chancery of the U. S. District Court for the Northern District of Georgia, as stated in 1924 in his report on the valuation of the gas property of the Georgia Railway and Power Company, as follows:

"I believe the rules of law deducible from the Supreme Court decisions, including the Georgia Case, are substantially as follows: (1) The rate base should represent the present value of the property used and useful in the public service. (2) In arriving at the value of such property, original cost should be considered and given such weight as may be just and right under the circumstances of each particular case. (3) Replacement cost of property less depreciation should not be used as an arbitrary measure of value, but (4) cost of reproduction less depreciation of the Utility's property representing investment by the Utility, when ascertained with the proper degree of certainty and reasonably applied, may be a proper method of arriving at fair present value. This rule excludes franchise, undisturbed paving, and

similar items. (5) An honest and intelligent forecast of probable future values made upon a view of all of the relevant circumstances is essential.***

THE REPRODUCTION COST NEW LESS DEPRECIATION METHOD

Before the World War, 1914-1918, the difference between "original cost" and "reproduction cost" had been comparatively slight for a considerable period of years. Perhaps owing mainly to the difficulties, sometimes insurmountable, in securing reliable data of the actual original costs of utility properties, great reliance came to be placed on the "reproduction cost new less depreciation" method of estimating the fair present value.

From 1915 to 1920, utility property construction prices increased unsteadily to about 250 per cent of 1913 prices, then dropped to 174 per cent in 1922, but rose to 214 per cent in 1923 and 215 per cent in 1924, since which date they have ranged around 206 to 208 per cent of 1913 prices.

It is manifest that strict adherence to the custom of making estimates of the fair value of utilities conform closely to the results obtained by the "reproduction cost new less depreciation" method would operate to give great increases of value to properties constructed prior to 1916 without any corresponding increases in the magnitudes either of the actual utility properties or of the actual investments therein.

THE PRUDENT INVESTMENT METHOD

The result was that some state utility commissions, as notably Massachusetts and some on the Pacific Coast, adopted the practice of making their utility valuations conform closely to the actual "prudent investments" in the properties.

The rule established by a long series of decisions of the Supreme Court of the United States is that utility companies are entitled to a fair return on the fair value of their property used and useful in the public service. The state regulatory Commissions have uniformly favored investment as the basis of the return but they have been overruled by the courts. In the Southwestern Bell Telephone Case Mr. Justice Brandeis wrote a vigorous dissenting opinion in which he maintained the rule that the return should be on the value of the property rather than on the prudent investment is legally and economically unsound.

THE SPLIT-INVENTORY METHOD

Other commissions came to develop a variation of the "prudent investment" method by the use of "split inventories," as follows:

First, in a deparate inventory all items of physical property installed prior to 1914, using average prices of say, 1910-14, inclusive, therefore; second, in other inventories all items of physical property installed

since January 1, 1914, using the actual costs each year as shown by the books of the company.

In the "split-inventory" method, the respective depreciations deducted for the respective items are based on the respective costs new, as used in the valuation.

The so-called split inventory method of determining property values has consisted in several cases in applying pre-war normal prices to the property installed before the war and investment costs on all property installed since. This method has met with the approval of the Wisconsin Commission in several cases, and has been favored by some of the other commissions.

In view, however, of the decisions of the Supreme Court that weight must be given to present prices, it is apparent that the split inventory method can not be followed without violating the present value rule. To take property constructed prior to the war and apply pre-war unit prices to it will not give the present cost of reproduction or "present" value.

The Indiana Commission has held that it would not be fair to provide return on the basis of book value when it has been shown that the present books do not show the book value--historic cost--but on the contrary that the books show an appraisal value plus net additions and betterments. Re Home Teleph. Co. (Ind.)

The supreme court of Wisconsin has held that a Com-

mission may not take the valuation of a utility property made in 1913 and bring it down to date by adding the cost of additions and by increasing land value, since it does not substantially reflect the increase in the value of any of the company's property except its land. *Waukesha Gas and E. Co. v. Railroad Commission (Wis.)*

Trend-Prices

Prior to 1914, the price level was comparatively stable and the custom developed of using average prices over a term of one to ten years (usually five) in estimating the "reproduction cost new less depreciation" value. Such averages forecasted the future sufficiently well, and eliminated short lived price fluctuations.

Since 1914, decisions of the U. S. Supreme Court have made more clear the fact that all estimates of value are in fact forecasts of future prices. Studies of price trends have become of increasing importance in utility valuation. An analysis in 1923 by the Valuation Committee of the American Electric Railway Association of recent decisions (prior to 1923) of utility commissions showed results as follows:

15 per cent gave valuations based closely on estimated or actual investments.

69 per cent gave some recognition to reproduction cost (though but few cases recognized this as the dominant factor.)

16 per cent used the split-inventory trend-price, or some other special basis.

Some state and some lower federal court decisions have approved commission valuations based substantially on the prudent investment method, or on the split-inventory variation thereof.

The U. S. Supreme Court has held consistently throughout (though by divided opinions since 1923) that "such weight as is just and right in each case" must be given to all factors affecting value.

In presenting its case to the Missouri Public Service Commission, the Southwestern Bell Telephone Company showed by its books that:

Actual cost of "total plant, supplies, equipment and working capital" equalled	\$22,888,943
--	--------------

The company's engineers estimated that:

Reproduction cost new of physical telephone property, as of June 30, 1919, equalled	28,454,488
---	------------

Depreciation	3,745,193
--------------	-----------

Reproduction cost new of physical property less depreciation	\$24,709,295
--	--------------

Working Capital	1,051,564
-----------------	-----------

Establishing business (going concern cost)	5,594,816
--	-----------

Total reproduction cost new less de-

depreciation 31,355,675

The Missouri Public Service Commission made no complete valuation of its own of the entire property, but had made prior valuations of the telephone properties in St. Louis (1913), Caruthersville (1914) and Springfield (1916). On the bases of these valuations and the evidence presented by the telephone company, the commission ruled that the value of the telephone property "will not exceed the sum of \$20,400,000."

The U. S. Supreme Court overruled this conclusion of the Missouri Public Service Commission and reversed the approving decision of the Supreme Court of Missouri, on the ground that the commission did not give any proper weight to the reproduction cost new less depreciation in fixing the fair value.

The majority opinion of the U. S. Supreme Court was written by Mr. Justice McReynolds. The following quotations give the most important features of the reasoning:

"Obviously, the Commission undertook to value the property without according any weight to the greatly enhanced costs of material, labor, supplies, etc., over those prevailing 1913, 1914 and 1916. As a matter of common knowledge, these increases were large. Competent witnesses estimated them as 45 to 50 per centum."

"It is impossible to ascertain what will amount to a

fair return upon properties devoted to public service without giving consideration to the cost of labor, supplies, etc., at the time the investigation is made. An honest and intelligent forecast of probable future values, made upon a view of all the relevant circumstances, is essential. If the highly important element of present cost is wholly disregarded such a forecast becomes impossible. Estimates for tomorrow cannot ignore prices of today.

"Witnesses for the Company asserted--and there was no substantial evidence to the contrary--that excluding cost of establishing the business the property was worth at least 25 per cent more than the Commissions' estimates, and we think the proof shows that for the purposes of the present case the valuation should be at least \$25,000,000."

Apparently the court adopted the minimum value of \$25,000,000 as lying between the \$22,888,943 actual original cost and working capital, and the \$31,355,675 reproduction cost of new less depreciation. It should be noted that the reproduction cost new of the physical property alone less depreciation was \$24,709,295.

In a minority of opinion, Mr. Justice Brandeis, with Mr. Justice Holmes concurring, while concurring with the majority of the U. S. Supreme Court in the judgment of reversal, did so,

"On the ground that the order of the state commission prevents the utility from earning a fair return on the amount prudently invested in it."

In the minority opinion Mr. Justice Brandeis strongly criticized the rule of *Smyth vs. Ames*, that "such weight as is just and right in each case" must be given all factors affecting value, including the reproduction cost new less depreciation. He characterized this rule as, in his opinion, "legally and economically unsound," as "delusive," as failing "to afford adequate protection either to capital or to the public," as leaving "open the door to grave injustice."

Mr. Justice Brandeis, argued very strongly and very ably in his minority opinion for substituting the prudent investment basis for fixing the fair value of utility property for the rule of *Smyth vs. Ames*, and he has continued to file similar minority opinions since but has always so far (1929) been overruled by the majority of the U. S. Supreme Court.

The Indianapolis Water Company Case. The Indianapolis Water Co. vs. the Indiana Public Service Commission and the city of Indianapolis, November 22, 1926.

This was a typical suit over enforcement of a water rate schedule promulgated by a utility commission, carried to the U. S. Supreme Court for final decision.

The following quotations from the majority opinion

are presented as indicating the most important features of the decision.

The property to be valued is the actual property which the company owns and uses, not a hypothetical substitute, even such substitute might render the same service at somewhat less cost.

"There is to be ascertained the value of the plant used to give the service and not the estimated cost of a different plant. Save under exceptional circumstances, the Court is not required to enter upon a comparison of the merits of different systems. Such an inquiry would lead to collateral issues and investigations having only remote bearing on the fact to be found, viz., the value of the property devoted to the service of the public."

Reproduction cost new less depreciation, if any, must be considered in determining fair value. Fair values are affected by and generally follow relatively permanent levels and trends of prices.

"If the tendency or trend of prices is not definitely upward or downward and it does not appear probably that there will be a substantial change of prices, then the present value of lands plus the present cost of constructing the plant, less depreciation, if any, is a fair measure of the value of the physical elements of the property. The validity of the rates in question depends upon property value January 1, 1934, and for a reasonable

time following. While the values of such property do not vary with frequent minor fluctuations in the prices of material and labor required to produce them, they are affected by and generally follow the relatively permanent levels and trends of such prices."

A fair allowance must be made for going value (going concern value.)

The court interpreted its earlier decisions as declaring:

"That there is an element of value in an assembled and established plant doing business and earning money, over one not thus advanced, is self-evident. This element of value is a property right, and should be considered in determining the value of the property, upon which the owner has a right to make a fair return when the same is privately owned although dedicated to public use."

The fair rate of return in this case is at least 7 per cent and maybe higher.

"The evidence is more than sufficient to sustain the rate of seven per cent found by the Commission. And recent decisions support a higher rate of return.*** As indicated above a reasonable rate of return is not less than seven per cent."

Depreciation proven by the testimony of competent valuation engineers who examined the property and made

estimates in respect to its condition is to be preferred to mere calculations based on averages and assumed probabilities in determining depreciation deductions.

"There is deducted approximately 25 per cent of estimated cost new to cover accrued depreciation. The deduction was not based on an inspection of the property. It was the result of a straight-line calculation based on age, and the estimated or assumed useful life of perishable elements. The Commission's report indicates that the property is well planned, well maintained and efficient. Its chief engineer inspected it, and estimated its condition by giving effect to results of the examination and to the age of the property. He deducted about 6 per cent to cover depreciation. Mr. Hagenah made an estimate of existing depreciation based on actual inspection and a consideration of the probable future life as indicated by the conditions found. He deducted less than 6 per cent. Mr. Elmes testified that he made an inspection and estimate of all the actual depreciation. He estimated \$443,044 would be required to restore the property as of appraisal date to its condition when first installed and put in practical operation. He deducted that amount. The testimony of competent valuation engineers who examined the property and made estimates in respect of its condition is to be preferred to mere calculations based on averages and assumed proba-

bilities. The deduction made in the City's estimates should not be approved."

Recent Opinions on Going Value

The Montana Public Service Commission in a recent opinion has written a fairly exhaustive note on going concern value. The opinion states:

"That 'good will'--including that element of value which inheres in the fixed and variable consideration of customers, resulting from an established and well conducted business--has no place in the fixing of valuation for the purpose of rate making of public service corporation, has been the accepted rule since the decision of the Supreme Court in Willecoxy Consolidated Gas Co.. On the other hand, it is equally well established that going concern--indicating that value which inheres in a plant where its business is established, as distinguished from one which has yet to establish its business--is an element of value that constitutes a property right that must be considered in fixing the value of the property upon which the owner has a right to earn a fair return when his property is dedicated to a public use.

"No rule of thumb or formula has been devised whereby 'going concern' value can be definitely measured. In fact, a survey of the decided cases--Commissions and courts--compels the conclusion that there is no uniformity in approach or in results as between Commission or as be-

tween courts. The method commonly employed by Commissions and courts in assigning a monetary value to "going concern" is to allow a certain percentage of the value attributed to physical elements comprising the utility's property. This appears to be an indefensible method and involves sheer guesswork.

"Having in mind the Des Moines Gas case, *supra*, and Galveston Electric Co. vs. Galveston, cases wherein the Supreme Court of the United States affirmed the actions of the lower courts in refusing allowances for "going value" in addition to percentages allowances 12 and 13.3 per cent of the base cost of labor and materials for overheads and expenses of organization and business management--neither of which cases have been reversed--we believe that where a utility property is valued on the basis of reproduction cost new, less depreciation, and the items of organization expenses, etc., are taken into consideration and included in a general allowance for overheads, and the subsequent business development costs are paid out of operating expenses, no additional sum should be allowed for going concern value. This view has the support of recent cases and recent pronouncements of text writers in the subject. (citations omitted.)

"In the instant proceedings we have allowed 15 and 16 1/2 per cent (this latter per cent on the 'upper power plant' only) to cover general overheads, including

expenses of organization. Under our uniform classification of accounts such items appertaining to the cost of attaching business as advertising, soliciting, appliances, demonstrations, etc., are charged to operating expenses. Under these circumstances we feel that we are giving to the element of going concern the consideration and value that it deserves. Where the cost of attaching and developing the business has been paid by the consumers, our failure to give that fact due and proper consideration in the valuation of a utility as a going concern would have the effect of compelling consumers to pay an income on items of cost or value furnished by them." Re Union Electric Co. (Mont.)

Going value is one of the most elusive elements in a valuation of public utility property. This does not mean that it is not an actual value. In private business going value and good will have sometimes been treated as the same thing, but in public utility valuation good will or monopoly value is not recognized. Attempt to define going value have usually resulted in confusion. In a Pennsylvania case it was said that the numerous reports and opinions of courts and Commissions, where there have been attempts to "bound the meaning," bring us to as much confusion of tongues as there were different languages developed on the Plain of Shinar.

Going value has been defined as that element in

value which comes from the fact that the business is a going concern and that the company has an established business; as the excess in value a property in operation has over a similar structure without customers attached; as the difference in value between a plant constructed and ready for business, but doing no business, and one which has developed the business and is running along smoothly; as representing to a certain extent the value of property working together in a coherent whole functioning for the purposes for which the property was constructed; as value due to the fact that the plant has consumers actually using its product, is in actual and successful operation, and has attached to it a developed business.

The United States Supreme Court in an early case said that it understood going concern to be an expression of the added value of the plant as a whole over the sum of the values of its component parts, which is attached to it because it is in active and successful operation and earning a return. *Knoxville vs. Knoxville Water Co.*

From the various definitions it appears that going concern value has been defined as: (1) The difference between the value of a plant with customers secured, business established and in successful operation, rendering adequate and satisfactory service and a plant completely assembled but with customers yet to obtain and business to establish; and (2) that value which is added

to the physical value of the plant by reason of the fact that it is in successful and harmonious operation.

It has been pointed out that there is a difference between these two definitions. If going value is merely the difference in value between plants with and without customers, then every plant that is doing any business has some going value. But if going value is only that intangible value which is to be added to the cost or value of the physical plant, it does not follow that the property has going value merely because of the fact that there is an established business.

The Special Master in a case in United States District Court Southern District of New York, said that although a utility has to a certain extent been reimbursed for its expenditures in extending its business, this has been held no reason for not considering them as elements in going value, citing *Lincoln Gas and E. Co. vs. Lincoln* 250 U. S. 256, 63 L. ed. 968, 39 Sup. Ct. Rep. 454; *Minneapolis vs. Rand*, 285 Fed. 818, 819, 830; *Kings County Lighting Company case*, 310 N. Y. 479, 486, 51 L. R. A. (N.S.) 1,104 N. E. 911; *Consolidated Gas Co. vs. Predergast* (U. S.)

A public utility has recouped the cost of attaching business from utility earnings. Is this a ground for excluding going value from the rate base?

The Michigan supreme court held that the denial of

going value on this ground was error if there was not evidence that funds were not earned lawfully or that they were not rightfully the property of the utility company. Michigan Public Utilities Commission vs. Michigan State Teleph. Co. Mich.

It was said in a case referred to a Special Master in the United States District Court, Eastern District of New York, that it was obvious that the element of going value could not readily be proved by direct evidence because of the intangible nature of such an element and that opinion evidence was therefore of value. A witness furnishing testimony on this point was said to be a man of wide experience, with an knowledge of the development and maintenance of a gas business that qualified him to present an opinion that was entitled to weight. Kings County Lighting Co. vs. Prendergast (U.S.)

The Alabama Commission holds that bonds should not be issued against good will or going concern value, especially when the provisions of the mortgage under which the bonds are issued contemplate that bonds shall be based upon physical property. Re Mobile Gas Co. (Ala.)

The Pennsylvania Commission has held that development cost of the business of a public utility is not equivalent to, or synonymous with, going concern value, but that the determination of such value depends upon many circumstances. Knoxville vs. South Pittsburgh Water

Co. (Pa.)

It has been frequently held that any attempt to appraise public utility property in actual and successful operation at its reproduction cost or value cannot be valid unless some consideration is given to going concern value. There are two decisions of record, however, which are as yet unreversed and unmodified holding that where a state statute enumerates in detail the elements which the state Commission must take into consideration in fixing the value, and where such statute does not mention going concern value as one of these elements, the Commission in such a situation is not obliged to give any recognition to going concern. Both of these decisions are from Washington and arise under the same statute, the sole distinction being that one was a rate fixing proceeding while the other was a general valuation proceeding of a telephone utility. The ruling was made in both cases that the failure of the Commission to give any weight to going concern under the statute was not a deprivation of property without due process of law in contravention of the Federal and State Constitutions. The supreme Court of Washington distinguished between the decisions from other states holding going concern value necessary by pointing out that such states did not have statutes prescribing the rules by which the property of utilities should be valued and the regulatory bodies were, there-

fore, left free to adopt such rules as would best accord with the justice of the state, whereas in Washington the statute did not leave the Department or court free in this respect. The court stated further; "Whether this difference will be regarded by the authoritative court as a sufficient justification for the rule so adopted remains yet for determination. But until it is so determined we feel constrained to follow the statute." Columbia River Teleph. Co. vs. Department of Public Works (Wash.)

In a case in which the cost of developing personnel had always been charged to operating expense, the Missouri Commission said that it knew of no reason why a part of employees' salaries, previously charged to operating expenses and recouped through revenues derived from rates paid by consumers, should now be capitalized and again be assessed against the consumers. This treatment would result in a duplication of charges, against the consumer, for this item of expense. It was therefore, held that this item should not be included in capital account.

Aluminum Goods Mfg. Co. vs. LaClede Gas Light Co. (Mo.)

The Missouri Commission has held that the mere fact that the sale of gas to railroads for illuminating cars has decreased is not a sufficient reason for disallowing going value to the system supplying the gas for that purpose. Aluminum Goods Mfg. Co. vs. LaClede Gas Light Co.

(No.)

The supreme court of Oklahoma has recently sustained the Commission for that state in not making a specific allowance for going value. The court said that the Commission found in its order, and there was no dispute in the evidence as to the fact, that the gas plant involved in this case was in successful operation, and, therefore, the Commission was not required to set aside a definite sum as the measure of going value, and cited in support of the statement pioneer teleph. and teleg. Co. vs. State.

Note: The weight of authority would appear to be to the contrary.

Working capital and going concern value are often referred to as part of the overheads, even in some instances by the Commissions, but, as stated by the Pennsylvania Commission, they are improperly classed as such. Casanave vs. Overbrook Steam Heat Co. (Pa.)

The Wisconsin Commission held that proof of going concern value by estimates of the cost of reproducing the business was not conclusive in showing the existence of a value separate from, and in addition to, values in the physical property, since this method was one which would show a going concern cost, even though the business were unprofitable; in fact, even though it could never be made profitable. Marinette vs. City Water Co. (Wisc.)

The method used by the Interstate Commerce Commission

in making the St. Louis and O'Fallon railway valuations for 1920, 1921, 1922 and 1923, overruled by the U. S. Supreme Court as not giving due weight to reproduction cost new less depreciation, was substantially as follows:

(1) All physical property units (except land) installed prior to June 30, 1914, (consistuting the bulk of the property) were valued at reproduction costs new less depreciation, as of 1914, using prices which represented a fairly consistent price level for the five to ten years preceding 1914 (which will hereinafter be designated "1914 prices."

Note: Since the general railroad construction costs level had not changed greatly during a considerable number of years prior to 1914, the value assigned this part of the railway property is approximately equal to the "prudent investment" therein.

(2) All physical property units (except land installed between July 1, 1914 and June 30, 1919 during which dates prices fluctuated greatly) were valued at reproduction costs new less depreciation, on the basis of unit prices equal to "1914 prices" plus sums representing price increases for the several years over the "1914 prices."

Note: Since the prices used for this part of the property approximated the actual costs year by year the value assigned this part of the railway property is also approximately equal to the "prudent investment" therein.

(3) All physical property units (except land) installed after June 30, 1919 were valued at actual book costs new less depreciation.

Note: The value assigned this part of the railway property is also approximately equal to the "prudent investment" therein.

(4) Land was valued at current value, each year 1920, 1921, 1922 and 1923, as measured by that of neighboring lands.

Note: The value assigned this part of the railway property is "cost of reproduction" (there is no depreciation in land), not the "prudent investment" therein.

The position taken in the majority opinion of the United States Supreme Court in overruling the St. Louis and O'Fallon railway valuations made by the Interstate Commerce Commission for the years 1920-1923, inclusive, on the ground that due weight was not given to reproduction costs new less depreciation, is stated fully in the opinion, as follows:

"Paragraph 4, section 15a, directs that in determining values of railway property for purposes of recapture the Commission 'shall give due consideration to all the elements of value recognized by the law of the land for rate-making purposes, and shall give to the property investment account of the carriers only that consideration which under such law it is entitled to in establishing

values for rate-making purposes.' This is an express command; and the carrier has clear right to demand compliance therewith. United States ex rel. Kansas City Southern Railway Co. vs. Interstate Commerce Commission, 252 U. S. 178.

Elements of Value Recognized by Law

"The elements of value recognized by the law of the land for rate-making purposes" have been pointed out many times by this Court. *Smyth vs. Ames*, 169 U. S. 466; *Wilcox vs. Consolidated Gas Co.*, 212 U. S. 19; *Minnesota Rate Cases*, 230 U. S. 352; *Southwestern Bell Telephone Co. vs. Public Service Commission*, 262 U. S. 276; *Bluefield Water Works and Improvement Co. vs. Public Service Commission* 262 U. S. 679; *McCardle vs. Indianapolis Water Co.*, 272 U. S. 400. Among them is the present cost of construction or reproduction.

"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 and market value of its bonds and stock, 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."

Present Costs Essential in Estimate of Fair Return

In *Southwestern Bell Telephone Co. vs. Public Service Commission* (287) we said: "It is impossible to ascertain what will amount to a fair return upon properties devoted to public service without giving consideration to the cost of labor, supplies, etc., at the time the investigation is made. An honest and intelligent forecast of the probable future values made upon a view of all the relevant circumstances, is essential. If the highly important element of present costs is wholly disregarded such a forecast becomes impossible. Estimates for tomorrow cannot ignore prices of today."

The doctrine above stated has been consistently adhered to by this court.

The report of the Commission is long and argumentative. Much of it is devoted to general observations rela-

tive to the method and purpose of making valuations; many objections are urged to doctrine approved by us; and the superiority of another view is stoutly asserted. It carefully refrains from stating that any consideration whatever was given to present or reproduction costs in estimating the value of the carrier's property. Four dissenting Commissioners declare that reproduction costs were not considered; and the report itself confirms their view. Two of the majority avow a like understanding of the course pursued.

The following from the dissenting opinion of Commissioner Hall, concurred in by three others, accurately describes the action of the Commission;

"In order to determine the value of the O'Fallon property devoted to carrier service during the recapture periods, ten months in the year 1920 and the years 1921, 1922, and 1923, we start with a valuation or inventory date of June 30, 1919. The units in existence on that date are known. Original cost of the entire property can not be ascertained. As to the man-made units we estimate the cost of reproducing them in their condition on that date and in so doing apply to the units installed prior to June 30, 1914, the unit prices of 1914, representing a fairly consistent price level for the preceding five or ten years. To like units, installed after June 30, 1914, and prior to June 30, 1919, we apply the same prices, but

add a sum representing price increases on those units during that period. For the third period, from June 30, 1919, down to each recapture date, we abandon estimate and turn to recorded net cost of additions less retirements. On this composite, made of estimated value for two periods and ascertained net cost for the third period, the majority base a conclusion as to value at recapture date of the man-made items. Land goes in at its current value as measured by that of neighboring lands.

"Without summarizing the other processes, all clearly stated in the majority report, it will be observed that the rate-making value arrived at for the successive recapture periods, as for example the year 1923, rests upon 1923 market value of lands; costs of other property installed since June 30, 1919; unit prices of 1914 enhanced by allowance for increased cost of units installed during June 30, 1914-1919; and, for the units installed prior to June 30, 1914, constituting by far the major part of the property, unit prices of 1914 without any enhancement whatever. As to this major part of the carrier's property devoted to carrier purposes in 1923 no consideration is given to costs and prices then obtaining or to increase therein since 1914."

In the exercise of its proper function this Court has declared the law of the land concerning valuations for rate-making purposes. The Commission disregarded the ap-

proved rule and has thereby failed to discharge the definite duty imposed by Congress. Unfortunately, proper heed was denied the timely admonition of the minority—"The function of this commission is not to act as an arbiter in economics, but as an agency of Congress, to apply the law of the land to facts developed of record in matters committed by Congress to our jurisdiction."

The question on which the Commission divided is this: When seeking to ascertain the value of railroad property for recapture purposes, must it give consideration to current, or reproduction costs? The weight to be accorded thereto is not the matter before us. No doubt there are some, perhaps many, railroads the ultimate value of which should be placed far below the sum necessary for reproduction. But Congress has directed that values shall be fixed upon a consideration of present costs along with all other pertinent facts; and this mandate must be obeyed.

It was deemed unnecessary by the Court below to determine whether the Commission obeyed the statutory direction touching valuations since the order permitted the O'Fallon to retain an income great enough to negative any suggestion of actual confiscation. With this we cannot agree. Whether the Commission acted as directed by Congress was the fundamental question presented. If it did not, the action taken, being beyond the authority granted,

was invalid. The only power to make any recapture order arose from the statute.

The judgment of the court below must be reversed. A decree will be entered here annulling the challenged order. Reversed.

It will be noted that the majority opinion of the United States Supreme Court does not state how much weight must be given to reproduction costs, other than to quote the rule of *Smyth vs. Ames* that all factors affecting value must be "given such weight as is just and right in each case." The opinion in the *O'Fallon* case states that:

"The weight to be accorded thereto is not the matter before us. No doubt there are some, perhaps many, railroads the ultimate value of which should be placed far below the sum necessary for reproduction."

In the minority opinion written by Mr. Justice Brandeis, reference is made to footnotes giving some instances of actual sales of railway properties in which the actual sales value proved to be far below the reproduction costs less depreciation, as follows:

	Book Cost	Probable Approx. Value Reproduction Cost	Value by actual Sale
Pacific Extension C.M. and St. P. Ry. Built 1909. Mtg. sale	\$257,000,000	\$500,000,000	\$42,500,000*
Teledo and Ironton Ry. Sold to Henry Ford, in 1920		\$18,000,000**	6,800,000

Kas. City, Mexico and	Over***	Over***
Orient Ry. 1919 Figures	\$29,000,000	\$60,000,000
sold to A.T. and S.F. Ry.		\$14,507,500

*Upset cash price fixed by court in foreclosure proceedings.

**Physical value as stated by Railway Age. \$16,000,000 to \$20,000,000

***Actual sales price included 320 miles of railway in Mexico not included in the book and reproduction cost figures.

Note: Justice Brandeis also called attention to the authorization by the I.C.C. of the abandonment of 4,049 miles of railway in 1920-1928, the value of which before abandonment was manifestly only a small fraction of the reproduction costs new less depreciation.

While the argument of Justice Brandeis in citing the above cases was directed against reproduction costs new less depreciation as a basis of valuation, it seems to the writer that they weigh equally against "prudent investment" as a basis of valuation, and that they go far to justify the rule of *Smyth vs. Ames* that "such weight as is just and right" must be determined, not by formula or fixed rule, but by sound judgment in "each case."