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Depreciation accounting

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THESIS

Depreciation Accounting

by

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CHAPTER I

WHAT IS MEANT BY DEPRECIATION ACCOUNTING?

Depreciation accounting is but one phase of the system of recording, summarizing, and analyzing business transactions which we know as "accounting". It is a method whereby effect is given in accounts to the physical and economic phenomenon of the gradual loss of the useful life of tangible fixed assets.

The American Institute of Accountants defined depreciation accounting as follows: ¹

"Depreciation accounting is a system of accounting which aims to distribute the cost or other basic value of tangible capital assets over the estimated useful life of the unit - which may be a group of assets - in a systematic and rational manner. It is a process of allocation, not of valuation. Depreciation for the year is the portion of the total charge under such a system that is allocated to the year. Although the allocation may properly take into account occurrences during the year, it is not intended to be a measurement of the effect of all such occurrences."

From the preceding definition it may be seen that depreciation accounting is an expedient which prorates the normal useful life of a fixed asset, or group of assets, ²

¹ Accounting Research Bulletin No. 20 (New York, American Institute of Accountants, November, 1943) p. 167
valued at cost or other monetary basis, over the useful life valued in terms of years, hours, or units of service productivity. By "useful life" is meant the period during which the physical and functional productivity of a fixed asset is such as to make it economically beneficial to continue to operate that particular asset. Investment in tangible capital assets is considered a deferred operating cost. Accordingly, this system has as its purpose the allocation of portions of the deferred cost to periods of operation. Any "valuation" effect is incidental, and the system should not be criticized for its failure to reflect fluctuations in supply and demand or in the value of money. The only just basis of criticism is that the allocation does not accomplish its prime purpose - the matching of current costs and revenues.

In defining the word "depreciation", as applied to the art of accounting, there are two possible methods of approach. One is the positive method; the other is the negative. Too often, in the definition of an elusive concept, the line of least resistance is to attack the problem from the negative viewpoint, and merely to silhouette rather than to define. The Treasury Department, in the matter of the capital
asset concept, chose to give the taxpayer a negative definition.

However, the negative approach is not entirely without merit. When used in conjunction with a positive definition, it serves the purpose of preventing misinterpretations and lends the definition an exactness that otherwise might be lacking. Since accounting, in itself, cannot be termed an exact science, in the same sense as mathematics, or even economics, it follows that many of its basic concepts do not admit of exact definition. Accordingly, the best definition of the accounting concept of depreciation is one which utilizes a quasi-scientific approach and supplements the statement of what depreciation is with examples of what depreciation is not.

In addition to the preceding qualification, the best possible definition should have clarity, conciseness and completeness. The published definitions that follow will

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INTERNAL REVENUE CODE Sec. 117-A-1
"A capital asset is any property held by the taxpayer except:
(1) Stock in trade or other property properly includible in inventory.
(2) Property held primarily for sale to customers.
(3) Depreciable property used in trade or business.
(4) Real property used in trade or business.
(5) Federal, state and municipal obligations issued on or after March 1, 1941, on a discount basis and payable without interest at a fixed maturity date not exceeding one year from date of issue."
be examined in the light of these qualifications.

Published Definitions:

THE UNITED STATES SUPREME COURT:—

"Broadly speaking, depreciation is the loss, not restored by current maintenance, which is due to all the factors causing the ultimate retirement of the property. These factors embrace wear and tear, decay, inadequacy and obsolescence. Annual depreciation is the loss which takes place in a year."

THE NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS:—

"Depreciation is the expiration or consumption, in whole or in part, of the service life, capacity, or utility of property resulting from the action of one or more of the forces operating to bring about the retirement of such property from service."

THE UNITED STATES TREASURY DEPARTMENT:—

"Depreciation is the exhaustion, wear and tear of property used in a trade or business or of property held for the production of income."

W. A. PATON:—

"The term 'Depreciation', in its most significant use, designates the expiration of the cost of buildings and equipment in the course of business operation."

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1 Lindheimer v. Illinois Bell Telephone Co. 292 U.S. 154 (1934)
2 Report of Special Committee on Depreciation September 1943
3 Bureau of Internal Revenue Reg. 103 I.R.C. Sec. 29.23-1-1
4 "Advanced Accounting" (New York, MacMillan Co. 1941) - p. 256
GEORGE O. MAY:-

"Depreciation, as applied to fixed property, is now a word of art, used to describe broadly the cost or expense due to all the factors which cause the ultimate retirement of property in so far as that cost is not included in current maintenance. Annual depreciation charges are an amortization of cost over useful life, they are not an attempt to measure a change in value; they have nothing to do with replacement."

ERIC KOHLER:-

"Depreciation. Expired Utility: the loss of service yield from a fixed asset or fixed-asset group that cannot be restored by repairs or replacements of parts; caused by wear and tear (through use or desire), obsolescence (progress of the arts), and inadequacy (unsuitability to the particular enterprise)."

ARTHUR W. HOLMES:-

"Depreciation is considered to be a decline in value due to wear and tear, obsolescence, inadequacy, the passage of time, and the action of the elements."

H. A. FINNEY:-

"Depreciation is related to all forces, economic as well as physical, which ultimately terminate the life of a fixed asset."

1 "Financial Accounting" (New York, MacMillan Co. 1943) p. 118
2 "Depreciation and the Price Level" (Accounting Review April, 1948) p. 132
3 "Auditing Principles and Procedure" (Chicago R.D. Irwin, 1946) p. 288
THE AMERICAN INSTITUTE OF ACCOUNTANTS:

"Depreciation is used as a term of art in accounting to describe a cost to an accounting unit inherent in the use of instruments of production, such as buildings, machinery, etc. It includes generally so much of the cost arising from the gradual exhaustion of physical or functional usefulness of such property as is reasonably foreseeable and is not restorable through current maintenance. It includes the cost of exhaustion due to wear and tear, decay, obsolescence, inadequacy, and superfluity (and possibly requirements of public authority. It may also include exhaustion due to violent action of the elements, or to accidents which cause premature retirement, where it is applied to groups of units large enough to make such losses over a period of years reasonably foreseeable. It does not include losses which may result from unforeseeable or abnormal causes."

ROBERT H. MONTGOMERY:

"Physical depreciation of fixed assets is generally understood to be the ordinary loss in service life caused by wear and tear from operation and by deterioration resulting from chemical reactions from air, water, gas, etc. The bookkeeping term "depreciation" is the translation into dollars and cents of the normal periodic loss of total service life of fixed assets."

1 "Report of Committee on Terminology" (Accounting Research Bulletin No. 16, October 1942)
2 "Auditing Theory and Practice" (New York Ronald Press, 1940) p. 477-478
Judging the preceding definitions on the bases of method of approach, clarity, conciseness, and completeness, that by George O. May would seem to be most satisfactory. The most common fault with published definitions is that "cause" is given far more consideration than "effect". Whereas, the most important reason for disparity of thought on depreciation is the failure to agree, in principle, as to the consequences of the factors occasioning depreciation. Other faults are those common to unsuitable definitions in general - brevity at the expense of clarity and completeness; completeness by forfeiting clarity and forcefulness.

Depreciation Factors:

There seems to be universal agreement, at least, as to the factors or causes of depreciation. For purposes of analysis these factors are grouped by their nature into physical or internal, and functional or external causes. Physical factors are the result of friction, vibration, strain, chemical reaction and weather. Intensity of use, care in handling, and maintenance policy also have a distinct bearing upon the rate of physical deterioration.
Functional factors are obsolescence, inadequacy, and cessation of demand for the product. Obsolescence is purely a matter of relative costs of production, not of physical condition. Inadequacy is the result of changes in financial policy, engineering progress, plant relocation, or change in the size of the market. Cessation of demand for the product is self-explanatory.

The development of the concept of depreciation has reached the point where the word is required to embrace all forces, economic as well as physical, which ultimately terminate the life of a fixed asset. Quite possibly, the capacity of the word 'depreciation' to embrace such a scope has been exceeded. One authority, H. A. Finney, recognizes this possibility by asserting,

"It might be preferable to limit the use of the word 'depreciation' to signify the expiration of cost or value which is the consequence of the physical changes which we recognize as incident to growing old."

The author believes that an individual concept demands an individually definitive term. This sentiment is borne out by the American Institute of Accountants Committee on Terminology in Accounting Research Bulletin

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No. 16, October 1942 wherein it states:

"It must be admitted that the use of the term (depreciation) in accounting is unsatisfactory since it is applied in its normal sense to some assets such as marketable securities, and in a specialized sense to others, such as fixed capital assets."

At first economic forces were considered extraordinary, and were not held to accrue. There was no partial obsolescence, no gradual technological development. Now, however, it is generally conceded that economic forces are continually working, just as physical forces, to bring about the end of the useful life of fixed assets currently in service. Whether or not it is conservatism, or the inability of industry to finance entire simultaneous conversion that allows obsolescence to accrue, or whether it actually does is another question; however, the prevailing tendency is to provide for the exhaustion of fixed assets due to the workings of economic forces on an accrual basis.

It must be kept in mind that, in speaking of both physical and economic factors, we are concerned only with normal deterioration and normal obsolescence. It is also worthwhile mentioning that normalcy, in the case of obsolescence, is relative, depending upon the state of development that the specific industry itself has reached.
Obsolescence is a much more important factor in the initial stages of industrial development than physical exhaustion. Inadequacy is more apt to occur in a period of rapidly expanding markets for a new product.

Although not as important as the physical and economic factors, it would be well to take note of the possible effect that social factors may have on service life. The American Institute of Accountants mentions "the possible requirements of civil authorities." This phrase could cover endeavors to reduce hazard, raise standards of sanitation and working conditions, improve the quality of the product and the living conditions of those within the shadow of the plant.

The general policy is to provide by means of insurance, or by restriction of surplus, for the premature retirement of plant assets due to extraordinary physical, economic, or social factors. The estimation of service life cannot be expected to forecast meteorological disturbances, the rate of technological development, nor the scope of social legislation.

The General Theory of Depreciation:

The accounting term "depreciation" applies only

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1 Accounting Research Bulletin No. 16 (New York, American Institute of Accountants) p. 142
to fixed tangible assets. Current assets do decline in value, but effect is given to such a decline by valuing those assets at the lower of cost or present market value. The cost of the fixed tangible assets, as we have seen, is regarded as a deferred operating charge. Because of the effect of physical, economic, and social factors upon the length of service utility, it is proper that that portion of the expired utility assignable to a period of productivity be charged against the revenue derived from such production. It is intended that the cost of a capital asset, less any residual or scrap value, be charged to operations over its entire service life.

The depreciation reserve.

At no time during the service life of a capital asset does depreciation accounting attempt to "value" the asset. The process is strictly one of cost allocation. The annual allocation of the expired service life is charged directly to operations under the classification "depreciation" and credited to a reserve termed "reserve for depreciation", which serves to determine the balance sheet amount of unamortized plant assets by accumulating the cost of the expired service life. By deducting the reserve from the asset we arrive at the "book value". By "book value" is meant the unexpired service utility
valued in terms of the balance of original cost, or other basis, which must be charged to future operations. It is a quantitative measurement and not a qualitative measurement, the ordinary meaning of "value".

**Asset reserves:**

One of the difficulties in reconciling basic accounting concepts and terminology lies in the fact that no differentiation is made between the character and purpose of asset reserves. All asset reserves are indiscriminately termed "valuation" reserves. Reserves for doubtful accounts, for depreciation of plant assets, and for amortization of patents are by no means homogeneous. It is true that a balance sheet does present values and that asset reserves effect a valuation of asset accounts. But it is again a question of confusing purpose and effect. The purpose of fixed tangible asset reserves is to define that part of expired utility which has been charged to past operations and to reflect that portion of unexpired utility which must be charged to future operations. On the other hand, the main purpose of current asset reserves is to determine a conservative realizable valuation.

The general confusion which results from the use of the word "reserve" to connote four distinct meanings within the one balance sheet has led to the Committee on
Terminology of the American Institute of Accountants to issue a bulletin in that regard recently. The recommendation of the committee was to limit the use of the word "reserve" to the restriction of retained earnings, and to discontinue to use the term in describing deductions from assets or provisions for liabilities in the balance-sheet, and also in the income statement.

In the author's opinion the adoption of the preceding recommendation cannot help but further the comprehension of the depreciation accounting concept. The progress of public education in accounting principles has been seriously hampered by the application of old terms to new trends of thought; clarification must precede understanding.

Depreciation and depletion:

Aside from the fact that both depreciation and depletion refer to the allocation to operations of the cost of long-term commitments there is little similarity. Depletion represents the "exhaustion of such properties as mineral deposits, oil pools, and stands of timber. From a value standpoint depletion is the expiration of the

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1 Accounting Research Bulletin No. 34 November 1948
cost of wasting resources as a result of the process of production. Like depletion, depreciation may vary with the volume of output, but, unlike depletion, it is not completely arrested whenever there is a cessation of activity.

**Depreciation and amortization:**

Amortization is a systematic allocation of the cost of intangible assets over their legal or useful life, whichever is the shorter. Depreciation is a process of amortization but accounting terminology has differentiated between the allocation of expired cost of fixed tangible and fixed intangible assets by labeling the former "depreciation", and the latter "amortization". In the recent World War the cost of conversion to war production was allowed to be charged to operations over the period of National Emergency. This process was termed "The Amortization of Emergency Facilities", and is not to be confused with the accelerated depreciation of plant assets due to increased production activity. It is an example, however, of the application of the term "amortization" to the expiration of the utility of tangible assets and serves to emphasize the close relation of the accounting processes.

**Misconceptions Regarding Depreciation**

The most prevalent misconceptions regarding the theory of depreciation are as follows:
I. Depreciation is not an actual expense.

2. Depreciation is a reservation of profits.

3. The depreciation reserve is a fund of money.

4. Depreciation constitutes inherently a provision for replacement.

5. In a going concern accrued depreciation merely represents deferred maintenance.

6. Depreciation may be offset partially or completely by an increment in tangible value.

7. Depreciation is merely a change in physical condition and capacity to serve.

8. The accrual policy, admittedly sound in the case of a single unit, is rendered entirely inapplicable by a number of plant units with varying service lives.

No attempt has been made to list these misconceptions in order of their importance or prevalence, but each will be considered in the order in which it is listed.

Some hold that depreciation is not an "out-of-pocket"\(^1\) expenditure, and that, since the annual charge is, at best, an estimate figure, it has not the same validity that other fixed overhead charges, such as rent, have. The proponents of this viewpoint include those who would reduce the depreciation charge in lean years and increase the charge in years of prosperity in order to show management in a favorable light. It is true, in many cases, that management is

\(^1\) W.A. Paton and A.C. Littleton, "An Introduction to Corporate Accounting Standards" (American Accounting Association, 1940) p. 68
laboring under an impossible burden of fixed overhead
due to lack of foresight or economic astuteness of those
who established the business. Management should be judged
entirely on the basis of controllable income and expendi-
tures. But such a miscarriage of justice is not a valid
excuse for ignoring the fact that depreciation represents
the extreme example of prepayment. The cost of the plant
is an actual cost, and by the same token depreciation is a
throughly valid operating charge. The fact that deprecia-
tion is an estimation does not warrant the attitude that it
is different from other operating charges. Oftentimes, es-
pecially for interim statements, it is insisted that the
amount of expenses not readily known be estimated in order
to show a more accurate picture of operations. When the
actual amount of the expenses is known, then adjustments may
be made. In the case of depreciation an honest estimate is
far superior to no recognition merely because the exact
amount cannot be ascertained.

There are those who conceive of depreciation as a
reservation of profits. ¹ They view depreciation as a non-
operating expense which is deducted from the net amount of
income available for distribution to stockholders. The term

¹ H.A. Finney, "Principles of Accounting-Intermediate"
(New York, Prentice-Hall Inc. 1946) p. 332
"reserve for depreciation" is misleading in this respect, but the fact of the matter is that there can be no true profit figure before provision for depreciation, or for taxes either. Depreciation does have the effect of preserving original capital investment in that it serves to present the distinction between return of and return on capital, but that is not its purpose. Depreciation is not contingent upon profits; it is an allocation of cost to operations, profits notwithstanding.

Those who think of the depreciation reserve as a fund of money lose sight of the fact that depreciation is the allocation of a previous expenditure. It does not in itself provide funds for replacement, or for any other purpose. ¹ The process of accounting for expenses generally does not affect the volume of funds flowing into a business. If funds are to be provided for replacement then that is a related problem, but one entirely separate from the process of accounting for depreciation.

Closely allied with the foregoing misconception is the belief that depreciation constitutes inherently a provision for replacement. ² It is true that a business

in order to continue to operate must, in time, replace those units which are no longer serviceable. The fact remains, however, that, whether or not the units in use are replaced, their cost must be allocated to operations.

The conception that accrued depreciation in a going concern merely represents the amount of deferred replacement and maintenance which is necessary to raise operating efficiency to a maximum is that of the advocates of the retirement policy. 1 The plant is conceived of as a permanent unit which never will be retired entirely as long as the business exists. Depreciation is recognized only at such time as a component of the unit is actually removed from service. One variation of this policy is to establish an estimated yearly retirement reserve and to charge retirements against that reserve during the year as the need occasions. Exception is taken to this concept in that it does not recognize the gradual loss of service utility. An asset may maintain its normal capacity right up until retirement, but the increased maintenance costs that accompany age belie the theory that depreciation is not accruing.

When accounting concepts, that of depreciation

1 Public Service Commission of Wisconsin, "Depreciation" (New York, The State Law Reporting Company, 1933) pp. 51-52
accounting in particular, were in their infancy, emphasis was placed on the concept of "value", rather than that of "cost". Since depreciation was considered a change in value it was thought that a loss of physical capacity could be offset by an increase in the market value of similar assets. If such were the case, the fact of depreciation did not require recognition. This theory persists in some circles.

Another aspect of the valuation misconception involves the confusion of two concepts— one, that of the going concern, the other that of depreciating plant. "An increase in intangible value does not offset expiring cost of property." The presence of goodwill does not enhance the market value of second-hand productive machinery.

A misconception similar to that of the retirement policy is that depreciation is merely a change in physical condition and capacity to serve. If there is no apparent physical wear and tear then there is no depreciation. Again it is a case of unimpaired physical capacity at a particular point not being proof of the existence of unimpaired power to produce income over a period.

Lastly, there is the contention that the accrual policy cannot be successfully applied to an extensive plant installation, wherein the service lives of components vary greatly. In answer to this contention, let it be said that it is a common failing of confused logic "to assume that essential principles are inoperative wherever conditions are sufficiently involved to obscure their operation." The simple situation requires less analysis and clerical work than the complex. The Treasury Department in its bulletin F did not consider the task of maintaining adequate depreciation records as an impossible proposition.

The Basic Problem

Much of the criticism of depreciation accounting is based upon the assertion that balance sheet interpretation is misleading. The problem that faces accountants is twofold:

1. To present the effects of depreciation accounting in balance sheets in such a manner as to nullify the possibility of misinterpretation of the purpose or intent of the depreciation process or of the meaning of the figures set forth therein.

2 "The taxpayer should keep such records as to each item or unit of depreciable property as will permit the ready verification of the factors used in computing the allowance for each year, for each item, unit or group." Treasury Regulation 45, Article 169, Internal Revenue Code
2nd: To defend their position in maintaining that the province of accounting is not to appraise, but to match revenues and costs, disregarding any unrealized profits but providing for all possible foreseeable losses.

American accountants have been continually under fire for their reluctance to abandon historical cost as a basis of capital asset balance sheet valuation on the grounds that such a presentation seriously understates the true net worth of a business. However, in England it is recognized that balance sheets may properly underestimate present value or potential realization. So long as the chartered accountant confines his presentation to under-estimation he is absolved from all criticism.

Since the bulk of the criticism stems from the standpoint of interpretation, it would be well to remind businessmen that the interpretation of financial statements is a specialized field. When a layman takes it upon himself to interpret law without benefit of a lawyer, the responsibility for his errors cannot be laid at the door of the legislator. One of an accountant’s functions is to assemble financial data in such a manner as to set forth clearly the position of an enterprise. Another is to interpret the strength and stability of that position in the

1 Kenneth MacNeal, "Truth in Accounting" (Philadelphia, The University of Pennsylvania Press, 1939) p. 24
light of projected activity and general business conditions. In the field of accounting, just as in the field of medicine, diagnosis is highly specialized. In both instances, the case history must be analyzed before any diagnosis can be made and any remedy prescribed. The fact remains that pictures, or balance sheets, of a business taken over a period of years, which present values in a consistent manner, will allow a qualified diagnostician to ascertain the financial condition of an enterprise. At the same time it must be realized that there is always the uncertainty of the presence of the "will to live" and of the ability of management to thrive in progressive competition. One of the fundamental principles of "hoss-trading" is not only to know horses, but also the character of the trader.

The author does believe, however, that it is the function of the accountant to educate the layman by clarifying the meaning and purpose of accounting precepts, but only to the extent that the folly of assuming the role of a financial specialist is made clear. It should also be conveyed that if a layman chooses to assume the role of a specialist the responsibility for his mistakes in judgment must rest squarely upon his own shoulders. Accounting and accountants can be justly criticized for not having attempted or accomplished this matter of public indoctrination in the
Accountants have done much to meet criticism with respect to the matter of appraisal not being within the scope of the purpose of accounting. Present-day balance sheets make use of the means of footnotes to supply additional pertinent data as to the compatibility of book values and market values and as to the presence of possible contingencies. It should be remembered, however, that each individual balance sheet presupposes a knowledge of the general condition of the industry and of business as a whole.

In addition to the theoretical problems which confront depreciation accounting there are also physical problems which must be recognized and solved. The mechanics of accounting for depreciation resolves itself into four phases:

1. The basis of the asset to be depreciated.
2. The unit of depreciation.
3. The method of depreciation.
4. The rate of depreciation.

A detailed discussion of each of these four phases has been reserved for Chapters III through VI of this work.
CHAPTER II

A HISTORY OF DEPRECIATION ACCOUNTING

The Evolution of Depreciation Accounting

Depreciation in its earliest recognition grew out of the determination of the marketable value of salable merchandise. The first form of business was the individual proprietorship and, at least in his own mind, the proprietor valued his merchandise at the price he could expect to receive for it. As record-keeping reached the bookkeeping stage, the proprietor chose to value his inventory at its market value. The application of the inventory method to those assets required to conduct the business was the next seemingly logical procedure. At the end of each year all assets other than cash were valued; any difference between cost and value was charged or credited to profit and loss. Depreciation was not considered an expense or cost, but a loss in value. The fact of depreciation was recognized, but the nature of the depreciation process was obscured by the valuation concept. This viewpoint regarding depreciation persisted until the middle of the nineteenth century. ¹

¹ "Although it was more correct to look at depreciation in this light than to ignore it completely, this simple concept was nevertheless an inadequate view of the real nature of depreciation." A.C.Littleton, "Accounting Evolution to 1900" (New York, The American Institute, 1933) p.226
The first mention of depreciation as such appears, according to Littleton, in "Bookkeeping" by W. Inglish in 1861, wherein he suggests "a yearly deduction of five and ten per cent to be made from original cost to allow for deterioration, or wear and tear ". In explaining the mechanics of the entry Inglish terms the charge "depreciation". The importance of this work lies in the fact that it marks the beginning of the present day mathematical methods of computing depreciation. From this suggestion has been derived the straight-line method and, by virtue of objections to the straight-line method, the other methods of computing depreciation have evolved.

Until the development of the corporate form of business entity and the growth of public utilities the concept of depreciation received little clarification or codification. Littleton states as the reason for the slow development of depreciation theory:

"Business units were small and there was no deep interest on the part of the proprietors in refining the calculation of net profit. In addition relatively little use was made of long-lived assets." 1

The long-lived assets had been present in trading companies, but it was the advent of the combination in the corporate form of long life and limited liability, with the accom-

1 A.C. Littleton, "Accounting Evolution to 1900" (New York, The American Institute Publishing Company, 1933) p. 228
panying need for correct statement of profits, lest the capital structure be impaired by dividends, that gave depreciation theory the greatest impetus.

With the introduction of the railroads, depreciation became the loss in value, due to wear and tear, which was not restored by current maintenance. However, any depreciation represented deferred maintenance, and replacements might more than offset depreciation for the year. This gave rise to the renewal theory, which holds that plant longevity is unlimited and that all replacements of components now in use be charged to current operations. Additions were capitalized, but replacements and maintenance charges were used to offset current revenues. The valuation concept was discarded as impractical and as being incapable of control by management, according to Dionysius Lardner in his book, "Railway Economics" (1850).

The attention given to depreciation by public utilities naturally aroused interest in the ranks of industry and, accordingly, recognition was tendered. The renewal theory, however, was not considered acceptable for manufacturing industries. One author, Matheson, in his book "Depreciation of Factories" (London, 1854), suggested establishing a depreciation rate and checking the accumulated depreciation by means of periodic valuations. ¹ He recognized the

persistency of depreciation despite idle plant and lack of profits, but failed to associate depreciation with factory cost of production. This association remained for the influence of cost accounting.

With the introduction of cost accounting the necessity for the correct apportionment of all operating costs in order to determine relative production costs became apparent. The devotees of cost accounting gave depreciation theory the impetus which has brought it to its present stage of development.

The evolution of depreciation accounting may be summarized as follows: Depreciation, if recognized at all, through the beginning of the nineteenth century was considered a loss in value, and, accordingly, not an actual expense. Functional depreciation was recognized, but obscured by market fluctuations. With the advent of the railroads it became a loss in efficiency or capacity, and it was recognized as a cost which was incurred despite production or profits. Cost accounting, in turn, established depreciation as a cost of production, and the rapid chain of technological developments which began at the start of the twentieth century gave recognition to the economic factors of obsolescence and inadequacy.

Factors Contributing to the Development of Depreciation Accounting:

The factors which contributed to the development of
The desire of public utilities for rates which included provision for depreciation.

2. The need for comparative statement of assets for the purpose of merger.

3. The need for the correct statement of net profit by corporations.


5. The income tax legislation allowance for depreciation and obsolescence.

Public utilities fought from the very outset for rates which allowed a margin of profit after provision was made for depreciation. The point of dispute, however, was not relative to the nature of depreciation, but rather to the effect of depreciation. The utilities insisted that the reserve for depreciation should not be deducted from the asset in determining the rates for consumers. The public attention that the ensuing legal battles received contributed greatly to the recognition and understanding of the nature of depreciation.

Prior to the consolidation of small and varied business interests there was the need for comparative statement of the assets of the firms which were to be combined. Those which had adopted a form of depreciation accounting were to be matched with those which had neglected to do so. The policy adopted in placing these assets on equal footing was carried over into the new enterprise. Toward the end
of the nineteenth century mergers were numerous; this was undoubtedly a salient factor in securing wider-spread adoption of depreciation accounting.

The corporate form of entity required the safeguarding of the stockholders' interests by the strict maintenance of the original capital structure. Consequently, the net profit concept became all-important. All cost, whether "out of the pocket" or not, received careful scrutiny. The subsequent inclusion of all such costs, before determining a profit available for distribution as dividend earnings, led to the universal recognition of depreciation accounting within the species of enterprise. There was a tendency, however, to regard depreciation as a cost which could only be provided for out of profits. It remained for cost accounting to establish the principle that depreciation is a cost, whether earned or unearned.

Cost accounting, with its engineering and statistical approach, produced invaluable information as to the effect of functional and economic depreciation factors. It made it manifestly clear that each operating period must absorb its share of the cost of the service utility therein exhausted, the matter of unrecovered or unearned depreciation

1 "Since consolidations were frequent between 1897 and 1903, a great impetus was thus given to depreciation accounting." George O. May, "Financial Accounting" (New York, The MacMillan Company, 1943) p. 123
being an unrelated object of concern.

The last line of resistance to the universal adoption of depreciation accounting was erased by income tax legislation, which permitted a deduction in arriving at net taxable income for depreciation and obsolescence. Those enterprises, incorporated and unincorporated, manufacturing and non-manufacturing, which had seen fit to overlook depreciation accounting until this point were forced to acknowledge the concept, if only to avoid paying unnecessary taxes. The majority of these firms incorporated depreciation accounting into their own system of record-keeping at this time, so as to maintain conformity with tax figures and since subsequent legislation has required the compilation of records and data in sufficient detail to substantiate the depreciation allowance claimed by the taxpayer.

Decisions, Bulletins, and Findings Influencing Accounting Thought on Depreciation.

The legal viewpoint.

The majority of the many and varied legal decisions and findings concerning depreciation, which have been handed down by the courts of the United States, have arisen out of disputes on the part of public utilities with the consumer rates

1 Public Service Commission of Wisconsin, "Depreciation" (New York, State Law Reporting Company, 1933) pp. 69-146
established by the commissions. In this work the author is not directly concerned with the question of what constitutes a fair rate base, but rather with the trend of legal thought upon the subject of depreciation accounting. It is, however, difficult to discuss legal opinion regarding depreciation without including a measure of the problems encountered in public utility accounting, since the two are so inter-related.

The decision of the case of Smyth v. Ames (1898), 169 U.S. 466, established the precedent of the fair-value basis and it constitutes the legal authority for the use of replacement cost as a means of valuation. Earlier, in 1878, the United States Supreme Court had held that only the actual expenses of renewals could be charged to operating expense. The principle of accrued depreciation was not recognized.

In the case of Knoxville v. Knoxville Water Co., 212 U.S. 1, in 1909 the Court reversed its opinion and held that provision should be made out of earnings for depreciation and the replacement of parts of property, as well as for current repairs, "before coming to the question of profit at all".

In 1913 the Court reaffirmed the double standard

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1 U.S. v. Kansas Pacific Railway Company, 99 U.S. 455
by holding in the Minnesota rate cases (230 U.S. 352) that, while allowance might be made for depreciation by the accumulation of a reserve, the asset should be valued, for rate purposes, at present replacement cost less observable depreciation - the fair-value concept.

The preceding decisions recognized the fact of depreciation, but did not set forth the basis to be used, the factors causing depreciation, nor the method or methods to be used in computing the depreciation charge, at least not in a clear and unmistakable manner.

With respect to income tax computations, however, the Court was more explicit and forthrightly advocated the usage of the straight-line method based on the original cost of the property in the case of the United States v. Ludley, 274 U.S. 295.

This case is interesting in that it presents the clearest conception of depreciation accounting yet advanced by legal authority.

"The theory underlying this allowance for depreciation is that by using up the plant a gradual sale is made of it. The depreciation charge is the measure of the cost of the part which has been sold. The depreciation charge represents the reduction, during the year, of the capital assets through wear and tear of the plant used."

In the United Railways v. West case (280 U.S. 234) the Supreme Court presented a majority opinion that, since
fair value had been adjudged the basis for rate fixing, it was inconsistent to use other than replacement costs in determining the annual allowance.

"Manifestly, this allowance cannot be limited by the original cost, because, if values have advanced, this allowance is not sufficient to maintain a life of efficiency."

"It is a 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 majority opinion was not shared by Mr. Justice Brandeis and, Mr. Justice Holmes concurring, he presented a dissenting opinion supporting original cost as the fairest and most practical depreciation base.

In part Mr. Justice Brandeis says:

"The main purpose of the charge is that irrespective of the rate of depreciation there shall be produced, through annual contributions, by the end of the service life of the depreciable plant, an amount equal to the total net expense of its retirement. To that end it is necessary only that some reasonable plan of distribution be adopted."

He states further:

"To use as a measure of the year's consumption of plant a depreciation charge based on fluctuating present values substitutes a conjecture for experience... thereby the only stable factor involved in fixing a depreciation charge would be eliminated."

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In the author's opinion Mr. Justice Brandeis has presented the most satisfactory legal viewpoint of the accounting principles of depreciation that has been set forth in over seventy-five years of contradictory judicial decisions and findings.

The factors of depreciation were defined by the Wisconsin Railroad Commission, in March 1910, as being:

"Wear and tear, abrasion, corrosion, deterioration due to time and the elements, obsolescence due to the progress of the arts, and inadequacy due to growth."

The following types of losses were considered to be excluded from the concept of depreciation:

"Loss in capital value, errors in construction or layout, lack of ordinary economy, foresight and efficiency, unforeseen competitive conditions, strikes, and unexpected contingencies."

The Supreme Court would seem, by virtue of majority opinion, to have recognized the interdependence of accrued depreciation and the annual depreciation charge in the case of the United Railways v. West. However, by persisting in the fair-value concept, rather than that of prudent investment, it seems to have failed to grasp the primary purpose of depreciation accounting—that of charging to operations the deferred cost of service utility. It implies that the purpose of depreciation accounting is the preservation of invested capital in terms of purchasing power, not in terms of monetary quantity. The Court has realized the inadvisability
of recommending any one method of determining the depreciation charge, leaving the decision to the discretion of the commissions. It has defined depreciable assets, but has avoided clarifying the factors which cause depreciation.

The accounting viewpoint

The views of accountants upon the subject of depreciation accounting have best been presented by the following bulletins issued by the American Institute of Accountants Committee on Accounting Procedure:

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In Bulletin Number 5 the Committee approached the problem of appreciation with a reluctant attitude, primarily because it did not approve of recording appreciation for other than internal management purposes. However, it felt that it was necessary to formulate an accepted practice for the treatment of appreciation already recorded.

The Committee stated that:

"Accounting for fixed assets should normally be based on cost and any attempt to make property accounts in general reflect current values is both impractical and ine- expedient."
The decision of the Committee was that, if increments in value had been reflected upon the books of a company, it was mandatory that depreciation be taken upon the appraisal value also.

In Bulletin Number 16 the Committee on Terminology merely attempted to provoke a discussion among the members of the Institute without formally defining the accounting term "depreciation".

It did, however, set forth the following distinctions regarding depreciation:

1. Depreciation is a cost, not a loss in value.
2. Depreciation applies only to tangible fixed assets.
3. Depreciation is caused by physical, functional, and financial factors which persist gradually despite current maintenance.
4. Depreciation is only indirectly related to replacement.

In Bulletin Number 20 the Committee on Terminology, headed by George O. May, formally defined "Depreciation Accounting", despite a considerable amount of apathy on the part of the majority of the Institute members. The formal definition has been quoted on page five, Chapter I, of this work.

Some of the comments in the body of the report are worthwhile noting:

"Much of the confusion and many of the misapprehensions that have arisen in respect of depreciation accounting would be obviated by the substitution of some such word as 'amortization' for 'depreciation'.'
Only so long as a fixed asset "is regarded as an instrument of production or distribution would depreciation accounting seem to be properly applicable to it".

"Definitions which imply that 'depreciation for the year' is a measurement, expressed in monetary terms, of the physical deterioration or of the decline in value within the year, or, indeed, of anything that actually occurs within the period are unacceptable."

Bulletin Number 27 was issued because of the need occasioned by Section 124 of the Internal Revenue Code, which permitted the owner of so-called "emergency facilities" to amortize their cost for income tax purposes over a period of sixty months. If, by doing so, this practice had resulted in an understatement of asset value and would result in an overstatement of future income, the Committee recommended "the adjustment of accumulated amortization or depreciation". This recommendation, however, barely received the two-thirds vote necessary for its adoption. It constituted an exception to the general rule that errors in past judgment should be corrected by revised rates in the future. Several of the members stated that complete disclosure of the facts in published statements was far more desirable and informative. Mr. Stans, in assenting, qualified his vote by stating that the only exception to the general rule should be accorded in this instance, and that the bulletin should not be interpreted as being license for such adjustment in every case of over-depreciation.
In Bulletin Number 33, the Committee on Accounting Procedure restated its adherence to the theory of original cost as opposed to that of replacement cost and advised against the arbitrary write-down of new assets acquired at the current high price level by the "excess of current costs over an estimated 'reasonable' cost".

The Committee's rejection was by no means final, and it suggested that such a procedure might be adopted at some time in the future when the price level became more stable. The most remarkable feature of the vote, which secured the complete assent of nineteen of the twenty-one members and the qualified assent of another, was that W. A. Paton, hitherto one of the foremost proponents of the original cost basis, declined to take a stand. The effect of Paton's withdrawal from the ranks of "original cost" adherents would be difficult to conjecture, but apparently he is unconvinced as to the continued practicability of that basis under prevailing economic conditions.

In Bulletin Number 34 the Committee recommended the omission of the word "reserve" in connection with "a charge in the income statement to reduce the amount at which an asset is stated". The criticism advanced was:

"A charge for depreciation is a 'reserve' in so far as it indicates that cash or other assets received by way of revenues is, to the extent indicated, to be used or devoted
to a special purpose. The description of these charges as 'reserves' or 'provisions' suggests not only that the function of depreciation is one of replacement, but in addition leads to the suggestion that the provision be based upon estimated future cost."

This bulletin also recommended the presentation of the depreciation reserve in the balance sheet as "amortization to date" in order to indicate the measurement process.

The complete recommendation of the bulletin was that the word "reserve" be used only in the case of a restriction of earned surplus.

Although Bulletin Number 35 is only indirectly concerned with depreciation accounting, it is interesting to note that herein W.A. Paton chooses to take his stand on the question of original cost versus replacement cost by way of objection to the recommendation of the Committee.

"Mr. Paton assents to the Bulletin but does not agree with the implication that it is improper to charge depreciation to revenues on the basis of replacement cost, as found in the reference to Bulletin 35."

The preceding bulletins regarding the purpose and application of depreciation accounting principles represent the considered and valued opinion of some of the finest minds in the accounting profession today. As in the case of legal decisions rendered by a majority vote, very often the dissenting opinions are also worthy of consideration. Progress in an art can best be accomplished by the exchange
of viewpoints and experiences which allow themselves to be formulated into recommendations for future practice. Each Accounting Research Bulletin attempts to present constructive criticism and suggestion; it is in this respect that the greatest service has been rendered, the development and codification of depreciation accounting principles. In the author's opinion we are approaching the time when a positive and conclusive statement of accounting theory and practice with respect to the phenomenon of depreciation will be made. This statement, while embodying flexible principles, will relegate depreciation accounting to the status of a staid and irrefutable concept.

The viewpoint of regulatory commissions.

Before the initiation of the commission system of regulation it was common practice for utilities to finance expansion by charging additions and betterments to operations, or to finance replacements through new capital issues. In 1906 the Interstate Commerce Commission started to formulate classifications for railroads, and its first step was to require the capitalization of expanded and improved facilities and to provide depreciation accounting for equipment or "rolling stock". The importance of this step was mainly historical. Academically it is criticized by George O. May as having done "little, if anything, to preserve railroad invest-
ment or to make railroad accounting sounder",\(^1\) since it "contemplated amortization of the cost of equipment over the potential life as extended by rebuilding, and the rate of depreciation was left to the reporting carrier".\(^2\)

In 1914 the use of depreciation accounting for ways and structures was made optional by the Commission and the regulations regarding the depreciation of equipment were made stricter.

The Interstate Commerce Commission had been continually at odds with the legal and engineering viewpoints, which defined accrued depreciation as deferred maintenance on replacement cost. It strove to establish historical cost as the basis for rate regulation and for the determination of the annual amortization to be charged to operations. In 1920 the Commission secured the authorization of Congress to determine the classes of depreciable assets and the "percentage of depreciation" to be used with respect to each class. It was the intent and purpose of the Commission that the use of percentage rates of depreciation would ultimately result in the deduction of the depreciation accumulation thus computed from the gross rate base.

Starting in 1926 the Commission attempted to introduce depreciation accounting for property other than equip-

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\(^2\) ibid.
ment. The effective date was postponed until January 1, 1932, at which time the full impact of depression economy forced further postponement as an alleviative measure. The actual enforcement of the order was effected on January 1, 1943. The long postponement minimized the importance of the innovation, and the transition to depreciation accounting at that late date caused undue hardship for many investors. ¹

On the other hand, the National Association of Railroad and Utilities Commissioners, after trying vainly to reconcile the legal and the accounting viewpoints, adopted the retirement reserve procedure in its first standard classification in 1922. As a means of encouraging new development it was effective, but this pronouncement caused public utility accountants a great deal of concern. It was impossible for them to certify to the adequacy of such depreciation provisions and conform with accepted accounting standards of procedure. ²

In 1936, however, the NARUC reversed its stand and adopted depreciation accounting, accepting its part of the responsibility for the inadequacy of the depreciation reserves at that time, due to its previous recommendations.

The history of depreciation accounting with respect

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² ibid p.133.
to regulatory commissions is an example of the necessity of treating such problems objectively from the outset. The influence of the legal viewpoint, as rendered by the Supreme Court, no doubt deterred the commissions from accepting depreciation accounting at a much earlier date. However, the subjective considerations of how depreciation accounting would affect expansion, and how it would retard the recoupment of prosperity really led to the procrastination of the commissions. Postponing the decision to change policies, until the change became relatively unimportant, gave rise to a new and greater problem, that of determining the most equitable manner of distributing the burden of past mistakes in judgment. Should the consumer pay through future revision of rates, or should the investor pay by appropriation of surplus hitherto available for dividends? In the author's opinion the persons who had benefited most by previous methods should bear the burden, or at least their proportionate share, if the proportion is capable of determination or of assignment. Unfortunately, it would be impossible to force a share of the burden upon those investors who have since disposed of their interests, or upon those customers who have since discontinued availing themselves of the service. Theoretically, the solution is simple, but, practically, no equitable solution has yet been advanced.

The development of depreciation accounting in regu-
lated industries is summarized by George O. May as follows:

"The adoption of Depreciation Accounting in Railroad and Utility regulation cannot be regarded as an accounting reform, but only as a change of policy inspired by purely practical rate-making considerations."  

The Depreciation Policy of the Bureau of Internal Revenue.

From the very beginning income tax legislation recognized the equitability of allowing a deduction for depreciation in determining taxable income. Although income tax levies were unconstitutional until the passage of the Sixteenth Amendment by Congress in July 1909, and its subsequent ratification by the required number of states in February 1913, the first of the present series of Acts was instituted under the guise of being an excise tax on corporations in 1909. The Act of 1909 provided that allowance might be made for depreciation, recognizing only the effect of physical factors. The term "depreciation" and the deduction were carried over into the Act of 1913.

In 1916, however, the following phrase was substituted for the word "depreciation":

"A reasonable allowance for the exhaustion, wear and tear of property used in trade or business."

In 1918 recognition was given to the economic factors of depreciation, and the preceding phrase was extended

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to include "a reasonable allowance for obsolescence".

One of the factors that led to the more widespread use of depreciation accounting was the earlier Treasury requirement that the corporation keep its books in accordance with depreciation accounting in order to be eligible for the deduction. Another factor in the spread of depreciation accounting was the economic effect of the First World War. ¹

The manner of apportioning depreciation is not prescribed by Treasury Department regulation, although the straight-line method is suggested; any method consistent with trade practice is acceptable. The taxpayer assumes the burden of proof that the allowance claimed is justified, but only those claims which are clearly unreasonable are to be disallowed.

It was specifically provided in the Revenue Act of 1932 that the remaining basis for property at any time should be reduced by depreciation "to the extent allowed - but not less than the amount allowable for prior years". Depreciation must be taken into account whether or not it is earned, or whether or not it results in any tax benefit.

A change in policy was instituted in 1934, the beginning of which stemmed from a preliminary report of a subcommittee of the Committee on Ways and Means. The report re-

commended that for the years 1934, 1935, and 1936 the deductions for depreciation and depletion be reduced by twenty-five per cent from what would be otherwise allowable. The need for additional revenue without increased rates was the major reason for this proposal.

The Treasury Department countered with a plan providing for changes in administrative procedure, which was ultimately accepted. The plan provided that the depreciation deduction be decreased "so that for the remaining life of the assets depreciation will be in effect reduced to the extent that it may have been excessive in prior years". ¹

The three essential features of this plan were: ²

1. Taxpayers would be required to furnish detailed schedules containing all the facts necessary for a proper determination of depreciation.

2. All deductions for depreciation would be "limited to such amounts as may reasonably be necessary to recover during the remaining useful life of any depreciable asset the unrecovered basis of the asset".

3. The Treasury regulations would be amended to place the burden of sustaining the deductions squarely upon the taxpayer.

The new policy of the Treasury Department was set forth in Treasury Decision 4422, February 28, 1934. As a guide to the taxpayer the Department furnished tables of rates

² ibid p.20
for specific industries, which stated the average normal life of new fixed assets on the basis of past experience.

The Treasury regulations had, previous to 1940, required the amortization of any loss due to extraordinary obsolescence or inadequacy over the shortened life of the asset. The Second Revenue Act of 1940 authorized corporations to amortize special facilities over a period of sixty months, provided they were certified by the appropriate authority as necessary in the interest of National Defense. In addition to encouraging the conversion of industry to war-time production, it recognized the effect that the economic factor of inadaptability would have after re-conversion to peace-time production.

It was further provided that, if the war ended in less than sixty months after special amortization was first taken, or if the facility should be certified as no longer necessary in the interest of National Defense within a shorter period, then the taxpayer was permitted to recompute the amortization deduction on the basis of the period as terminated by the end of the National Emergency, or by a certificate of non-necessity. This was the first instance of the Department allowing the recomputation of prior years' income merely for the benefit of the taxpayer.

The Treasury Department has always approached the problem of depreciation with an open mind. It is to its cred-
it that it recognized the fact of depreciation and advocated depreciation accounting from the beginning. Also to its credit - it could hardly be otherwise - is its strict adherence to the cost basis. The Department recommends, but does not require, the application of the straight-line method to depreciable units.

The main difference between the depreciation policy of the Treasury Department and generally accepted accounting principles is that of the treatment of rate adjustments and the correction of prior profit and loss. The treatment of the exchange of fixed assets also differs. It may be argued, however, that these differences are not so much ones of policy, but of procedure. In legislating, the good of the majority must be considered and possibilities for abuse must be minimized. A fair, but uncompromising stand must be taken.
CHAPTER III

THE BASIS OF THE ASSET TO BE DEPRECIATED

In establishing the exact manner in which depreciation accounting will function, the first consideration is the basis of the asset to be depreciated. The possible bases for depreciation are as follows:

1. Cost, either entire or adjusted.
2. Cost plus maintenance.
3. Replacement or reproduction cost.
4. Present value.
5. Converted-dollar cost.
6. Special income-tax bases.

In selecting a basis for depreciation there may or may not be a variety of choices open to those who determine accounting policy. At any rate it must be kept in mind that, no matter what the final choice is, circumstances surrounding acquisition definitely decide what basis must be used for income-tax computations.

Cost, either Entire or Adjusted

By "entire" cost is meant the total amount expended by the present owner for a capital asset in order to derive a measure of production. This includes all freight, cartage, assembly and installation charges which may be required before any productivity can be expected from a newly acquired fixed asset.
By "adjusted" cost is meant the original cost reduced by any retirements and increased by any additions or replacements. A further refinement is to use the basis of "adjusted" cost less any net scrap value. By "net scrap value" is meant the excess of the expected scrap value over the anticipated removal cost. Some prefer to disregard the element of removal cost, considering it proper to charge operations directly at the time of disposal. The author concurs with this viewpoint. Since the removal cost may well exceed the scrap value, it results in the introduction of another estimate figure with little or no purpose. Only when the item constitutes an expense which is significant in relation to the cost of the asset and when the removal expense can be accurately determined should the base be adjusted for it.

The cost basis for depreciation has persisted for years, ever since the theory of depreciation accounting gained recognition and acceptance. In the author's opinion it is the only basis that is consistent with the theory of depreciation accounting - the allocation of a past expenditure to operations. The reason for the popularity of this basis and its advantages are summarized by George O. May as follows:

"Historical cost has the dual advantage of convenience and definiteness. Realistically viewed, however, adherence
to the basis has not resulted primarily from its intrinsic merits. The difficulty and uncertainty encountered in determining value have probably been the dominant consideration.\footnote{Geo. O. May, "Financial Accounting" (New York, The MacMillan Company 1943) p. 102.}

Although the author believes that historical cost is the most satisfactory and consistent basis available, that belief does not deter the presentation of the other side of the case. The limitations of historical cost as a basis are stated by Lewis H. Kimmel in the following quotation:

"Cost as a basis is satisfactory only when the price level is constant, or \textit{shows} minor changes. The postulate of a relatively constant price level, on which the validity of the cost basis rests, does not accord with the facts in a period of sharp changes in costs."\footnote{Lewis H. Kimmel, "Depreciation Policy and Postwar Expansion" (Washington, D. C. The Brookings Institution 1946) p. 4.}

By way of adding weight to the argument against the cost basis, it may be mentioned that the validity of historical cost has also been questioned in the case of price constancy at a higher or lower level than that which prevailed at the time of acquisition.
Cost Plus Maintenance

This basis strives to recognize the fact that a certain amount of maintenance will be necessary in order that the plant asset continue in efficient operation over the period of its useful life. Accordingly, to the adjusted cost of the asset is added the estimated amount of service and renewal of parts that will be required. The annual charge to operations is then based on the adjusted cost plus the estimated maintenance requirements. The reserve which is created by this procedure is called "allowance for depreciation and maintenance", and is charged with normal servicing costs and the book value of those parts which are replaced.

In the author's opinion the preceding basis has merit in that it allows an even spreading of the total operating costs over the useful life. Physical depreciation and maintenance costs are said to vary inversely with the age of plant assets. Whether this variance is exactly inverse is not important; the important point is that increased maintenance costs in later life result, in part, from previous usage. Because of this fact it is necessary, in order to match cost and revenue, to charge current revenues with a portion of the increased maintenance which will occur in the future. At the same time provision is made, by means of the unabsorbed maintenance reserve, so that future revenues will
not be charged with more than their rightful share of maintenance expense.

One authority, William A. Paton, minimizes the practicability of the cost plus maintenance basis.¹ He suggests an alternative method whereby only the cost of major parts is accrued, and accrual is by means of depreciation. Routine maintenance is charged as incurred, or by means of an annual budget. Paton does admit, however, that the "cost plus maintenance" basis is sound in principle. His objection on the grounds of practicability would seem to be akin to the objection that depreciation accounting principles are negativ ed by the complexity of plant installations.

Replacement or Reproduction Cost.

The proponents of the "replacement cost" basis insist that, unless current operations are charged with an amount consistent with the cost of replacing plant assets now in use, when the time for replacement arrives the capital structure will not have expanded sufficiently to meet the additional cost requirement. From a financial standpoint it is true that provision must be made for replacement, whether it is at the same price level or at a higher or lower one. There is, however, no justification in gener-

ally-accepted depreciation accounting principles for the charging of current operations with the deferred cost of an asset which has not yet been acquired.

There is no objection to the restriction of earned surplus for the contingency of replacement at a higher price level. On the contrary, it is a necessary step in order to expand the capital structure. To base a depreciation charge to current operations on the expected replacement cost of fixed assets is contrary to depreciation accounting and accounting principles in general. In order for an element of cost to be accrued it must have been incurred; until a cost has been incurred there can only be provision made for its contingency. As we have seen, replacement is not inherent in a fixed asset, but maintenance is. It is for this reason that the author justifies the accrual of maintenance and not that of replacement. When a fixed asset is acquired, the expense of maintenance is incurred simultaneously. Accrual is an accounting problem; provision is a financial one.

Another objection to the replacement cost basis is that, in a period of fluctuating price levels, external factors will dominate entirely the earnings from operations figure. In a normal economic situation external factors, such as supply and demand, will affect earnings from operations, but actual operating costs should not be distorted.
merely because of the presence of external factors whose effect has not yet been felt. It is not customary to charge the cost of goods sold with the present higher cost of materials if no materials have yet been purchased at the higher price. Neither is it customary nor permissible to charge operations with the higher cost of fixed assets until fixed assets have been purchased at the higher price.

In view of the high current interest in depreciation and its relation to the price level Chapter VIII of this work has been reserved for a detailed discussion of the arguments for and against depreciation based on replacement or reproduction cost.

**Present Value.**

"Present value" is the apparent value of a fixed asset or group of assets. It is the market or appraisal value of a plant or a component of a plant. This basis is closely allied to the preceding one in that both deal with present worth. The distinction is in the fact that many installations do not admit of a replacement or reproduction cost for the reasons of obsolescence, unfavorable location, and inefficient layout. In this situation the only recourse is to appraisal, wherein consideration is given only to such replacement costs as are applicable and determinable.

From the standpoint of accounting principles, there can be no strenuous objection to the use, as a basis,
of cost plus any increment as determined by the findings of a reputable, intelligent, and conscientious appraiser, if the total depreciation charge is divided equitably between operations and the surplus resulting from the appraisal. In other words, if that portion of the total depreciation charge which represents the amount of the expired appraisal productive capacity is charged against the appraisal surplus, and not against operations, the procedure is permissible if the appraisal has been recorded.\(^1\) In fact it is a recommended procedure for the reason that it presents a more correct balance sheet valuation of capital assets. The accountants' viewpoint of the present value basis is stated by William A. Paton as follows:

"The accountant has found that he can function most effectively by assisting in the interpretation of the results of valuation and by developing methods of recording and reporting the essential facts brought to light in such a manner as will not obscure original costs and applicable depreciation and will not lead to misinterpretation by managers, investors, or other interested parties."

\(^1\) The recording of appraisal values is specifically discouraged by the American Institute in Accounting Research Bulletin No. 5 entitled "Depreciation on Appreciation" issued in April 1940.

Converted-Dollar Cost

This basis is applied to all assets and liabilities, with the exception of cash in the proposition advanced by Sweeney in his book, "Stabilized Accounting". The purpose of this basis is to "make appropriate corrections in recorded figures in view of the change in the value of money as reflected in the general price level". The relation between converted-dollar cost and replacement cost is very close. The distinction is that, while replacement costs contribute, in general, to changes in the price level, specific replacement costs may or may not vary exactly as the general price index.

Sweeney's proposition is that the purpose of accounting should be the presentation of income and expense data in the light of whether or not the economic capital structure has been maintained. Accordingly, true profit would be represented only by an actual increase in the original invested purchasing power. His proposition is based on the contention that the dollar values by which assets and liabilities are represented are not homogeneous. Therefore before these values can be totaled they must be reduced to a common basis. The classic example used to support this contention is that of attempting to add oranges and apples.

together. In spite of the fact that the word "dollar" resembles more the term "fruit" than any of the species, there is merit in the general proposition. The practical value of the results of value conversion, especially in view of the added detail involved, are highly over-rated. If suitable indices are available, it is quite possible that such information might be used to advantage to supplement statements prepared in the usual manner. The matter of maintaining original invested purchasing power is mainly an academic discussion point. The firm which earns the largest dollar increase will still be the most successful no matter what the basis for comparison may be.

As a basis for depreciation charges, converted-dollar cost is

"subject to the technical limitations that beset the use of replacement cost; in general neither program can be relied upon to provide charges to operations equivalent to the amount necessary as of the date of retirement to preserve the integrity of capital- defined as invested purchasing power in one case and as physical extent or capacity in the other." ¹

Once again, it is a question of whether accounting principles should pay homage to economic principles and

whether accounting should thereby sacrifice any and all recognition it has fought hard to earn as a science and be forever relegated to the status of an art. Adherence to basic principles, not merely obstinacy in the face of adverse criticism, is the only manner in which accounting can secure its individual status.

1 Special Income Tax Bases.

The following bases are prescribed by the Federal Income Tax regulations of the United States Treasury Department, as determined by the circumstances and dates surrounding acquisition:

Cost:—
Property acquired on or after March 1, 1913 by purchase or in a taxable exchange.

Fair market value:—
1. Property acquired in any manner before March 1, 1913.
2. Property transmitted at death.
3. Property acquired by gift or by transfer in trust on or before December 31, 1920.

Substituted basis:—
1. Property acquired by gift or by transfer in trust after December 31, 1920.
2. Property acquired in a tax free exchange.
3. Property acquired upon involuntary conversion of other property.

1 Prentice-Hall Tax Course (New York, Prentice-Hall Inc. 1946-7) p. 1502
5. Property acquired after Dec. 31, 1920 by a corporation through the issuance of stock or other securities.
6. Property acquired during affiliation.
7. Property acquired during a consolidated return period.
8. Property contributed to a partnership.
9. Property distribution in kind to a partner.

The basis of "cost" as stated in the preceding requirements corresponds to the accounting basis of historical cost. The basis, "fair market value", is defined as follows:

"Fair market value is the price which would probably be agreed upon by a seller willing but under no compulsion to sell, and a buyer willing, but under no compulsion to buy, where both have reasonable knowledge of the facts."

The final basis is defined as follows:

"A substituted basis is a basis determined by reference
(a) to the basis in the hands of a transferor or donor, as in the case of property acquired by gift after Dec. 31, 1920 or
(b) to other property held at any time by the person for whom the basis is to be determined, as in the case of nontaxable exchanges."

When property has a substituted basis, that basis must be adjusted, not only for the period that it was held by the present owner, but also for the period it was held by a transferor or donor.

Since the purpose of this work is not confined to tax problems, the author considers it sufficient and appropriate only to mention the different instances in which a substituted basis is employed, without engaging in a detailed
discussion of the nature of each substituted basis.
CHAPTER IV

THE UNIT OF DEPRECIATION

Unit Procedure

The ideal situation is one in which each and every element of plant fixtures and installation can be depreciated individually. As a practical matter, however, it is necessary to determine exactly what comprises a depreciable unit. It is difficult in many cases to define just what constitutes a productive entity. The problem is further complicated by the fact that often component parts have varying service lives. As a general rule a depreciable unit may be defined as a group of component parts which, when combined in a certain manner, enable the whole to perform an individual and distinct productive function.

In the case of a power lathe, according to the preceding definition, any attachments, which were used in conjunction with the lathe and which could be and were used independently of the lathe itself, would be depreciated separately. Any attachments which were used solely in conjunction with the lathe would be depreciated together with the lathe as a unit.

The final test, as to whether an element of production is merely a component or an actual unit, is not whether it can produce independently, but whether it does
and is required to contribute individually to production in the specific plant installation.

Under the unit procedure the amount of accrued depreciation accumulated in the reserve account at any time represents the total of the individual accruals of those assets now in service. It thereby allows the computation of the individual gain or loss upon retirement and serves to validate the depreciation rates being used for similar plant assets. ¹

Group Procedure.

From the standpoint of expediency it is sometimes advisable to adopt the group procedure of depreciation. This procedure utilizes the average service life of a number of similar plant assets. Depreciation is computed at the rate of the average life upon the total cost or other basis of the assets. There is no recognition of gain or loss, or excessive or inadequate depreciation, in the case of individual retirements. Only when all the assets in the group have been retired is recognition given. The disadvantage of this procedure may be clearly seen in the probability that,

¹"One of the main advantages of the unit plan of procedure, in fact, is the check-up thereby afforded on the depreciation schedules in effect." W. A. Paton, "Advanced Accounting, (New York, The MacMillan Co. 1941) p. 266
due to additions and replacements, the opportunity for re-
cognition of gain or loss or inadequate or excessive de-
preciation may not be afforded during the lifetime of the
enterprise. 1

Basically the group procedure is a compromise
between the extreme of depreciating each individual unit
and that of depreciating the entire plant as one unit. Its
value is primarily one of reduction in the amount of de-
preciation data and records which need to be recorded and
compiled. This feature compensates for resulting minor in-
accuracies and gives the group procedure a definite advan-
tage over the unit procedure when the situation develops
that the estimated average life coincides with the actual
service life of the majority of the assets in the group.
In this instance the results of both procedures are very
similar. 2

1 "The major disadvantage of the group method is that it
does not provide adequate means of checking the correct-
ness of the estimated life of each individual unit."
James S. Lanham "Group Method of Depreciation" (The
Accounting Review, Vol. XXII No. 2 April 1947) p. 174

2 W. A. Paton, "Advanced Accounting", (New York, The
MacMillan Company 1941) p. 268
CHAPTER V

THE METHOD OF DEPRECIATION

The Straight-Line Method.

This method assumes that depreciation occurs, or accrues, uniformly over the service life of the capital asset. Each period during this life absorbs an equal portion of the total cost or other basis. Depreciation according to the straight-line method is computed by dividing the depreciable basis by the number of periods contained in the estimated service life. The result of this computation becomes the annual allocation to operations.

One of the strongest objections to the straight-line method is that "its usage results in an increasing rate of return on the unrecovered or remaining investment". Although this criticism has force where the plant installation consists of one major unit, it assumes that gross income will not vary with decreasing efficiency and operating charges will not increase with age due to increased maintenance charges. William A. Paton counters this objection by stating:

"Plant property is usually represented by a considerable number of units in various stages of service life, rather than by a single operating asset."

Another objection to the straight-line method is that "it results in the accumulation of a huge and unnecessary reserve which will eventually fluctuate around fifty per cent of the original investment". This criticism assumes that such a reserve is contradictory to actual fact, which may or may not be the case. If it is not in strict conformity with physical depreciation then these critics must be reminded that the primary function of depreciation accounting is not valuation.

Furthermore, if by the word "reserve" is meant the funds made available, then it should be pointed out that the presence of unneeded funds at a particular point does not, in itself, label depreciation charges excessive.

The straight-line method has secured widespread adoption because of its lack of complexity in theory and in practice, the advantages of which are certainly obvious. The preceding objections are only two of the many which have been raised against it. Actually speaking, each of the other proposed methods of computing depreciation is the crystallization of a point of dispute with the straight-line method.

In the author's opinion the adherence of the majority of accountants to the straight-line method is not due to any apathy on their part, rather it is due to the fact that, in general, the advantages of that method out-
weigh those of any of the alternate proposals. This contention is borne out by the stand taken by the Bureau of Internal Revenue which, as a result of its exhaustive study of depreciation and depreciation rates, endorsed the straight-line method, with the exception of a few cases where it states "the unit of production method would appear to reflect more accurately the depreciation sustained".

The adoption of a narrow viewpoint with respect to the manner of computing depreciation should, however, be avoided. In the determination of the method to be utilized, as in every instance of the application of accounting theory to practice, each case should be decided upon its own individual merits without regard to personal preference.

Interest Methods

The general theory underlying all interest methods is expressed in the following definition of depreciation by Perry Mason in his "Principles of Public-Utility Depreciation".

"The amount of the investment in an asset with a terminable life is a capitalization of the value of the future services

1 "The simplicity of the straight-line method of determining depreciation makes it administratively desirable, and, generally, it appears that the straight-line method approximates the actual depreciation as nearly as any of the other so-called scientific methods." Bureau of Internal Revenue, Bulletin F "Depreciation and Obsolescence" Aug. 31, 1920
to be rendered by the asset, and depreciation is the amortization or expiration of the investment as the services are realized." ¹

These methods were proposed as a means of overcoming the objection to the straight-line method on the grounds that it results in a tendency toward an increasing rate of return on the remaining investment. Where but one important and costly asset is involved, such as a hotel or a power plant, this contention may be justified. However, the NARUC Special Committee holds otherwise:

"The loss in service caused by deterioration, inadequacy, obsolescence and other causes is not influenced by the cost of money, to reason so results in holding that depreciation on property accumulates more rapidly when money costs 2 per cent than when it costs 6 per cent." ²

All interest methods in their net effect bring about a systematically increasing operating charge throughout service life. This feature is demonstrative of a lack of conservatism and their complexity is also an objection to their use in practice. ³

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¹ Perry Mason, "Principles of Public Utility Depreciation" (Chicago, American Accounting Association, 1937) p. 2

² NARUC, "Report of Special Committee on Depreciation" (New York State Law Reporting Co. 1938) p. 19

³ "Such a schedule of depreciation hardly seems reasonable from a practical standpoint in view of the declining productivity and increasing maintenance commonly associated with advancing age."

The principal interest methods are:

a. the annuity method
b. the sinking-fund method
c. the compound interest method

The annuity method.

Under the annuity method the charge to operations each period includes the full value of the service of the unit of plant as received, and the implicit interest earned on the remaining investment is treated as an earning. The imputed interest, or return on unrecovered investment, compounded over the life of the asset, is added to the cost. The resulting basis of cost plus implicit interest is reduced annually by an equal charge to operations. The charge to operations is composed of a credit to interest earned for the return on the unrecovered investment and a credit to the depreciation reserve for the amount of the investment recovered. As the unrecovered investment decreases, the interest credit decreases and the amount of investment recovered through depreciation increases.

The obvious objection to this method is that "it results in a charge to revenue which includes net return as well as the cost of the property". The mere imputation of

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profits does not and cannot guarantee the entrepreneur a satisfactory return. Moreover, imputed income is an economic principle, not an accounting one. Accounting theory decries the recognition of income before it has actually been realized; income can only be realized through an excess of receipts from sales over expenditures made to produce sales.

The sinking-fund method.

The sinking-fund method is that of establishing a replacement fund into which a fixed sum of money is deposited each period. The fund is determined to accumulate, by means of the annual deposits plus the interest compounded thereon, to the amount of the original cost or other basis of the capital asset at such time as the service utility will have been exhausted. The depreciation charge to operations parallels exactly the annual increase in the sinking fund.

As a practical matter, unless, for example, the capital asset were created by the issuance of obligations which are to be retired partially during the service life or entirely simultaneously with the exhaustion of utility, then the sinking fund method is not applicable. From a financial standpoint it may be argued that funds made available through revenues, unless required to be deposited, may well be used to better advantage in unrestricted current operations. In other words, the funds may earn a higher yield if pressed into operations rather than if they were
to be invested by a trust in someone else's enterprise.

In addition to the objection on the grounds of practicability the basic shortcomings which apply to all interest methods are to be found in the sinking-fund method. These objections have already been discussed under the heading of the annuity method.

In connection with the sinking-fund method, it might be well to mention two common misconceptions which have arisen regarding this method.

1. The sinking-fund method results in a reduction of the depreciation charge.

   The correct statement is that the sinking-fund reduces the amount of depreciation which must be earned through operations. The interest income does, speaking of net income, offset part of the expense of depreciation, but it does not offset any portion of the depreciation charge. The income from operations figure remains the same, regardless of the presence of an interest earning retirement or replacement fund. The net income figure (interest income being considered other income) is increased by the amount of depreciation earned by the fund.

2. The sinking-fund method results in a double burden upon earnings.

   This misconception results from a confusion of the depreciation charge, which is a cost of operation, and the sinking fund which is a restriction of earnings. It is not
a double burden upon earnings, but instead upon the consumer, who is required to pay enough for the product to cover the cost of the original investment and to cover the cost of the replacement of the plant assets now in use. Under this method replacement comes about, not by the reinvestment of original capital, but by means of earnings. It is asking a great deal for one generation to pay for two plant installations, one, the benefit of which, it may never enjoy.

The compound interest method.

This method may be considered a variation of either the annuity or the sinking fund method. It is the annuity method, utilizing only the net charge to operations as depreciation, or it is the sinking-fund method without the incorporation of an actual fund.

Of the three interest methods the plain compound interest method is the least objectionable. It does not anticipate earnings implicit only in sales. However, it still does not conform basically to the physical pattern of depreciation and, accordingly, in the author's opinion, has little, if any, justification for introduction into accounting theory and practice.

The interest methods are an interesting revelation of the intricacies of high finance, but there is no relation between the concept of the gradual accumulation
of a fund of money and the concept of the gradual expiration of the service utility of a capital asset.

Production Methods.

The straight-line and interest methods of computing depreciation do not give consideration to variations in quality and quantity of output. The ideal situation is to be able to charge operations to the exact extent that service has been received from the productive assets to be depreciated.

Working-hours method.

This method takes into account the effect that excessive operation has upon capital assets by way of shortening the service life. The service life is estimated, therefore, in terms of hours of productivity. The operation of a machine on three shifts, instead of two, is readily taken into consideration. By dividing the basis by the number of estimated working hours we arrive at the depreciation per working hour. By totaling the number of working hours during an accounting period and then multiplying by the depreciation cost per working hour the depreciation charge for the period is determined.

Units of production method.

This method is substantially the same as the working hours method, with the exception that the service life is estimated in terms of the total units that will be pro-
duced by the capital asset.

Other variations are to estimate the service life in terms of specific services rendered or dollars of sales. Each instance is individual in its needs and circumstances and the best production method should be determined upon the basis of these factors.

Since the production methods have arisen out of the objection to the straight-line method on the grounds that varying levels of productivity are not considered, they are short-sighted in that they do allow for factors, such as structural deterioration and obsolescence, which are present despite production.

Another objection to the production method is the amount of clerical work that is necessary to carry it out. Paton acknowledges the possible usefulness of production methods as follows:

"Production methods have a limited, but important use as a means of securing reasonable spreading of annual charges, computed under the straight-line policy over monthly or quarterly reports." ¹

Stephen Gilman in his "Accounting Concepts of Profit" suggests a combination method whereby the percent-

age of total depreciation which will mark the effect of time upon service utility is determined and also that percentage which will occur as a result of the level of production.\textsuperscript{1} The annual depreciation charge under this combination method is composed of two elements - time and productivity. In the author's opinion this method is the most satisfactory one that has been forwarded, if not the most practical one.

Another authority would combine the interest method with the production method.\textsuperscript{2} Under this method the cost of the plant unit would be conceived as the present worth, at a suitable rate of interest, of a series of services fluctuating in accordance with an assumed pattern, and scheduling depreciation charges accordingly. In the author's opinion the theoretical advantages of such a plan would vanish when confronted with the complexity and unreliability of its assumptions in practice.

Decreasing-Charge Methods.

The theory of the decreasing-charge methods is

\footnotesize

\textsuperscript{1} Stephen Gilman, "Accounting Concepts of Profit" (New York, The Ronald Press 1939) p. 346

\textsuperscript{2} John B. Canning, "The Economics of Accountancy" (New York, The Ronald Press 1929) pp. 296-305
that the cost of a fixed asset is composed of two elements - repairs and depreciation, and that the sum of these two charges should be a fairly uniform amount year by year. Since maintenance charges increase as time goes on, the depreciation charges should decrease in order that the total charge be uniform.

Diminishing charge methods are also advocated on the grounds that the large charge in the early life of the asset corresponds with the large initial reduction in value from cost to second-hand market.

The most prominent decreasing-charge methods are:-

a. uniform rate on diminishing value.

b. the sum of the year's digits or life periods.

c. diminishing rates on cost.

Uniform rate on diminishing value

The formula for this method is as follows:

\[
\text{Rate} = 1 - \sqrt{\frac{\text{Scrap Value}}{\text{Cost}}} \frac{\text{Life}}{\sqrt{\text{Value}}} \]

The sum of the year's digits or life periods

e. g. Life Five years

Sum \( 1+2+3+4+5 = 15 \)
DEPRECIATION SCHEDULE

1st Year = $\frac{5}{15} \times \text{Cost Less Scrap Value.}

2nd Year = $\frac{4}{15} \times \text{Cost Less Scrap Value.}

3rd Year = $\frac{3}{15} \times \text{Cost Less Scrap Value.}

4th Year = $\frac{2}{15} \times \text{Cost Less Scrap Value.}

5th Year = $\frac{1}{15} \times \text{Cost Less Scrap Value.}

Diminishing rates on cost.

According to this method the rates are selected arbitrarily, so that the sum of the rates equals the total percentage of the cost assignable to depreciation.

e.g. Cost 10,000.00 100%
Scrap Value 100.00 1%
Life Five Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate</th>
<th>Depreciation Charge and Addition to Reserve</th>
<th>Total Reserve</th>
<th>Book Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>35%</td>
<td>3500.00</td>
<td>3500.00</td>
<td>6,500.00</td>
</tr>
<tr>
<td>2</td>
<td>25%</td>
<td>2500.00</td>
<td>6000.00</td>
<td>4,000.00</td>
</tr>
<tr>
<td>3</td>
<td>20%</td>
<td>2000.00</td>
<td>8000.00</td>
<td>2,000.00</td>
</tr>
<tr>
<td>4</td>
<td>10%</td>
<td>1000.00</td>
<td>9000.00</td>
<td>1,000.00</td>
</tr>
<tr>
<td>5</td>
<td>9%</td>
<td>900.00</td>
<td>9900.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

TOTAL 99% 9900.00
The decreasing-charge methods assume that repairs will increase in the same proportion as the depreciation charges decrease. There is absolutely no guarantee that this situation will occur unless the cost plus maintenance basis is used or a separate reserve for maintenance costs is established.

The viewpoint that the decreasing charge methods produce a valuation consistent with second-hand market values is, according to H. A. Finney, contrary to the basic accounting tenet, that market values need not be given consideration in accounting for fixed assets. The author would disagree with Finney at this point and rephrase the accounting principle to read:

The first consideration of accounting for fixed assets is to ascertain the amount of expired service utility. Any valuation effect is incidental. However, if a method can be advanced which allows charges to operations consistent with expired service utility, and at the same time serves to produce a valuation more closely resembling market value, it deserves careful consideration before rejection.

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Professor Finney's statement would seem to preclude the possibility of a method which would satisfy both requirements. He is correct, however, in stating that market value should not govern or determine the amount of expired service utility.

**Miscellaneous Methods.**

**Depreciation based on income.**

This method determines the depreciation charge annually and arbitrarily by determining what the net profit before depreciation is and what management would like the net profit after depreciation to be.¹

The obvious objections are:

1. It does not recognize depreciation as an actual expense.

2. It adheres to the misconception that depreciation is a provision for replacement, which can only be made out of available profits.

3. It serves as a tool of management for the deceptive stabilization of income.

On the other hand, it is related to the production method in that gross revenue may be a fair indication of operating activity and, consequently, of utilization of fixed assets. The method of computing the de-

preciation charge on sales was classified earlier as a production method.

The retirement method.

This method recognizes depreciation only at the time of replacement. No reserve account is used. Two variations are followed:

1. The cost less salvage of the asset being retired is charged to operations.

2. The cost of the replacement is charged to operations.

The first variation is preferable, in that it carries property account balances reflecting the cost of those assets in use, or the adjusted historical cost, not merely the original historical cost. Briefly, the theory behind the retirement method is the conception that the plant is one fixed asset, hence all replacements are maintenance.

The basic objection to this manner of computing depreciation is that operations are not charged until retirement and that balance sheet values are presented without recognizing accrued depreciation.¹ Also, the charges

to operations are governed by replacement needs and policy, rather than by virtue of services rendered. The proponents of the retirement policy maintain that, in a going concern, there is no accrued depreciation and that, where groups of small unit value are concerned, the distinction between maintenance and replacement is often indistinguishable. This position has been discussed in Chapter I of this work.

The appraisal method.

This method consists of estimating the value of the asset at the end of each period and writing off as depreciation the difference between the balance of the asset account at the beginning and at the end.

The objections to this method are:

1. The element of realizable values is introduced, whereas going concern values should be considered, primarily.

2. This method brings about a depreciation charge which is a composite of cost exhaustion and market fluctuation, obscuring the unrealized appreciation by netting it with the depreciation charge.

3. Neither physical condition nor operating effectiveness affords a satisfactory basis for depreciation computation.

The inventory method.

Some fixed assets due to their nature do not admit of estimated life conjecture, e.g., containers for a bottled beverage company, glassware, linen, and silver for a hotel. Accordingly, the accepted method is to charge all
replacements to the fixed asset account and to take a physical inventory and appraisal to determine the depreciation for the year.

This is more acceptable than the base-stock method, whereby the fixed asset account is maintained at the cost of a normal quantity needed for operations and all replacements are charged to expense.
CHAPTER VI

THE RATE OF DEPRECIATION

The estimated life of a fixed asset is the period during which the cost, or other basis, should be charged to operations, for at the end of that period the economic and/or the physical utility of the asset will have been exhausted. Service life is estimated in units of time or of productivity. The depreciation rate for a specific operating period is determined by finding the ratio of the expired units or periods of time to the total number of units or periods of time contained in the entire service life.

The Importance of the Rate of Depreciation.

The relative importance of the rate of depreciation, as opposed to the basis, the unit, and the method of depreciation, is grossly understated. The depreciation rate determines the size of the operating charge for each accounting period, and errors in calculating service lives may seriously distort operating results, no matter what method or basis is used. Speaking from experience, however, it is not from ignorance of its relative importance that the depreciation rate has received less attention than the others. It is because the author, as well as most other accountants, does not feel qualified to do other than generalize upon the subject. The general feeling is that it is not within the
province of accounting to determine estimated service lives for various capital assets. To a large extent this is true; the estimation of fixed asset longevity is a specialized field. The accountants' position is similar in the case of insurance. From time to time accountants are required to pass upon the adequacy of insurance coverage. This is also a specialized field. Nevertheless, the accountant, by basing his decisions regarding depreciation and insurance upon the findings of specialists, cannot escape the burden of responsibility which he accepts by making the decision. Concerning any decision of this nature consideration should be given to the thoughts and opinions of all interested parties and the responsibility for the ultimate decision should be shared.

Decisions of such importance should combine the knowledge of the accountant, the engineer, the statistician, and management. This cooperation is demanded because of the far-reaching effect that such a decision can have, because the knowledge of all interested parties is required in order to arrive at the fairest and most accurate estimate, and, lastly, because of the reluctance of any one of the parties to accept full responsibility for the decision.

As a practical matter, engineers limit their responsibility to the physical characteristics of structure and design. The construction of mortality tables is the
responsibility of a statistician. The problem of providing for functional depreciation still remains to be solved, and, to this end, the advice of a competent marketing expert or advertising executive might well be utilized. An engineer can forecast, to a degree, the probability of technical innovation, but he has not the experience nor the qualifications necessary to predict changes in the scope and nature of the market for the product, which is also a phase of functional depreciation.

The following is a summary of the duties and responsibilities of the different professions in determining the service lives of capital assets:

<table>
<thead>
<tr>
<th>Profession</th>
<th>Duty and Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineer</td>
<td>a. Physical deterioration of structure and design.</td>
</tr>
<tr>
<td></td>
<td>b. Proximity of technical innovation.</td>
</tr>
<tr>
<td>Statistician</td>
<td>- - - Mortality tables of similar assets operating under similar conditions.</td>
</tr>
<tr>
<td>Marketing Expert</td>
<td>- - - Functional depreciation due to fluctuations in nature and size of demand.</td>
</tr>
<tr>
<td>Management</td>
<td>- - - Disclosure of projected activity and maintenance policy.</td>
</tr>
<tr>
<td>Accountant</td>
<td>- - - Consolidation and application of the findings of the others in accordance with accepted depreciation accounting principles.</td>
</tr>
</tbody>
</table>
Methods of forecasting Service Life

Two methods are utilized, chiefly, in estimating the service life of capital assets:

1. The inspection method.
2. The actuarial method.

The inspection method is applied to newly contrived capital assets or to existing assets devoted to new usages. It requires an exhaustive knowledge of engineering and, unless extreme care is observed, the results can become negatived by reason of the uncertainty surrounding them.

The actuarial method is the scientific analysis of statistical data relating to the service lives of groups of capital assets. Serious errors can result in mis-application of otherwise suitable data. Tables of service lives of assets which were compiled years previous may be rendered useless by changes in the manner of constructing similar assets at the present time. Also, in cases where tables point out that among a group of assets there is apt to be

2 Public Service Commission of Wisconsin, "Depreciation" (New York, State Law Reporting Co., 1933) pp. 165-185
considerable deviation from the average, such tables are of little use when applied to a few isolated assets.

The Impossibility of Universal Rate Conformity.

There are a number of factors, due to the pressure of which, it is impossible to prescribe universally acceptable rates of service exhaustion. Foremost are climatic conditions, maintenance policy, length and intensity of operation. It is for this reason that the Treasury Department in its Bulletin F, as amended by TD 4422, January 1934, cautions the taxpayer that the tables of rates presented therein are merely a starting point. Through its comprehensive five year study of depreciation rates the Treasury Department compiled these tables which list depreciable assets classified by their industrial usage, if such usage is individual, and according to their function where their usage is adaptable to various industries. The service life estimates in these tables are considered to be the normal life of new capital assets. No consideration is given to any residual value, although the reduction of the basis by residual value is recommended. It is also interesting to note that the service life estimates are converted into annual depreciation rate percentages according to the straight-line method.

The depreciation rate for a specific capital asset, or group of capital assets, is peculiar to its in-
individual installation. Accordingly it is the privilege and duty of business enterprises to establish rates which are neither inadequate nor excessive. Ideally there should be no variance between rates established fairly by an enterprise and those regarded as adequate by the Treasury Department. However, individual personalities, desires, policies, opinions, etc. often color a situation to such an extent that there is definite disagreement between the two. Regardless of managerial policy it is mandatory to acquiesce to the wishes of the Treasury Department with respect to income tax computation. It may be advisable, however, to continue to follow the rejected policy in so far as the statements prepared for stockholders and creditors are concerned, if there be no deviation from accepted accounting principles.

The distinction between maintenance and replacement is often the cause for differences in the opinions of management and of the Treasury Department. In the matter of correcting past misjudgments the Government alone enjoys the benefit of retroactive adjustment, whereas depreciation accounting conventions require the correction of the profit or loss of the year or years involved.
Provision for Obsolescence and Inadequacy.

As was pointed out in the discussion of factors contributing to depreciation, normal obsolescence and inadequacy must be considered as well as physical deterioration. Therefore, in establishing depreciation rates, or more correctly speaking, estimate service lives, it is necessary to adjust the physical longevity for ascertainable or foreseeable economic loss of service utility. In this manner provision is made by means of the depreciation rate for these factors.

In the treatment of depreciation factors the problem of abnormal obsolescence and inadequacy was discussed. It is impossible to estimate other than normal economic depreciation. For this reason accounting principles require that one of the following procedures be employed when abnormal obsolescence occurs:

1. The write-down of the asset or assets involved.
2. Revision of the remaining estimated service life.
3. The deferral of the loss until disposal.

As a matter of preference, the second procedure is recommended by the author because it serves to charge the remaining unrecovered cost to operations. Some accountants object to this suggestion on the grounds that abnormal obsolescence is an extraordinary expense, and
should be charged directly to surplus in the year of its occurrence. However, the fundamental tenet of depreciation accounting is that the entire cost of the fixed asset be charged to operations. Often what appears to be abnormal obsolescence is merely bad guesswork as to service life being brought to light. Revision of past and future depreciation rates, or merely that of future rates, is a matter to be decided by the individual circumstances.

Uniform Rates Within Industries.

One of the steps forward in accounting progress is the advent of uniform systems of accounts as established by boards representing the various members of particular industries. This solidification of accounting practice and classification has resulted in the clarification of comparative operating results and has provided creditors and investors with the means of judging and understanding relative financial standing in a particular and specialized industry.

At all times these industrial boards have striven to secure uniformity, but not by means of regimentation. Accounting in a democracy must be democratic, and while terms and classifications can and should be systematized, individual situations still demand individual treatment and flexible accounting principles.

The author believes, however, that within industries, especially those in similar locations, there can
be established basic depreciation rates which should not vary appreciably. In published statements full disclosure of depreciation rates and policy should be required, and any variance from the basic rates of the industry should be explained in detail. Uniformity of industrial depreciation rates and the disclosure of depreciation policy in published statements are not new thoughts, but there still exists a damaging minority which resists the adoption of such frankness in its dealings with the public.
CHAPTER VII

SPECIFIC DEPRECIATION PROBLEMS

Appreciation:

One of the most troublesome problems an accountant faces is that of coping with appreciation. The American Institute of Accountants recognized the importance of a statement of the recommended procedures to be followed in dealing with recorded appreciation and issued a Bulletin in April 1940 relative to this particular situation.

The committee made only one definite recommendation and that was "when such appreciation has been entered in the books, income should be charged with depreciation computed on the new and higher values."¹ No definite conclusions were made as to the nature of the surplus resulting from appraisal, nor as to the mechanics of how the appraisal should be realized. These questions are not properly within the scope of this work, but the author does wish to state the committee's recommendation seems to be the most desirable method of solving the problem. It serves the purpose of placing the income statement on a comparative basis and allows the appraisal to prove its existence by earning its recorded value over the remaining service utility of the

¹ Accounting Research Bulletin No. 5. Committee on Accounting Procedure, "Depreciation in Appreciation" (American Institute of Accountants, New York, April 1940)
fixed asset.

Appreciation requires the following considerations accounting-wise:

1. Is the appreciation a reality or merely the result of over-excessive depreciation?

2. Should true appreciation be actually recorded on the books of account?

3. Should depreciation be charged on recorded appreciation?

A careful, diligent, and independent appraisal should reveal whether depreciation rates have been excessive in the past. If such is the case there are two alternatives.

1. To recalculate past depreciation.

2. To revise future rates and write off the remaining service utility over the extended service life.

The second alternative alone has the approval of the Treasury Department for tax purposes, but, in keeping with the principle of matching costs and revenues, accountants favor the first alternative.

Paton says in reference to the second method:

"Such an adjustment, however, is seriously objectionable from the standpoint of year to year cost and income accounting because of the inequitable distribution of charges."\(^{1}\)

In the author's opinion appreciation should only be actually recorded when there is a wide differentiality between historical book value and replacement book value, and then in such a manner so as to "insure preservation of the data of original cost." 1 In recording the appreciation it seems preferable to use the gross appreciation rather than the net appreciation, so that an accurate and detailed analysis may be made of the appraiser's findings and the uniform rates may be applied to both the appraisal and the cost basis.

The authority of Accounting Research Bulletin Number 5 holds that depreciation should be charged on recorded appreciation. There are legal points at issue, for this procedure is tantamount to the capitalization of expected earnings and may result in discrimination against common stockholders. However, Paton suggests a method whereby the income charge resolves itself into a mere restriction of earned surplus for the contingency of replacement at a higher price level. 2 Such a method allows the

2 ibid pp. 343-4
determination of unrealized appraisal absorption, the comparison of operating results with similar enterprises, and leaves the issue of the distribution or capitalization of the capital gain to the future discretion of the stockholders, as in the case of a quasi-reorganization.

Devaluation:

In general, the same accounting principles apply to devaluation as do to the recognition of appreciation. The basic accounting tenet is to provide for all possible losses and to refrain from anticipating any and all unrealized gains. This would seem to be contrary to the general recommendation that no recognition be given to a decline in fixed asset values, unless evidence of the loss be conclusive. The depreciation charge is deemed to provide only for normal obsolescence or other economic factors. A decline in the value of the service rendered due to abnormal causes cannot be provided for by means of the ordinary depreciation charge; the recognition of a decline in the stated value of a fixed asset is not within the scope of depreciation accounting. The point of issue is whether loss in value should be recognized, and, if so, in what manner?

An extraordinary loss in value should not be the cause of the revision of past operating profits or losses. At the same time it should not be the basis for charging future revenue with a cost in no way connected with the pro-
duction of income. Furthermore, it should not distort the operating income statement for a specific year, i. e. the year of occurrence.

The ordinary method of treating devaluation is to appropriate a part of invested capital as a capital surplus invested in fixed assets. This amounts to the reduction of the stated value of capital stock and is legally permissible, usually, only with the consent of the stockholders. As the decline in value is earned, the capital surplus is transferred to surplus available for dividends. The profit figure is reduced by the total depreciation charged on cost, but that part which is not considered necessary to maintain the purchasing power of original invested capital is made available for distribution to the stockholders.

The theory underlying this procedure is that an extraordinary loss is a capital loss, and not a loss from operations. However, if the reduction in the carrying value of fixed assets is due to a drop in the cost of replacement, and if the operating income is sufficient to absorb the increased cost, then the reported profit is partly income and partly return of invested capital, which is no longer needed to run the business. The general case is, however, that,

when replacement costs decrease, income decreases correspondingly and is not sufficient to absorb the decline in asset value through depreciation charges based upon original cost.

As in the case of appreciation, the depreciation charge in a devaluation situation is based on the replacement cost. The difference is that the portion of the charge assignable to operating income is the amortization of the replacement cost, and that portion assignable to net income is the absorption of the decline in the carrying value of the fixed assets.

Paton contends that the policy of the immediate absorption of the net decline in asset value by reducing capital is justifiable only on the grounds of simplicity. ¹ He states that "by suppressing a section of cost against capital" a portion of capital is transferred to future income, with the effect that a deferred cost of operations is not passed through either income or surplus. In the author's opinion the distinction between a loss from operations and a capital loss would sometimes justify such a procedure. The point is that a loss from operations is not necessarily a capital loss, while a reduction in the carrying value of invested capital is generally a capital loss.

Paton does admit the propriety of writing-off abandoned property immediately, but the implication is that earned surplus should be charged with the loss. The question arises: Is a capital loss offset by previous earnings which have not yet been distributed? Legally, the answer is in the affirmative. If there are undistributed earnings they must be, in effect, appropriated to replace the lost capital, in order that the stated capital may be maintained. In an instance where there is a deficit from operations, however, the addition of a capital loss to the depletion of capital, as represented by the deficit, does not distort the true nature of the loss. The author would prefer to see the write-down charge made to a capital deficiency account and a portion of earned surplus actually transferred to offset the capital deficiency. In this manner the distinction between operating losses and capital losses would be better preserved.

The generally accepted accounting principles which apply in the case of devaluation are as follows:

1. Depreciation charges to operations should be based on the revised carrying value.

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2. There must be conclusive evidence as to the propriety of any write-down. Inadequacy of past depreciation rates should not be confused with an extraordinary loss due to economic factors.

3. A procedure which permits the gradual absorption of a decline in value will eventually prove the validity of a write-down. If the write-down can be absorbed and the same rate of net profit that prevailed previously maintained in addition, then there is strong evidence that the write-down was improper.

Accelerated Depreciation

The problem of treating accelerated depreciation is primarily that of establishing flexible rates and of revising future rates in the light of the experience garnered from operating in the past at varying levels of production and under sundry conditions. Accelerated depreciation may be premised by reason of the following operating conditions:  

1. Excessive overtime.
2. Additional shifts.
3. Overloads.
4. Use by inexperienced operators.

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The production method of the allocation of the expiring service utility of plant assets takes into consideration the effect that various levels of production have upon depreciation, in so far as that effect varies directly with production. However, the production method does not consider the fact that other physical factors do not vary directly with the increase or decrease in production, e. g., the passage of time, the action of the elements. As compensation for this oversight a combination of the straight-line and the production methods was advanced. This combination method has been discussed in Chapter V of this work. The author's opinion as to the desirability of distinguishing between the loss of invested capital and the loss of as yet undistributed earnings has been expressed in the previous section of this Chapter, which dealt with devaluation.

Recently, during the Second World War, there was occasion and opportunity for business enterprises to be informed of the presence of abnormal economic depreciation factors prior to the acquisition of plant assets. Some industries, in tooling for war production, acquired machinery which they could use after the end of the war, but which would be out-dated and out-moded as soon as normal peace-time production regained pace with technological developments. In both these instances it was proper to
allocate the cost of those plant assets to the war-time operating periods.

There were many instances, however, of machinery and equipment which was acquired primarily for war production, but which was normally adapted, or could easily be adapted, to post-war production. The taxpayer was permitted by Treasury regulation\(^1\) to amortize those plant assets certified by authority as necessary to the war effort over the period of the National Emergency. This feature of income tax legislation prompted many companies to depreciate even plant assets adaptable to post-war use at the allowable accelerated rates, both on their own records as well as for tax purposes.

Accelerated economic depreciation is definitely a matter of the revision of the estimated service life of plant assets. With accelerated physical depreciation it may be merely a question of establishing an equitable manner of distributing expired service utility to operating periods within an accounting period. No revision of the service life may be required. However, the presence of the economic factors of obsolescence and inadequacy pre-

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\(^1\) Second Revenue Act of 1940 54 Stat. 1001; Internal Revenue Code, Sec.124(e)(1)
clude the possibility that the length of the service life may not be affected.

Accelerated depreciation due to economic factors may be the result of normal or abnormal obsolescence or inadequacy. The accounting treatment differs in each instance. Accelerated depreciation premised on normal obsolescence is, in effect, the correction of previous estimates of service longevity. In this instance it is proper to adjust and correct previous operating results. This opinion is not shared by the Committee on Revision of the Statement of Principles of the American Accounting Association. The Committee distinguishes between errors in judgment and errors of a mechanical and non-judgment nature, and it preaches the doctrine of "finality" with respect to errors in judgment which were based on the best information available at the time the decision was made.


Accelerated depreciation due to abnormal economic factors is, in reality, the alternative method to that of writing-down plant assets, when unforeseeable technological or economic developments reduce the service life of plant assets to a fraction of the original estimates.

In the author's opinion it was by no means proper to have altered recorded depreciation accounting policy merely because a tax concession had been granted. The same principle applies to the adoption of IT 3818, which was issued late in 1946 by the Treasury Department as an inducement to private industry to take the initiative and help solve the housing problem. The same opinion was voiced by the Committee on Accounting Procedure of the American Institute of Accountants, which stated:

"From an accounting standpoint there was nothing inherent in the nature of emergency facilities which required the depreciation or amortization of their cost over a shorter period than would have been proper had no certificate of necessity been issued." ¹

The generally accepted depreciation accounting principles with respect to the problem of accelerated depreciation may be summarized as follows:

1. The shortening of service life due to abnormal physical factors should be reflected in revised rates for the future together with an adequate method for matching costs and revenues.

2. The decrease in useful life due to normal economic factors and abnormal economic factors, both foreseeable and unforeseeable, should be reflected in revised rates for the future.

The author takes exception to the second principle in that he believes that the correction of mistakes in judgment regarding the effect of normal obsolescence should adjust the cumulative earnings figure in addition to revising the future rates. Accounting principles should embody the quality of "finality", but such finality should not preclude the recognition of the fact that past mistakes affect past earnings. To state unequivocally that "two wrongs make a right" is an unreasonable conclusion, even if the measure is adopted for the sake of definiteness. A mistake is a mistake, whether made in the best of faith or not. Accounting can achieve definiteness by correcting errors, one and all, whenever they come to light, and by analysis as to the cause take precaution against their reoccurrence.

Also, in the author's opinion, the effect of unforeseeable abnormal economic factors should be to reduce the invested capital. If legal and financial requirements demand the maintenance of original invested capital, then
that amount of undistributed earnings should be "re-invested".

Depreciation in the Public Utility Field

In the public utility field there is very often the tendency to claim that the generally accepted accounting principles which apply to industry are not plausible when applied to utilities, and exceptions must be granted because of special considerations. This is manifestly evident in the case of the advocation of the retirement policy in preference to the accrual policy.

The contentions, upon which the propriety of the use of the retirement policy is advanced, are as follows:

1. Utility property is a single and perpetual entity.

2. The replacement of worn-out components by improved substitutes maintains the original serviceability, provided maintenance is adequate.

3. The maintenance of serviceability precludes the presence of depreciation.

4. Ordinary depreciation reserves are excessive, unnecessary and misleading.

5. Periodic charges based on actual transactions are preferable to those based on estimates and conjectures.

Another basic assumption in public utility accounting is that the original investment remains undisturbed. "Original cost" means the cost of the original plant assets; any fluctuations in the cost of replacements
in kind is to be borne by charges against current revenue. This concept is similar to that of the base stock theory of inventory valuation. It is correspondingly like the Lifo theory of matching the cost of present materials against the income from future sales. While the Lifo method can be used with impunity in accounting for inventories, which are relatively short-term deferred costs, it is not satisfactory when it applies the current cost of an asset, which has not yet contributed anything to production, against income produced by the asset which it replaced. It also produces an arbitrary balance sheet valuation of fixed assets.

Another variation of the retirement policy is to charge operations with the cost of the asset being retired and to charge the property account with the cost of the replacement. Of the two methods the second one is more reasonable. However, the basic objection that the cost of the fixed asset has not been systematically amortized is still not overcome. Even the addition of a reserve for retirements, similar to a provision for doubtful accounts, does not minimize the departure from accepted depreciation accounting principles. Paton's views on the subject are
summarized in the following quotation:\textsuperscript{1}

"The fact that even under ideal conditions the retirement policy fails to provide for the absorption of any part of plant cost prior to date of the first replacement emphasizes the inherent weakness of the scheme. The effect is clearly an overstatement of net income in the early years."

The accrual policy has been gaining gradual acceptance in the public utility field over the years. This process was discussed in Chapter I of this work. This recognition and acceptance has been due to the realization of the basic fallacies and short-sightedness of the retirement policy. The workings of the obsolescence factor did more to convince public utilities of the advantages of the accrual policy than all the admonitions and the persuasive logic of public accountants.

Learning by experience, as in the case of street railways,\textsuperscript{2} is the hardest, but yet the most graphic way of stressing the superiority of one method over the other.

The basic deviations from sound depreciation accounting which are inherent in the retirement policy are as follows:

\begin{itemize}
\end{itemize}
1. The effect of the physical and economic factors of depreciation is not recognized until retirement.

2. As a consequence of this failure to recognize the gradual loss of service utility, despite adequate maintenance, there is no systematic amortization of the service utility over the useful life.

3. An honest attempt to match costs and revenues by systematic amortization although based on estimates, is preferable to no attempt at all.

Another exception to accepted depreciation accounting principles is the proclivity of public utilities to capitalize unusual retirement losses so that they may be included in the rate and recovered by future charges to income.¹ This practice is defended on the grounds that, since the rates are fixed by regulatory commissions, the utilities cannot avail themselves of speculative profits and should be protected against extraordinary non-operating losses.

In the author's opinion the request for inclusion of compensation for extraordinary losses in the rate-base is equitable. From an accounting standpoint it is highly

illogical, however, and stems from the fear on the part of utilities that, unless it is capitalized, it will be disallowed in determining the rate-base. A similar fear was responsible in part for the belated adoption of the depreciation reserve.

The amount of the retirement loss does not represent unexpired service utility and therefore should not be added to the cost of the replacements. The loss is a capital loss and mere deferment will not minimize the amount nor destroy its reality; neither will capitalization guarantee the recoupment through future revenues of all or any part of the loss.

**Depreciation in Wasting Asset Industries**

Accounting for depreciation in wasting asset industries is peculiar in one important respect. The useful life of structures and equipment is determined in the normal manner, but their service life is further limited by the length of time that will be necessary to fully deplete the asset.\(^1\) The service life of these fixed assets cannot exceed the life of the wasting asset.

Since the life of the wasting asset is readily de-

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\(^1\) William D. Cranstoun, "Contemporary Accounting" (New York, American Institute of Accountants, 1945) ch 7 pp. 14-15
terminated in terms of units of depletion, it is only natural that the most adaptable method of determining depreciation is the production method.

The formula for computing the depreciation charge for the year is as follows:\(^1\)

\[
\text{Annual depreciation} = (\text{cost-scrap}) \times \frac{\text{Units extracted during year}}{\text{Total estimated units}}
\]

The general practice is to assume that, upon the complete exhaustion of a wasting asset, the value of any depreciable equipment will be merely that of scrap. This practice chooses to ignore the possibility of further use at some other location. In the author's opinion this procedure is proper only if the depreciable asset had been purchased specifically for use at one particular site or if the practicability of its relocation at another site were minimized by prohibitive removal costs or very limited further usage.

Other Depreciation Problems

Depreciation on donated fixed assets

With respect to the depreciation of donated fixed assets there are several questions which must be answered, assuming that the fair value of the asset is to be recorded.

1. Should depreciation on donated fixed assets be charged to revenue?

Some writers contend, in conformity with Accounting Research Bulletin Number 5, that depreciation should be charged to revenue on all appreciated values, since the recording of an appraisal value is equivalent to the capitalization of that value. It is also claimed that depreciation is a phenomenon of donated fixed assets as well as of purchased fixed assets, and that comparability and cost accounting require it.

However, Daniel Borth contends that:

"The value of the donation is a rough capitalization of the comparative disadvantages that the donee incurs through acceptance of the terms and conditions of the donation. Presumably the subsidy offsets, in whole or in part, some other operating expenses which are higher because the concern operates under the less favorable conditions."\(^1\)

The implication is that charging depreciation to revenue might well lead to a double charge to earnings, one in the form of higher expenses, the other as depreciation. Borth argues that a double charge to earnings automatically destroys all comparison, and, also that depreciation need

\(^1\) Daniel Borth, "Donated Fixed Assets" (The Accounting Review Volume XXIII, April 1948 Number 2), p. 175
not be charged to revenue merely because it is common to both purchased and donated assets. He states further that cost accountants may impute the depreciation cost just as easily.

In the author's opinion the intent of management should be the determining factor. If the intent was to capitalize the value of the donated asset, then the depreciation charge to revenue is proper. If the intent was merely to value the asset for balance sheet purposes, without meaning to retain whatever benefit derived, then two rules apply.

1. The appraisal value should not be recorded; all costs pertaining to the donated asset prior to the time of production should be capitalized and depreciated over the useful life of the asset.

2. A footnote to the balance-sheet should disclose the fair-value of the donated asset at the time of its contribution less what would have been the accumulated depreciation had the fair-value been recorded.

The second question is: should depreciation be provided on donated fixed assets before the date on which unconditional title is obtained?

H. A. Finney feels that operations during the period prior to acquisition of title to contingent donations should be charged with depreciation.
He states:

"If no depreciation is provided during this period, high depreciation charges will be necessary during the period of use following the acquisition of title. These high charges will introduce an element of variation in costs during two periods of similar operations and will load the total depreciation on the period of ownership rather than upon the entire period of use." ¹

Finney bases his assumption on the premise that even a contingently donated fixed asset should be recorded at its appraised value. The implication is that ownership is not an absolute prerequisite to the recording of a tangible fixed asset. Corporations, which rent or lease their facilities, charge their operating revenue with rentals, which correspond to what the annual depreciation charge would be if they owned the property. The absurdity of a situation wherein operations would not be called upon to bear either rental or depreciation charges, serves to point out the desirability of recording appraisal values on contingently donated fixed assets. It follows that, once the asset value is recorded, there must be a depreciation charge to operations.

The author agrees with Finney for the reason that comparability between the operating periods prior to the final passing of title and those operating periods subsequent to the passing of title demands the recording of contingently donated asset values. Also for the sake of comparability with other firms which either own or rent their productive facilities such a procedure is desirable. Comparison requires not only the recording of contingently donated assets; but it also requires that they be recorded at their appraisal value.

**Depreciation during construction**

The general construction theory is that, while individual components of a plant may suffer depreciation prior to the start of production, the plant as a whole has not been impaired. A clearer statement of the process would be to conceive of the depreciation of assets used to complete the construction and installation of other plant components as an additional cost of the construction and installation, or an additional item of overhead. It is, in effect, a redistribution of the original cost of the plant assets; the total remains the same and must be charged to operations in the normal manner commencing with production. If, however, the classification of asset cost is unimportant or the plant will be depreciated as a unit, nothing is accomplished by the calculation of the redistributed cost.
by means of depreciation charges during the construction period.

The treatment of overhead charges during the interim period between the completion of plant and the commencement of operations should be handled in the following manner:

1. If operations are being conducted elsewhere and the interim period is of short duration, then the interim expenses should be charged against those operations.

2. If operations are not being conducted elsewhere and the interim period is of short duration, then the overhead expenses are capitalizable, preferably as deferred charges.

3. If the interim period is of long duration, then the overhead expenses are properly treated as current losses, regardless of the presence of any income from other operations.

4. Interest on securities issued by an industrial company to obtain funds for construction is a money cost, not a construction cost and, theoretically, cannot be justifiably capitalized. The accepted practice, borrowed from the utility field, is, however, to capitalize such charges. 3


3 ibid p. 300
The treatment of fully-depreciated fixed assets

Fixed assets can become fully-depreciated in two distinct senses - one in the economic sense of having exhausted their service life, the other in the accounting sense of their cost having been completely allocated to operations. When complete depreciation in both senses does not coincide, then adjustments and corrections are necessary.

With the retirement of assets which are no longer useful the problem is relatively simple. Any small remaining book value is properly chargeable to operations in the year of retirement. It is presupposed that periodic tests of the accuracy of the estimated life will minimize the possibility that an asset might reach the normal end of its service utility without a large portion of its cost having been charged to operations.

In the case of large retirement losses on tangible fixed assets due to extraordinary physical or economic phenomena the treatment is different. Although in public utility accounting the capitalization of such losses is allowable for the expedient of equitable rate-fixing, that treatment, according to Paton is not permissible in industrial accounting. He states:

"It is unfortunate if expiring capital values have not been accrued through the period of use, but the matter is not remedied by overstating expenses
and understating the profits of subsequent periods.\(^1\)

He recommends the division of the retirement loss into that portion properly assignable to current operation and that portion applying to the underestimation of prior expense, or to the direct result of the extraordinary occurrence.

The author concurs with this recommendation for the reason that extraordinary losses have no bearing whatsoever on productive income, received or expected to be received.

The next question is - what treatment should be accorded fixed assets whose cost has been completely allocated to operations, but whose useful life has not yet been terminated? The normal answer to this question is that constant surveillance of the accuracy with which the cost of fixed assets is being allocated and revision of rates accordingly should ordinarily solve or minimize the problem.

If, however, in spite of ordinary caution such a situation occurs, then there are two alternate accounting procedures.

\(^1\) W. A. Paton, "Advanced Accounting" (New York, The MacMillan Company, 1941) p. 243
1. To accept the finality of the judgment regarding depreciation policy.

2. To adjust the depreciation reserve so that the book value will represent the cost properly assignable to future operations.

The first procedure received the unqualified approval of the Executive Committee of the American Association of Accountants which stated:

"The Committee believes that when an assignment of all or a portion of the accounting cost of an asset to expense has been made in good faith after considered judgment and after competent review, and the results met the test of the accepted accounting concepts and standards of the time, such assignment is not subject to reversal in latter periods."

The second procedure received the implied approval of the Committee on Accounting Procedure of the American Institute of Accountants in Accounting Research Bulletin No. 27, entitled "Emergency Facilities", which was issued in November 1946. W. A. Paton, who, as a member of this committee, assented to the bulletin and its implications states his position as follows:


"Depreciation computations should be modified wherever circumstances make it clear that this is advisable, and retroactive adjustment of the amount accrued is desirable. If plant assets are actually functioning the fact that their cost has been fully absorbed in earlier periods does not warrant understatement of the current depreciation charge; neither is it sound accounting to report no net value for such property in the balance sheet."

The reluctance of some accountants to accept retroactive adjustment is premised upon the possibility therein for abuse and the fact that it is thereby possible to have charged more depreciation than the cost of the asset. The doctrine of finality with respect to errors in judgment cannot be defended except for the sake of convenience. In the author's opinion it cannot be defended logically. The objection that more depreciation will be charged than the recorded cost is a petty technical issue. Mechanically, it is true, substantially, it is not. In the interest of securing the most accurate statements of operations possible the opportunity to recognize past mistakes, whether of a judgment or a mechanical type, should be accorded those honest enough to acknowledge them; they in turn should treat this concession as a privilege and refrain from wilful abuse.
CHAPTER VIII

DEPRECIATION and HIGH PRICES

The Reasons Underlying Current Interest in Depreciation and Depreciation Charges.

The periodic surge of interest in depreciation and depreciation charges follows the economic pattern of depression and inflation. During a depression period management decries the burden of depreciation charges which are a carry-over from the previous inflationary period. In order to show a margin of profit, no matter how small, management urges and secures the write-down of its unamortized fixed overhead. It justifies this procedure on the grounds of conservatism.

During an inflationary period management again expresses its dissatisfaction with conventional depreciation accounting. It claims at this point that the depreciation charges based upon cost do not retain that portion of income which will be needed to replace those assets purchased during the previous depression period.

The current thought on depreciation is not a new trend in accounting, economic, or financial circles. It is cyclical expression of management's contention that depreciation charges should be based upon the amount of income avail-
able. To the voice of management the economist has added his perennial contention that value should be the uppermost consideration, rather than cost. The statistician has also joined forces with the other two; he has supplied reams of data as to the price indices and the relative increase over previous base periods. To round out the group the fourth proponent has been the supreme judicial body of the United States which has endorsed replacement cost as an equitable basis time and again. The current interest is distinguished only by virtue of the fever pitch of attention which it has attracted. The publicity which it has achieved is no small tribute to the tireless energy of the replacement cost advocates. This time the proponents of replacement cost can at least claim an overwhelming moral victory. They have secured the acknowledgement from the Committee on Accounting Procedure of the American Institute that such a basis might be acceptable at some future date; they have also dislodged one of the original cost basis' staunchest supporters, W. A. Paton.

Aside from the purely academic issues involved there have been several factors at work during this particular economic cycle which have given the proponents of replacement cost their added initiative. One of these factors has been the growth of the unions throughout practically every industry in the country. The bargaining power of organized
unions has proven a match for management more and more frequently. Ordinary post-war inflation has been heightened by the demands of unions for higher wages. The increase in demand over supply due to material shortages has caused price advances. The added labor cost of converting scarce materials into finished products has caused greater price advances. The demands of unions for higher wages have been based partly upon the ability of management to pay. The ability of management to meet wage increase demands depends upon the amount of profit reported. A classification of a part of net profit as a return of invested purchasing power is one way of stalemating demands for further wage increases. Otis Bubaker, the Director of Research of the United Steel workers of America contends that replacement reserves are merely a ruse of management to avert granting further concessions to Labor.\(^1\) He also contends that this ruse seeks to justify the low rates of dividends to earnings.

Another factor which has contributed to the zeal of the replacement cost basis advocates has been the threat

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\(^1\) Otis Bubaker "Steelworkers Favor Depreciation on Cost". The Journal of Accountancy Volume 84, Number 6, December 1947) p. 458
of increased rates of taxation and the return of price ceilings. Recently a Congressional Sub-Committee held hearings on the question of whether or not, business profits were excessive. W. A. Paton testified to the effect that, in view of the rise in replacement costs, present profits were necessary to the continued existence of free enterprise. This was a direct application of the replacement cost theory as a defense against the re-institution of the excess profits tax or the upward revision of present corporation tax rates.

In the case of price ceilings, management argues that unless it can fix its selling prices in a free and competitive economy it cannot possibly hope to earn enough to meet the financial requirements of replacement at today's high level.

Another factor underlying current interest in replacement cost is the insistence on the part of insurance companies that assets be insured to value in order to obtain the maximum coverage. By means of the co-insurance clause, insurance companies have assured themselves of the maximum premium for the minimum risk, and, by doing so, have made the industrial business world conscious of replacement costs and values. Since management requires the service of appraisers in order to maintain adequate insurance protection, it has the means of supporting its replacement cost contentions.
The Case for Inflationary Depreciation.

The basic standard of measurement in accounting is the monetary unit in which a nation deals. In the United States the unit of measurement is the dollar. It has been said that the accounting theory of original cost as a depreciation base and as a record of invested capital is predicated on two basic assumptions:¹

1. The principle of prudent investment.
2. A stable price level.

Whenever either one or both of these assumptions are contrary to fact then the validity of the theory vanishes into thin air. If both assumptions are true then there is no appreciable difference between monetary income and economic income or between monetary position and economic position.² However, in a period of rapidly rising prices the disparity between nominal income and real income becomes increasingly important and significant. In businesses where investment in fixed assets is relatively small the effect of the price trend becomes immediately apparent because of the current nature of the bulk of the invested capital. On the

² James L. Dohr "Depreciation and the Price Level" (The Accounting Review Volume XXIII, No. 2 April 1948) p. 115
other hand, in concerns where investment in capital assets represents a significant portion of the total investment, then the increase in monetary revenue does not serve to maintain the purchasing power of the original investment. A part of the increase in monetary income, at least, is the recovery of invested purchasing power and hence is not income but a return of capital.

During the past ten years, using the year 1926 as the base year, the index of the wholesale prices of all commodities has practically doubled according to the following statistics as compiled by the Bureau of Labor Statistics, and reported in the Federal Reserve Bulletin 33, No. 12

<table>
<thead>
<tr>
<th>Year</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 1934</td>
<td>87.3</td>
</tr>
<tr>
<td>November 1946</td>
<td>140.9</td>
</tr>
<tr>
<td>December 1947</td>
<td>159.8</td>
</tr>
</tbody>
</table>

This price level movement is definitely one of major importance. No one can say categorically whether the movement is cyclical or whether it is a permanent trend. The important feature is the rapidity of movement. A price level showing a gradual upward trend would not cause the confusion bordering on hysteria which grips the industrial entrepreneurs of today. A gradual upward trend would not distort

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1 Maurice Moonitz "Adaptations to Price Level Changes" (The Accounting Review, Volume XXIII No. 2 April 1948) p. 137
operating results and the value of invested capital to a notable degree; the effects would be much more subtle. Since the movement has been rapid, the need for immediate steps to cope with the situation is felt evident. Moreover, economists contend that corporate capital replenishment will only span the normal business cycle.  

The general feeling is that, in view of the extent of present-day labor organizations, the price level will be maintained even if a recession in industrial activity takes place at some future date. This feeling contemplates the stabilization of prices at the present high level. If such be the case then it is unreasonable to assume that:

1. The business which must eventually replace fixed assets acquired, e.g. during 1941, will be able to do so, if it distributes as income the return of original invested purchasing power.

2. The business which has acquired fixed assets at the present high price level will be able to recover from future revenue, when the law of diminishing

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1 W.H. Garbade, "Current Replacement Costs and Corporate Earnings." "Journal of Accountancy" (Volume 86 No. 1 July 1948) p. 49

returns is activated, amounts necessary to earn the amortized service utility of those assets and, consequently, to replace them at the same price level.

The advocates of inflationary depreciation accuse accountants of being apathetic and of having achieved a supreme state of indifference to objective fact. They argue that the principle of disclosure does not satisfy the demands of the present situation and that the mere adherence to the cost basis on the grounds of consistency is at best reactionary. The alternative of restricting earnings for the contingency of replacement at the present level is only a temporary stop-gap. It will not forestall indefinitely the demands of the Government, wage earners and stockholders for the distribution of earnings.

The solution requires the definition of what constitutes real income and the clarification of the return of capital concept in the light of the maintenance of original invested purchasing power. The successful application of this solution requires the acceptance of the purchasing power concept by both accountants and the Government. Relatively little good would be accomplished if accountants were to accept this principle and the Tax Commissioner were to continue to levy taxes on income which is in reality
capital.  

In addition to the inconsistencies apparent in the present day income statement under generally accepted depreciation accounting principles there is the matter of balance sheet presentation of the value of capital assets. A balance sheet which seriously understates the actual worth of fixed asset investment is misleading and a misstatement of fact. This is true whether the underestimation be conceived of as due to the increment in value of plant acquired just previous to the rapid price rise, or as due to the lack of classification of the mixture of current dollars and past dollars. If the price level is accepted as having stabilized itself at the present high plane, then a capital gain has actually been realized and should be acknowledged. If the total of a company's assets is to have any other meaning than proof of the mechanical accuracy of the accounting system, then assets which are recorded in terms of unhomogeneous dollar values should be adjusted to place them on a comparable basis, and to give significance to the total

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1 Maurice E. Peloubet "Depreciation and the Price Level." (The Accounting Review Volume XXIII, No. 2, April 1948) p. 125
The arguments for inflationary depreciation may be summarized as follows:

1. The recorded cost basis is invalidated by fluctuating dollar values, which can only be compensated for by the use of the replacement cost basis.

2. The economic concept of income being an increase in purchasing power is more factual than the accounting concept that income is an increase in monetary quantity.

3. An abnormal business cycle, such as we are in now, will not be spanned by corporate capital replenishment.

4. Depreciation charges based upon recorded cost will not "fund" replacement at a higher price level.

5. The failure to recognize "actual" costs, as distinguished from recorded costs, will lead to the impairment of capital in the present economic situation.

6. Depreciation charges based on cost, as recorded, do not permit the matching of current costs and revenues.

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1 W.A. Paton, "Depreciation and the Price Level" (The Accounting Review, Volume XXIII, No. 2, April 1948) p. 121
The Case Against Inflationary Depreciation.

Each time criticism has been leveled at the accounting principle that original cost is the only accurate and satisfactory method of recording capital assets, accountants have re-examined the principle in the light of the prevailing economic situation. Each time they have refused to let pressure groups sway their views as to the long range desirability of the cost principle. ¹

The purpose of depreciation accounting has been defined by the American Institute of Accountants as the amortization of the cost of tangible fixed assets over the period of their service utility. This purpose does not embrace, nor does it pretend to embrace, the accumulation of funds to replace these assets. It is merely the allocation of a deferred cost to operations, premised on the most reliable estimates available.

Once a cost is incurred it becomes a historical fact. The evidence of the amount of the cost is undeniable and, as a recorded fact, it is not subject to adjustment for future price fluctuations, any more than any other incurred cost. If, because of a money-value differential in

¹ "As long as we adhere to cost, the charges to income for the consumption of assets are definite, objective, and demonstrable." William H. Bell, "Depreciation and the Price Level" (The Accounting Review, Volume XXIII, No. 2, April 1948)
the amount paid for capital assets, one company appears to be operating more profitably than another, the appearance of profits is actually the realization of a capital gain. Since the conventional treatment of capital gains and losses is to credit or charge them to earned surplus, the net result is the same as if the capital gain were recognized as such. A capital gain on the sale or disposal or fixed assets is not considered the return of capital, but the return on capital. It is treated as a fine point of distinction between profit from operations and profit from the conversion of invested capital. There is, however, no legal nor economic duty to retain capital gains as investment.

The advocates of inflationary depreciation would point out that the presence of a capital gain in an operating statement distorts the net income from operations figure. The truth of the matter is that the capital gain is income from operations; the realization of the gain was made possible by the use of the asset in production. If the asset had been sold, then the profit on the sale would not be remotely connected with income from operation; but that is not the supposition.

The next objection is that, if the realized capital gain is treated as income, then the pressure of the Government, Labor and stockholders will not enable the company to retain a sufficient amount of income to meet the
contingency of replacement at a higher price level. The problem of replacement at a higher price level has nothing to do with the amortization of a deferred cost to operations. The approval of the stockholders and the acknowledgment of Labor must be secured in order to expand the monetary amount of invested capital, in the same way that any effective capitalization of earnings would be handled in the case of improvements or expanded facilities. The replacement of fixed assets at a higher price level is equivalent to the quantitative expansion of invested capital. Replacement capital cannot be produced by any system of depreciation accounting; profits are essential to replacement at a higher price level.

At the present time there is considerable agitation caused by the fluctuating value of our monetary unit—the dollar. It is argued that historical cost gives rise to serious inequities prompted by the intermingling of present and past costs. To allocate to accounting the task of imputing income and costs would ascribe to accounting the province of economic analysis; the majority of accountants are neither qualified nor inclined to accept this responsibility.
The dollar as a measurement of past results and current position is effective only in a relatively stable economy. It is, however, the conventional medium of recording expense, income and value.¹ Just as the conventional income statement does not and cannot embody each and every basis of income measurement, the conventional balance sheet does not, and cannot, present a company's position from every conceivable viewpoint. Special forms and designs of income statement can be made out in order to emphasize the aspect of income measured by a specific basis. Special balance sheets can be presented to emphasize financial position from an economic viewpoint. In each instance the special presentation must be derived from conventionally recorded cost figures. It is impossible, at the time of entry, to record each and every expenditure in terms of economic value and thereby avoid translating these transactions into significant year-end economic values. In fact the simplest and best method is to record transactions at cost and interpret them simultaneously at the end of an accounting period.

¹ "It is true that the dollar in the bank at the end of the year may buy less (or more) goods than it would have bought at the beginning of the year. It is still a dollar and must be recorded as such." Howard C. Greer, "Depreciation and the Price Level" (The Accounting Review, Volume XXIII, No. 2, April 1948) p. 130
The dollar of recorded cost is the natural and most flexible basis that a system of recording transactions can adopt.\(^1\) If fluctuating dollar values make a special type of income statement or balance sheet desirable, then the immediate desire can be satisfied without departure, except momentarily, from the recorded cost basis.

The various arguments favoring the retention of original cost in spite of the apparent needs of the present inflationary system may be grouped as follows:

1. The original cost basis is the most definite, the simplest, and the most satisfactory method of recording fixed assets, from a long range viewpoint; corporate replenishments will bridge business cycles.

2. The function of depreciation accounting is to allocate a deferred cost to operations; this function in no way entails a provision for replacement.

3. The interpretation of recorded transaction in the light of economic income and position is not primarily an accounting responsibility; however transactions consistently recorded on the cost basis afford the best means for translating the results of various years into comparative analyses by any standard of income measurement.

4. The dollar, although admittedly a variable quantity, is the natural and basic accounting standard of measurement. No other measure is practical

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\(^1\) "At that time (acquisition) dollar cost is usually the most satisfactory, dependable evidence of actual value that is available."

W.A. Paton, "Depreciation and the Price Level" (The Accounting Review, Volume XXIII, No. 2 April 1948) p. 121
nor expedient for the purpose of recording or summarizing accounting transactions.

5. The permissive departure from original cost would lead to many undesirable and abusive practices of an arbitrary nature.

6. The replacement cost basis does not guarantee the accumulation of a reserve equal to replacement cost unless the price level remains stable from the time of adjustment to replacement cost until the time of replacement.

Conclusion.

Voluminous material has been written upon the problem of accounting for depreciation during the present period of inflationary prices and profits. The sum total of all the discussion on this point has merely served to emphasize the fact that there is a problem involved. The question is whether the problem is a purely academic one, or whether it is a practical one. To the ordinary businessman it is indeed, a practical problem. He faces the probability of having to replace his fixed assets at the prevailing price level, or, possibly, at a higher level. Unburdened, as he is, by purely technical considerations, the nature of the problem is essentially a financial one in his mind. If he is to invest more dollars in order to stay in business, he must procure the additional quantitative investment from one or more of these sources - future profits, past earnings,
or additional investment of his own or borrowed capital. Irrespective of financial conditions in the business world he pursues the prudent course of selling at the highest prices he can secure, and buying at the lowest prices that his suppliers will grant him. Since the net profit concept in his mind is an elementary one, he does not allow any side issues to obscure the true nature of his replacement problem - how can he finance his replacements?

The nature of the replacement problem with respect to every business organization large and small, whose selling prices are fixed by competition, is strictly a financial one. The nature of the problem with respect to those companies who are the leaders in their fields and who establish the selling prices for their products more or less arbitrarily, is somewhat different. Basically the nature is still financial, but other considerations enter into the problem. In price setting consideration must be given to all costs, both apparent and latent. The selling price is not limited by competition, but it is limited by supply and demand factors. The long range viewpoint is that profits should be such that depreciation which will not be earned during a deflationary period will have been at least partially earned during the prior inflationary period.

The corporate form of enterprise therefore faces the task of convincing its stockholders that a large portion
of the present profits will be required to offset unearned depreciation at some future date. With this end in view management has sought to refine the calculation of net profit, distinguishing between economic income and dollar income. The preservation of invested purchasing power, rather than the maintenance of stated dollar capital, is held out as the goal, the duty and the responsibility of management. Correspondingly, the presentation of a firm's financial position should clearly reflect the economic position in order to be fair to stockholders and prospective investors alike.

Neither accounting principles, nor the accountants who have formulated them intend that consistency in adherence to the recorded cost basis should enforce undue hardship upon corporations or any other type of business organization. Where flagrant disparity from objective reality exists, accountants have offered sincere, and equitable suggestions which can be followed without deviation from basic accounting precepts.

Accounting is, nevertheless, not an end in itself; it performs a necessary service to business and businessmen. Accordingly it should never fail to recognize the needs, as distinguished from the desires, of management. That is its responsibility and duty. At the present time the business world needs the clarification of its financial position in
the light of prevailing and pending economic conditions. Without abandoning all semblance of consistency with accepted depreciation accounting principles, accountants can, in the author's opinion, discharge their duties and obligations as public servants in the present emergency.

The tools for adjusting inequities and correcting and preventing misinterpretations have always been available. A number of methods of coping with the present inflationary situation have been advanced, ranging from the conventional to the extreme. The most important of these are:

1. The restriction of earnings for contingent replacement.
2. The footnote and memorandum procedure.
3. The placement of plant accounting and depreciation on an over-all replacement cost basis, by supplementing original cost data.
4. Quasi-reorganization.
5. LIFO for fixed assets, by means of indices of machinery and construction costs.
6. The extension of the accrual principles based on the premise that "experienced business judgment is the best basis for calculating periodic income."  

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A.C. Littleton, "Extension of Accrual Principles Would Help Depreciation Accounting" (The Journal of Accountancy Volume 86, July 1948, No.1) p. 21
7. The immediate absorption of that part of the cost of new assets which is considered excessive.

8. Increased depreciation rates.

9. The reversal of accrued depreciation.

Some of the published comments on the preceding methods are worthwhile noting.

Method 1.

The American Institute of Accountants\(^1\)

"Where there are gross discrepancies between the cost and the current values of productive facilities, it is entirely proper for management to make annual appropriations of net income or surplus in contemplation of replacement of such facilities at higher price levels."

James L. Dohr\(^2\)

"This procedure is proper where additional capital is required in the economic sense. The difficulty is that the price problem involves additional capital only in the monetary sense."

Method 2.

W.A. Paton\(^3\)

"The minimum recognition that should be given to the problem is the inclusion in periodic corporate reports of a careful statement of net income reported on the conventional basis."

\(^1\) Committee on Accounting Procedure, Accounting Research Bulletin No. 33 December 1947, p. 267

\(^2\) "Depreciation and the Price Level", Accounting Review, Volume XXIII April 1948 No. 2, p. 117

\(^3\) ibid p. 122
James L. Dohr

"This method might suffice in the early stages of inflation. There comes a time when the supplementary data lead to conclusions so different that they impeach the integrity of the financial statements."

Method 3.

William H. Bell

"In this period of relatively high costs, I should not be disposed to object to a proposal of any company management to appreciate its property on the basis of a current appraisal at replacement costs provided it is willing to commit itself to the consequent necessity of basing its future charges to income for depreciation on such appreciated amount."

Carman G. Blough

"All who have dealt with appraisal values know how very difficult it is just to determine current replacement costs but the most striking difficulty in this respect is the impossibility of predicting what will be the eventual cost of replacing a productive asset."

Method 4.

W.A. Paton

"If there is such a disparity between recorded data and current values, as to make the continued use of the old book figures misleading, present values may be substituted for recorded costs in a thoroughgoing accounting adjustment."

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1 "Depreciation and the Price Level", Accounting Review, Volume XXIII April 1948 No. 2, p. 117
2 ibid p. 127
3 "Current Accounting Problems" (The Journal of Accountancy, Volume 84, October 1947, No. 4) p. 335
4 "Depreciation and the Price Level" (The Accounting Review, Volume XXIII, April 1948, No. 2) p. 122
Method 5

Samuel J. Broad 1

"The use of an index method to convert past plant expenditures and the resulting depreciation charges to current dollars is the most practicable and simple method yet suggested."

George O. May 2

"It should not be forgotten that the adoption of LIFO has involved acceptance of the view that a meaningless figure in the balance-sheet (for inventories) is not too high a price to pay for a more informative income figure, a conclusion which is less open to question in regard to capital assets which are not intended to be sold."

Method 6

A. C. Littleton 3

"More realistic reporting might well emphasize experienced business judgment which realistically visualized forward conditions as well as the immediate present. Supplementary charges for depreciation derive from much the same kind of theory as allowance for doubtful receivables. There is no universal formula or dictum governing the latter."

1 "Impact of Rising Prices" (The Journal of Accountancy, Volume 66, July 1948, No. 1) p. 20

2 "Should the LIFO Principle be Considered in Depreciation Accounting When Prices Vary Widely?" (The Journal of Accountancy, Volume 84, December 1947, No. 6) p. 456

3 "Extension of Accrual Principles Would Help Depreciation Accounting". (The Journal of Accountancy, Volume 86, July 1948, No. 1) pp. 21-22
Method 7

The American Institute of Accountants

"The committee disapproves immediate write-downs of plant cost by charges against current income in amounts believed to represent excessive or abnormal costs occasioned by current price levels."

Eric Kohler

"Notwithstanding the motivation behind an immediate markdown of purchase price, this procedure can be justified on practical business grounds more readily than any that follow. In the first place, the excess acquisition cost can often be measured against prior construction or purchases of similar items. Again the lower depreciation base may offer a competitive advantage to the business in later years."

Method 8

The American Institute of Accountants

"The committee calls attention to the fact that plants expected to have less than normal useful life can properly be depreciated on a systematic basis related to economic usefulness."

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1 Committee on Accounting Procedure, Accounting Research Bulletin No. 33, December 1947, p. 268

2 "Depreciation and the Price Level" (The Accounting Review, Volume XXIII, April 1948, No. 2) p. 133

3 "Depreciation and High Costs" (Accounting Research Bulletin No. 33, December 1947,) p. 268
"A temporary increase of depreciation rates would have the same immediate effect as a partial write-down of costs, except that the depreciation method would likely spread the desired write-down over several years of high revenues. It involves a highly subjective determination and would doubtless be used by some simply as a manipulatory or profits equalization device."

The American Institute of Accountants

"In special situations in which material amounts of depreciable assets are determined to have a substantially longer or shorter life than was originally anticipated, a more adequate assignment of cost to the future revenues to be derived from such assets during their useful lives may result from an adjustment or restatement of the accumulated depreciation previously recorded."

"The plain implications of this bulletin (No. 27) is that similar arguments can be justifiably applied at any future date for increasing or decreasing depreciation reserves, thereby making a mockery of present standards of depreciation accounting."

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1 "Depreciation and the Price Level" (The Accounting Review, Volume XXIII, April 1948, No. 2) p. 133


3 "Depreciation and the Price Level" Accounting Research Bulletin, No. 27, November 1946, p. 134
The following represent the author's conclusions as to the extent and nature of the inflationary depreciation problem:

1. Replacement is a financial problem; accounting pur-
ports to match current costs and current revenues in the light of monetary gain or loss, nothing more.

2. The disparity between economic income and value and monetary income and value can be pointed out in special purpose statements, supplementing the re-
corded original cost data.

3. No one particular method is the only method to be used in every case which requires special treatment. Each case should be considered individually and the most adaptable method used. The panacean qualities of LIFO remain untested, although the possibility of its limited use with respect to fixed assets does offer an alternative.

4. Only those methods which definitely subordinate tem-
porary measures to the concept of original cost and which do not obscure the underlying cost data are recommended.

5. It has not been proven that complete departure from the cost basis of depreciation is either necessary or practical at the present time.
CHAPTER IX

SUMMARY

A Recapitulation of Generally Accepted Depreciation Accounting Principles

1. The basis for recording fixed assets at the time of their acquisition is the monetary amount or the monetary equivalent given in exchange for them. In the case of donated assets the basis is the fair-value at the time of contribution.

2. The purpose of depreciation accounting is the systematic amortization of the cost, or other basis, of fixed assets over the period of their useful service life.

3. The factors which occasion depreciation are classed as physical and economic. Physical depreciation results from the passage of time, the action of the elements, friction, stress, strain, etc. Economic depreciation is caused by obsolescence, inadaptability, inadequacy, etc.

4. The depreciation rate is calculated to include provision for both normal physical and normal economic depreciation. Abnormal depreciation of either type is considered a capital loss, and accordingly not chargeable to operations. Losses occasioned by abnormal depreciation should be charged against undistributed earnings in the year of occurrence.

5. Any method of amortization which successfully accomplishes the most accurate matching of cost and revenue possible in a specific plant installation is acceptable.
6. Ideally the cost of fixed assets should be apportioned on a unit basis. For the purpose of expediency in complex situations a number of assets with similar service lives may be grouped and depreciated as a unit.

7. The accounting cost established at acquisition is to be continued as the basis of accounting for fixed assets throughout the term of their useful lives. If, however, appraisal values have been recorded, consistency demands that depreciation on the recorded appreciation be charged to revenue.

8. With respect to the correction of errors in calculating depreciation charges in prior years, which were errors in judgment, there are two points of view. The statement of corporate accounting standards by the American Association of Accountants recommended that such corrections be reflected only by revision of future rates. The Committee on Accounting Procedure of the American Institute of Accountants in Accounting Research Bulletin No. 27 advocated the revision of past profit and loss in addition to the revision of future rates. Both committees agree that the correction of mechanical errors in calculating depreciation charges in prior years permits of retroactive adjustment.

9. The purpose of depreciation accounting precludes the possibility of it giving significance to fixed asset values or the fluctuations in value of the national medium of exchange. Where the difference between monetary income and value and economic income and value are marked, then it is the duty and responsibility of accountants to disclose that fact and to present the disparity as graphically as the situation demands.

1 Thomas W. Leland, "Report of Committee on Revision of the Statement of Principles" (The Accounting Review Vol. XXIII No. 1, January 1948) p. 20
Recommendations for the Clarification and Consolidation of Accounting Thought on Depreciation and Its Adaptation to the Needs of Industry

The first general recommendation that the author would make involves the realization on the part of accountants that accounting is not an end in itself. The responsibility of accountants is threefold:

1. To assure the public that the statements of operation and condition as certified by them embody the consistent application of logical principles of cost and value.

2. To present these statements of operation and condition so that the results of the consistent application of logical principles of cost and value are less susceptible to misinterpretation by intelligent and interested parties.

3. To clarify, whenever deemed necessary, the logic underlying accounting principles of cost and value.

An attitude that is sympathetic with and not oblivious to the needs of the public will secure a more amenable audience when accountants air the difficulties they encounter in devising satisfactory procedures. Such an attitude will materially reduce the accusations that accountants are apathetic, reactionary, and adamant.

The second general recommendation the author suggests requires the extension of the present research and public indoctrination program of the American Institute of Accountants to embrace the ability to predict approaching difficulties and to prepare statements of recommended
procedures in advance of their onslaught. The present policy has been criticized as producing ill-timed and hasty "post-factum justifications of consents already given to clients". In justice to the public sufficient diagnosis must have been made before the epidemic stage is reached.

The author's third and final general recommendation is that measures be adopted which will assure the uniform interpretation of accounting principles by all public accountants large and small, within a specific industry or type of business, regardless of personal likes or dislikes. In this connection, the author urges the periodic examination by an Institute Committee of the certificates prepared by its members to ascertain their conformity with the pronouncements of the Institute and the institution of practice clinics in the field, to which any practitioner, large or small, could bring his problems. Such a program would serve to satisfy the need for immediate and decisive action, which discourages many members from availing themselves of the present long-distance, impersonal advisory system. It would also serve to emphasize the distinction between the theoretical application of accounting principles

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1 Eric Kohler, "Depreciation and the Price Level" (The Accounting Review Vol. XXIII No. 2, April 1948) p.134
and the continual compromises that the small practitioner is forced to make. The realization of the problems confronting the small practitioner and the inclusion of several such individuals on executive committees (by subsidy, if necessary) would encourage otherwise indifferent Institute members to take an active part in shaping accounting principles and conventions.

Specifically, the author would make the following recommendations regarding conventional depreciation accounting principles:

1. The complete and final rejection of the word "depreciation" to describe the accounting process of cost amortization.

2. The elimination of the word "reserve" to designate the accumulated amortized service utility of fixed assets, as proposed by the Committee on Accounting Procedure of the American Institute of Accountants in Accounting Research Bulletin No. 34.

3. The revision of the conventional balance sheet to clarify the nature of the deferred charges to operations, commonly known as tangible fixed assets.

In Accounting Research Bulletin No. 16, in October 1942, the Committee on Accounting Procedure Procedure admitted the limitations and the undesirability of the use of the word "depreciation" to describe the peculiar accounting concept of the cost amortization of fixed assets. The author suggests the extension of the accounting term "amortization" to include the accounting process of assign-
ment of fixed asset cost to operations because of the workings of physical and economic factors. Possibly the phrase "Service Utility Allocation" might be more distinctive and less apt to be confused with other accounting processes.

Correspondingly the application of such a phrase to the amount of utility which has been charged to operations would be necessary for consistency. At any rate, any word or phrase which describes the accounting process and has not already become identified with any concept of economics, accounting, etc. is preferable to the continued use of the word "depreciation".

The following is a suggested outline for the reclassification of the accounting process;

<table>
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<th>Account</th>
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<tr>
<td>Asset (e.g. Building)</td>
<td>Building Service Utility</td>
</tr>
<tr>
<td>Asset Qualification</td>
<td>Building Service Utility</td>
</tr>
<tr>
<td></td>
<td>Allocated to Date</td>
</tr>
<tr>
<td>Expense</td>
<td>Allocation of Building Service Utility</td>
</tr>
</tbody>
</table>

The third specific recommendation of the author involves the revision of the asset classification of the conventional balance sheet along the lines illustrated by Stephen Gilman in his book "Accounting Concepts of Profit".

ASSETS

Cash:
Cash in Banks and on hand

Deferred Charges to Cash:
Bonds
Notes and Accounts Receivable
Less: Doubtful Accounts
Receivables from Officers and Employees

Deferred Charges to Future Income:
Investories
Land
Plant and Equipment - Service Utility (cost)
Less: Service Utility Allocation to Date
Prepaid Expenses

Intangible Assets:

In the author's opinion the preceding revision (or one similar in approach) would be singularly helpful in emphasizing the nature and purpose of the accounting process of depreciation. Gilman's suggested revision stresses the balance sheet classification of assets according to their function. Consistency demands the re-classification of all other assets, as well as fixed assets, according to their function. The province of asset classification according to the degree and amount of net potential realization should be confined to the statement of affairs. The conventional balance sheet purports to present only going-concern values and these values should be
grouped according to their going-concern usage or function. A change in asset classification merely for the sake of innovation cannot be justified. However, a purposeful suggestion, which requires the revision of present conventions in order to maintain consistency with the admitted intent of the balance sheet, may be regarded as true progress in accounting.
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<td>April 1940</td>
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<td>16</td>
<td>&quot;Report of Committee on Terminology&quot;</td>
<td>October 1942</td>
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