Depreciation in Rate Making

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DEPRECIATION IN RATE MAKING

DEPRECIATION is "an invisible, intangible thing" existing, principally, in the contemplation of engineers, accountants and that great body of people who have to do with the fixation of public utility rates.

Unlike the law of corporations which has been evolved mainly through legislative enactment, the law of depreciation is a matter principally for judicial declaration as part of the judicial review of rate cases. The declarations which do exist are characterized by inconsistencies and, until recently, a lack of any degree of definiteness. It seems that the fundamental judicial concepts, for the larger part, are yet to be fixed.

Depreciation in its broad sense may be defined as the inevitable lessening in value of all property, except land, due to physical deterioration, inadequacy and obsolescence. In a more restricted sense depreciation is the lessening in value due to physical deterioration alone. The effect of depreciation is the exhaustion from whatever cause of the service life of the property used by the utility in the rendition of its service, and, when that is complete, the result is the removal or abandonment of the property.

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The cost of a kilowatt of electric current represents not only part of the cost of a ton of coal but also a part of the cost of the building in which the coal may be stored pending use. The difference as an element of cost is merely one of time—the productivity of the building extends over a long period of time while the productivity of the ton of coal is

1 "By the expense of depreciation is meant:
   (a) The losses suffered through the current lessening in value of tangible property from wear and tear (not covered by current repairs),
   (b) Obsolescence or inadequacy resulting from age, physical change or supersession by reason of new inventions and discoveries, changes in popular demand, or public requirements and,
   (c) Losses suffered through destruction of property by extraordinary casualties."

Uniform System of Accounts For Telephone Companies As Prescribed By The Interstate Commerce Commission Effective January 1, 1913 at p. 67.
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confined to a short period. Unless the charges for service are sufficient to effect a reimbursement to the utility for the cost of the building as well as the cost of the coal the capital of the investors in the utility will accordingly be impaired. The assurance of a return of capital is equally important as the assurance of a return on capital.

Managers of public utilities early realized that the loss which would be suffered, when the cumulative effect of depreciation necessitated retirement or abandonment, must be anticipated and provided for before the termination of the service life of the property. In the case of the Bell Telephone Companies the first plan adopted was to segregate a portion of the annual profits. But since depreciation is a cost of rendering service it is properly an item of expense to be allowed for before determining profits and in 1909 the Supreme Court so held:

"Before coming to the question of profit at all the company is entitled to earn a sufficient sum annually to provide not only for current repairs, but for making good the depreciation and replacing the parts of the property when they come to the end of their life." 3

Prior to 1909 the Court had held that "only such expenditures as are actually made" can be claimed with propriety as a deduction from revenues in determining net earnings. 4

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2 Extract from circular sent out by the American Bell Telephone Company to its various local licensee companies throughout the country in 1884.

* * * It is certain that the present expense for Repairs and Reconstruction is not proportionate to the actual deterioration of property and that in future years the revenue of most companies will be subjected to much heavier charges on this account. It is suggested that a reserve fund be set apart, to which shall be carried such part of the annual profits as represents the estimated amount of yearly depreciation not covered by the expenditure on account of Repairs and Reconstruction."


3 Knoxville v. Knoxville Water Company, 212 U. S. at 13, 29 Sup. Ct. Rep. at 152 (1909). See also Louisiana R. R. Com. v. Cumberland Tel. & Tel. Co., 212 U. S. 414, 29 Sup. Ct. Rep. 357 (1909) where it was said, "That it was the right to raise more money to pay for depreciation than was actually disbursed for the particular year there can be no doubt, for a reserve is necessary in any business of this kind."

In 1912 the Interstate Commerce Commission promulgated the Uniform System of Accounts for Telephone Companies in which it provided "that the companies should include in operating expenses, depreciation charges for the purpose of creating proper and adequate reserves to cover the expenses of depreciation, currently accruing in the tangible fixed capital." It was also provided that the total depreciation should be distributed as nearly as may be throughout the life of the depreciating property. Similar provision was made in the Uniform System of Accounts prescribed for Telegraph and Cable Companies which was made effective as of January 1, 1914.

It is evident that the cost of long-lived property is not properly an expense wholly of the year in which the construction expenditures are incurred—nor is it properly an expenditure wholly of the year in which the property is removed or abandoned and the loss due to depreciation realized. It applies to all the years which measure the useful life of the property. The patrons of the utility receive the same benefits throughout its entire life and it is but equitable that the patrons in each year should bear an equal burden. That the actual lessening in value may be less rapid in the earlier years of the life of the property than in the latter years is irrelevant, for depreciation as an expense of any one year does not aim to measure the lessening in value of the property during that year but is simply an equitable portion of the total cost of the property subjected to depreciation.

These principles lead to the adoption of what is termed the "straight-line method of depreciation." The expenses of each year are charged with an amount determined by dividing the cost of the plant by the number of years measuring

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5 Uniform System of Accounts for Telephone Companies at p. 67.
6 Idem.
7 At p. 16. See also Uniform System of Accounts for Express Companies effective July 1, 1914 at p. 13.
8 A contention in which there is not a little merit is that as the property grows older, maintenance costs increase, and consequently there should be a proportionate decrease in the amount of depreciation charged to the expenses of the later years. This is the argument of the proponents of the plan of computing depreciation on a reducing balance (original cost less depreciation already written off). However, in the case of a utility, the plant of which is constantly turning over, with both new and old plant in service, the repair costs tend to equalize.
its service life. As the expenses of each year are charged the accounting practice is to credit an equal amount to an account termed the "Reserve for Depreciation." At the expiration of the service life of the property, if the estimate of the life has been correct, the cumulative amount will equal the cost of the property. When the property is retired the cost is deducted from the appropriate asset account to which it was charged when the plant was acquired, and concurrently deducted from the amount in the Reserve. Consequently at any point of time the asset accounts represent only the property remaining in service while the depreciation reserve represents the amount of the original cost which has been allocated to past operations. Since this is based purely on a method of spreading the cost of the property evenly over the years of its life it should be evident that at any one time during the life of the property the balance in the Reserve is no measure of the actual depreciation existent in the property. This proposition will be more fully discussed in the following pages.

There has been no occasion for the sanctioning by the Supreme Court of the straight-line method in contradistinction to various other accounting methods practiced in the allocation of depreciation to the various years. The propriety of the amount carried annually to the reserve is principally a question of fact to be determined by the various regulatory commissions rather than a question of law. It may become a question of law, however, if it appears that the amount is unreasonable.

Manifestly, it is unreasonable to charge the cost of property to the expenses of the year when built and then claim an allowance for depreciation in the expenses of the ensuing years. If the property has been built and its cost recorded as an asset, for the depreciation of which an annual allowance

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9 *Infra* p. 225.

10 Other methods are: reducing balance; compound interest or equal annual payment; unit of production; working hour. See R. B. Kester, Accounting Theory and Practice (1918), Vol. 2, pp. 150-186; V. B. Canning, The Economics of Accountancy (1929), 265-309.

11 "Where rates found by a regulatory body to be compensatory are attacked as being confiscatory, the courts may inquire into the method by which its conclusion is reached." Chicago, M. & St. P. Ry. Co. v. Commission, 274 U. S. 344, 351, 47 Sup. Ct. Rep. 604, 606 (1926).
may be claimed, it would manifestly be equally unreasonable to permit the cost of replacing major parts of the property to be charged to expense. If there is a continual replacing of parts the cost of which is treated as an expense it is evident that complete rehabilitation of the property may be effected and the cost thereof charged to expenses. In such a case to allow depreciation on the original cost of the property would effectuate a duplication of expense and a double burdening of the patrons of the utility. As the Court points out:

"If in the past, reconstruction and replacement charges have been met out of current expenses, the fact must be taken into consideration, both when we come to estimating future net income and in determining what sum shall be annually set aside to guard against future depreciation. * * * Otherwise there will be a double deduction on that account, first by paying such charges as they occur and thereafter by a contribution out of the remaining income for the same object." 12

Similarly the practice of the utility with regard to the maintenance and repair of the plant should be considered. The higher the standard of maintenance, the longer will be the service life of the property insofar as the effect of wear and tear is involved. As the annual amount of depreciation expense is determined by dividing the cost by the number of years it will be in service, the amount of the annual charge should accordingly be decreased. Inherently these are questions of fact to be considered in the initial process of rate making, but if from the record the unreasonableness is apparent they are properly subjects for judicial comment and decision.13

Until lately accounting theory and practice has proceeded on the hypothesis that the purpose of depreciation is to preserve the original investment. The post-war rise in price levels has raised the question whether the amount of

13Supra Note 11.
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depreciation should be based on an amount necessary to replace the property as distinguished from an amount sufficient to effect a reimbursement of the cost of the original property. This question was recently presented to the Supreme Court and it was held that the allowance for depreciation should be based not on cost but on present values. Three members of the Court dissented from the view of the majority, Mr. Justice Brandeis writing an admirable opinion. For the majority Mr. Justice Sutherland writes:

“One of the items of expense to be ascertained and deducted is the amount necessary to restore property worn out or impaired, so as continuously to maintain it as nearly as practicable at the same level of efficiency for the public service. The amount set aside periodically for this purpose is the so-called depreciation allowance. Manifestly, this allowance can not be limited by the original cost, because if values have advanced, the allowance is not sufficient to maintain the level of efficiency. The utility is entitled to see that from earnings the value of the property invested is kept unimpaired, so that at the end of any given term of years the original investment remains as it was at the beginning' Knoxville v. Water Co. This naturally calls for expenditures equal to the cost of the worn-out equipment at the time of replacement; and this, for all practical purposes, means present value. It is the settled rule of this Court that the rate base is present value and it would be wholly illogical to adopt a different rule for depreciation.”

The result of the decision is to adopt, as a matter of law, the view that the purpose of depreciation is to provide for

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14 Prior to the recent case, the matter was before the Supreme Court. In the United Fuel Gas Co. v. Commission, 278 U. S. 300, 49 Sup. Ct. Rep. 150 (1928) it was contended that depreciation should be based on present values. The Court did not determine the validity of the contention but decided the case on other grounds—that “conceding the contention of the appellant, there was a failure to show that the rate imposed is confiscatory or otherwise such as to call for the interference of a court of equity.”


16 Ibid. 280 U. S. at 253, 50 Sup. Ct. Rep. at 126.
replacements as distinguished from the preservation of the original investment. In other words, the amount of the depreciation expense is to be measured by a sum sufficient to replace property identical with that in service at prices determined by present value rather than to provide a sum sufficient to reimburse the utility with an amount equal to the original dollars invested.

No judicial precedents expressly holding this point are cited by the Court in support of its result. One of the few cases which is cited in the opinion is the Knoxville Water Company case, from which a quotation is inserted. The following words contained in the Knoxville decision are but a few sentences removed from the portion of that opinion which the Justice quotes:

"The Company is entitled to earn a sufficient sum annually to provide not only for current repairs, but for making good the depreciation and replacing the parts of the property when they come to the end of their life."

While these omitted words are supporting authority for the position of the majority, the language actually quoted by Mr. Justice Sutherland from the Knoxville case would seem to indicate an inconsistent and even contrary position:

(The utility) "is entitled to see that from earnings the value of the property invested is kept unimpaired so that at the end of any given term of years the original investment remains as it was at the beginning."

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17 The Court also cites Utilities Commission v. Telephone Company, 228 Mich. 658 (1924), quoting the Michigan Supreme Court from p. 666:

"If the rate base is present fair value, then the depreciation base as to depreciable property is the same thing. There is no principle to sustain a holding that a utility may earn on the present value of its property devoted to public service, but that it must accept and the public must pay depreciation on book cost or investment cost regardless of present fair value. * * *"


19 Supra Note 16, 280 U. S. at 254, 50 Sup. Ct. Rep. at 126.
The second exposition of the grounds of the opinion which arrests attention is the allegation that the purpose of the "so-called depreciation allowance" is to "restore property worn out or impaired." Examination of the writings of accounting authorities, as pointed out in the exhaustive review contained in the dissenting opinion of Mr. Justice Brandeis, and familiarity with actual practices in no way substantiates this view.

Thirdly, the majority opinion asserts that it would be illogical to adopt a rule for depreciation different from the rule for a rate base which is measured by present values. It is difficult to appreciate why it would be illogical. Depreciation is a means of returning capital, while a rate base is a means of computing a return on capital.

Neither does it seem that the "replacement theory" can be preferred on the merits. If a utility were a temporary institution, operating while its original property or plant existed and liquidating upon its retirement, it is difficult to assume that even the majority would seriously advance the "replacement theory." The factual situation, however, is that a utility is a semi-permanent institution continually replacing its plant.

At the present time, when the original plant constructed at pre-war prices is abandoned or retired, the property replacing it, due to the post-war rise in prices, costs considerably more. If depreciation has been based upon cost, obviously the amount of the reimbursement to the utility has been less than the amount needed for replacement purposes. The additional funds will have to be provided principally by the issuance of additional capital obligations in the form of stocks or bonds. If the depreciation had been based upon replacement values, assuming that the cost of replacement has been accurately forecasted, the amount of the reimbursement would be sufficient for replacing the property. Patrons of the utility during the past would have been providing funds through payment of higher rates based on higher depreciation charges, to build new plant. The result, therefore, under the "replacement theory" is that the patrons of the future are profiting by not having to provide for interest and dividends on additional capital obligations—but the profit is
at the expense of the patrons of the past. There seems to be no economic justification for burdening one generation for the benefit of another.

Looking to the future—suppose the price levels of the future are estimated to decline from the present level. Computing depreciation on the estimated replacement costs of the future, the depreciation charges to current patrons will be less than the cost of the present plant. When the time comes for replacement, funds sufficient to rebuild the plant will have been made available. But the investment of the stockholders and bondholders of the present will have become impaired through failure to secure reimbursement for the cost of the property originally built at higher prices. It is difficult to assume that the Court would adhere to the "replacement theory" when impairment of capital is likely to occur. Uniformity of treatment and stability of business methods is always desirable where possible.

Furthermore, the adoption of present values as a measure of ultimate replacement costs adds to the frailties of the "replacement theory" and is fraught with uncertainty. To quote Mr. Justice Brandeis' astute dissenting opinion:

"Each year the present value may be different. To use as a measure of the year's consumption of plant a depreciation charge based on fluctuating present values substitutes conjecture for experience. Such a system would require the consumer of today to pay for an assumed operating expense which has never been incurred and which may never arise." 20

The doctrine enunciated by the Court is supported by no controlling authority, is directly contrary to recognized practice and appears unsound in principle. Nor is it required by the "fair value" rule of Smyth v. Ames, itself a much-criticized doctrine. Most of the difficulty seems to lie in the use of loose language which has often characterized discussion of depreciation. The Depreciation Reserve is often spoken of as a Replacement Reserve even by those who do not adhere to the "replacement theory." Depreciation may be an

instrumentality in providing for replacing property, but, as its name implies, its purpose is to secure reimbursement for the cost of original property and thus preserve the integrity of the original investment.

II

The primary problem in the rate fixing process, as presently conceived, is the determination of the "fair value of the property being used by the utility for the convenience of the public." The term "fair value of the property" would seem to imply that its value new had been diminished so as to allow at least for the effect of usage and deterioration. Obviously old and deteriorated plant and equipment are not worth as much for any purpose, as corresponding new facilities. In 1909 the Supreme Court explicitly declared that valuation is incomplete without allowance for depreciation:

"It would seem to be inevitable that in many parts of the plant there should be such depreciation, 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 * * * and when particular physical items are estimated as worth so much new, if in fact they be depreciated, this amount should be found and allowed for. If this is not shown the physical valuation is manifestly incomplete." 22

The methods of determining the amount of existent depreciation are as varied as the experts of the parties to the proceeding.23 The usual process is one of appraisal and al-

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21 "The basis of all calculations as to 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." Smyth v. Ames, 169 U. S. 466, 18 Sup. Ct. Rep. 466 (1898).


23 Examples are (1) "Inspection," by which the actual depreciation or physical deterioration manifest to the eye is determined; (2) "Straight Line or
allowance—another of the arduous and expensive tasks made necessary by the holding in Smyth v. Ames. "There must be a reasonable judgment having its basis in a proper consideration of all relevant factors." 24 The claim must be supported by reliable evidence. 25 Valuation of the condition of the property by actual appraisal is preferable according to the Court:

"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 probabilities." 26

At best, however, "averages and assumed probabilities" play an important part in the work of a valuation engineer and the amount of actual depreciation can not be determined with mathematical precision.

The greater part of deterioration or depreciation of property actually occurs in the latter years of its life. "Depreciation comes on very slowly at first so far as percentage is concerned, but rapidly toward the end of the life of the property." 27 On the other hand, the expense of depreciation is distributed on the books of the company evenly over the entire life of the property. Consequently the amount accrued in the depreciation reserve is greater than the amount of actual depreciation existing in the property at any given time. The bookkeeping procedure differs in this respect from the fact.

Nevertheless it has been contended by various regulatory bodies that the balance in the depreciation reserve

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24 Supra Note 22, Minnesota Rate Cases.
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should be taken as the measure of the amount of depreciation in determining the fair value of the property. Such a treatment is an error of law.

"To deduct from the fair value of the plaintiff's property the entire book reserve for depreciation, in order to reach a rate base, was error of law. In point of fact the property was not depreciated that much; the commission did not find any such depreciation." 28

It has recently been pointed out, however, that the record in the particular case "shows that there is more reason to believe that the actual existing depreciation in the plaintiff's property is reflected by the amount of its reserve for depreciation than that it is shown by the estimate of experts who stated observed (actual) depreciation." 29

Another problem in determining a proper rate base also involves the depreciation reserve. The proposition as stated by the Indiana Legislature is as follows:

"In no event shall moneys temporarily expended from this fund (depreciation reserve) for new construction, extensions, or additions to the property be carried into or considered a part of the capital account (rate base) of such public utility." 30

It is a misstatement of the fact to speak of "property built with money out of the depreciation reserve" for the depreciation reserve does not represent a reservation of funds. To repeat, it is a mere bookkeeping device. The most that can be said for the fact is that "every charge to operating expenses (reflected concurrently as a credit to the re-

serve) results in the retention in the business of a corresponding amount of current revenue which would otherwise be shown as profits." 31 A growing and expanding public utility is a monstrous consumer of funds and the practice is to use the funds made available in this manner in the construction of new plant required by expansion and growth. Obviously, it is sound business policy to invest funds in property yielding seven or eight per cent. 32 rather than in securities yielding four or five per cent. However, it is contended that the value of the property financed through the depreciation charge should be excluded from the value of the property on which the utility is entitled to earn.

To quote the Supreme Court in one of the earlier cases:

"It certainly was not proper for the complainant (the utility) to take the money, or any portion of it, which it received as a result of the rates under which it was operating and so to use it or any part of it as to permit the paying of dividends to stockholders. If this were allowable, it would be collecting money to pay for depreciation of the property and having collected it to use it in another way upon which the complainant would obtain a return and distribute it to the stockholders." 33

While this expression of the Court's opinion is not perfectly clear there is strong ground for Commissioner Eastman's view that "in the Louisiana case the Court apparently takes the ground that extensions or improvements constructed from the proceeds of reserves set aside for depreciation are not to be included in the fair value." 34

31 Effective Regulation of Public Utilities, John Bauer (1925), at p. 147.
32 In McCordv v. Indianapolis Water Company, supra Note 26, the Supreme Court held "a reasonable rate of return is not less than seven per cent." and cited among others the following recent decisions as supporting a higher rate of return: Lincoln Gas. Co. v. Lincoln, supra Note 12; Galveston Electric Co. v. Galveston, 258 U. S. 388, 42 Sup. Ct. Rep. 351 (1922); Bluefield Water Co. v. Commission, 262 U. S. 679, 43 Sup. Ct. Rep. 675 (1923).
34 In re Stock of Chicago, Burlington and Quincy R. R., 67 I. C. C. 156, 177 (1921).
This line of argument proceeds on the ground that the money collected by the utility on account of depreciation in some vague manner still remains the property of the customers of the utility. The answer to this specious argument is set forth in a comparatively recent decision of the Court which apparently overrules the earlier decision:

"Customers pay for service, not for the property used to render it. Their payments are not contributions to depreciation or other operating expenses or to capital of the company. By paying bills for service they do not acquire any interest, legal or equitable, in the property used for their convenience or in the funds of the company. Property paid for out of moneys received for service belongs to the company just as does that purchased out of proceeds of its bonds and stocks." 35

The matter might seem, as juristic writers like to put it, well settled, were it not for an observation by Mr. Justice Brandeis in his dissenting opinion in the recent Baltimore case:

"It may also be that so much of the depreciation reserve as has not been used for retirements or replacements (balance in the reserve) should be subtracted from the present value of the utility's property in determining the rate base, on the theory that the amounts thus contributed by the public represent a part payment for the property consumed or to be consumed in the service." 36

While the statement is not at all assertive it does indicate the existence of a substantial doubt in the judicial mind, a doubt which seems to traverse the holding in the telephone case cited above. It is unlikely, however, that the Court will


36 Supra Note 15, 280 U. S. at 286, 50 Sup. Ct. Rep. at 137 (Footnote 57 of the opinion).
retract its former holding, which is sound in logic and result but a qualification of the application of its precepts may be imminent.

Since the amount of actual depreciation existing in the property is deducted from the rate base, it is a duplication to this extent also to deduct the balance in the reserve. The rate base is decreased by the amount of the actual depreciation and consequently the utility ought to be entitled to a return, at least, on a like amount of funds secured through the depreciation charge and invested in new property. In cases where the balance in the reserve representing funds collected from the patrons and invested in new property exceeds the amount of the actual depreciation deducted from the rate base, it is fair to concede to the patrons some credit for having reimbursed the utility in advance of the loss in value in the rate base due to the deduction of actual depreciation. It would seem to follow that an amount equal to the excess of the reserve balance over the actual depreciation should be excluded from the base on which a return is computed. This treatment does not militate against the principle that “Property paid for out of moneys received for service belongs to the Company.” It simply recognizes the fact that the patrons are making payments for depreciation not yet occurred. However, the ownership of the moneys passes to the utility with its transfer and the right to use it rests with the discretion of the utility. Investing it in property involves a certain amount of business risks not attendant upon investment in government securities for example. Hence the utility should be entitled to some compensation for the incurred risk—the difference between the yield on securities and the yield in the business. The remainder should be allowed as a credit to net earnings in favor of the patrons. Possibly an adjustment of the equities along this line of reasoning is what is contemplated by Mr. Justice Brandeis.

The problem of depreciation is but a part of the burdensome task of determining fair rates which may be charged by public utilities. It does seem that the courts are prone to

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37 "If accrued depreciation were deducted from cost of plant in determining fair value, then, on the contrary, extensions financed out of depreciation reserves ought to be included." "Salier on Depreciation, 418." Utilities Commission v. Telephone Company, supra Note 17 at 667.
tresspass upon the province of the regulatory bodies in so far as questions of fact are involved. Perhaps this is necessary in order to curb the overzealous administrative mind guided to some degree by a yearning for political popularity, but the recent Baltimore case would seem to indicate that more regard for the findings of the administrative bodies, as well as the practices of business men, might profitably be employed.

Rate case litigation has reached the point where, because of its complexity both in point of law and fact, expenditures of hundreds of thousands of dollars and years of time are common in each case. This has become a severe economic burden to the public. Whether it be the adoption of the prudent investment theory or some other, simplification of the process would be extremely beneficial in order that at least the out-of-pocket expenses might be reduced as well as other more obvious benefits achieved. At the present time the American pardonable pride in efficiency, is, in this field, hardly substantiated.

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28 As a recent article on the Federal Court decision in the Telephone Company case points out, "The magnitude of the case can be indicated by the following: The first hearing before the master took place on October 14, 1924; the last hearing on September 10, 1928. There appeared about 625 witnesses; pages of testimony numbered close to 37,000; and over 3,000 exhibits were introduced." "The New York Telephone Rate Decision" by Nathaniel Gold, National Municipal Review, March, 1930, at p. 181. These statistics but partially present the picture. The proceedings before the State Commission were commenced two years prior to 1924. At the present time hearings are being held before the Commission with respect to a proposed modification of the order of the Court, and an appeal to the Supreme Court also seems likely, a decade of litigation with its consequent expense being borne by the public.