Interest charged to cost in accounting

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INTEREST CHARGED TO COST

IN

ACCOUNTING.

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INTEREST CHARGED TO COST IN ACCOUNTING

I

FOREWORD

The question of interest on investment in its relation to cost of production has probably been discussed at greater length than any other subject in cost accounting, and concerning no other subject is there such a wide difference of opinion.

Prior to 1900, all indirect expense, including an interest charge where such was made, was distributed over the product in direct proportion to the labor involved, or in proportion to the time (hourly burden) taken to do the job. The informative value of such methods of distributing burden was recognized to be very small, and as regards the item of interest-charge, if included, was practically nil. The proportion of interest that became affixed to any given job bore no proportion whatever to the call on the use of capital made by that job.
Attempts were made at various times to remedy this defect. Machine rates were introduced to give some fairer incidence of the use of capital on individual jobs, but these were for the most part crude and arbitrary, and remained unscientific until an examination of the whole question of expense burden was undertaken in 1899-1900 by A. Hamilton Church. In his "Proper Distribution of the Expense Burden", published in volume form in 1908, was emphasized the desirability of abandoning the practise of aggregating all kinds of indirect expense under the head of burden, in favor of a segregation of such expense into classes of "factors", and observing the relations of such factors to the actual operation of the shop.

The next decade witnessed an unprecedented accumulation of capital and this naturally resulted in an extensive substitution of machine for hand processes. Capital investment in plant increased 40% per operator during the years 1902-12, and attention was directed anew to the subject of interest on

investment as an accounting charge to manufacturing cost. In April 1913, the Journal of Accountancy began the publication of a series of articles presenting both sides of the controversy. Some time later, the Harvard Bureau of Business Research undertook an extensive study of the same problem. During the War the problem again received special attention with relation to the "cost-plus" government contracts.

The writer has chosen the subject because of its vital importance in the proper determination of costs, and because of the prevailing tendency to confuse economic costs with accounting costs and consequently inject into the accounting records items which defeat the basic purpose of accounting, the determination of the cost to the producer of making a gross income. The problem will be analysed from an economic viewpoint, for proper accounting methods must be based on economic principles.
II
THE COST CONCEPT

In undertaking a study of the theoretical justification of charging interest to cost, we must first determine exactly what the term "cost" means. There are innumerable ways of defining cost, - almost as many as there are different interests actuating men or groups of men in production. The greatest line of cleavage, however, is that which lies between society and the individual.

Put in its most general terms, from the social point of view, which is that of the economist, "cost" means the conditions of supply in pecuniary terms, - it is the sum-total of all those value outlays which are necessary for the continued production of economic goods which society must have. The economist deals with society as a whole; he is not even concerned with business activities, much less with those of a single concern. Financial results interest him
only indirectly, if at all, for his ultimate interest is in wants and sacrifices. 

"Any obstacle to a human activity which is directed toward the gratification of human desires is an economic cost". Hence it is evident that the "economic" or social cost of production must equal price, and that that "cost" must include not only payment for the use of capital but profits as well. Costs, in this sense, concern payments made by the producer. Such a definition of costs is in line with the conception of economic costs as composed of the "pains and sacrifices" of those engaged in production, but it is broader than "pain cost" in that it would include the exhaustion of natural resources. The fact that the limited supply of some raw material necessary to the life of society is being exhausted by production, becomes a significant factor; it acts as an obstacle to the gratification of desires. In fact, the scope of economic cost becomes broadened as men realize more and more the necessity of producing for the future. This is illustrated by the fact that the conservation movement of today has become associated with a growing emphasis of depletion.

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Lewis H. Haney, Paper read at the Am. Statistical Association Meeting at Chicago in December 1919.
Individual costs differ from social costs, and much of the argument supporting an interest charge to cost is based on their assumed identity. The end of individual human activity is largely, though not necessarily entirely, selfish in the sense that it is the welfare of the individual and of his business unit which is the motivating force. The obstacles to his activity are largely obstacles to his money making. Cost, to the individual producer, is the cost of making a gross income.

The accountant deals with the relations between a particular owner, or owners, and the particular business, the whole structure of the accounts being designed for the purpose of exhibiting exactly this relation. Costs, from the accountant's point of view, represent those value outlays of the producer which are necessary to carry on the business. They concern the administration of the operations of the business unit, and consist of such payments as those made for the labor that must be hired, for material which must be purchased, and for such general expenditures as are necessarily incurred, including depreciation. When the business is
forced to rent a piece of land or a building, the interest on the money borrowed and the rent actually paid are items of outgo which must be met if the business is to continue. Such payments are, therefore, costs.

Accounting costs are tangible and of actual record. They do not, however, reveal true total payments for the several economic factors. The interest and rent items can properly include only the amounts actually paid or accrued, - which do not correspond to the economists "shares". Because the profits of the X Company can academically be divided into profits of capital, profits of land and profits of the entrepreneur (the nature of each being in no wise changed by calling them "rent", "interest" and "profits") is no proof that they are not parts of the whole, nor any reason for claiming that either of them is a cost item.

Since the accountant deals with the relations between a particular owner and his particular business, and is interested only in facts, it follows that he must regard rent on the particular
property owned and the interest on the particular capital invested as income, for they come in to the owner (his employer) from his property of business. In fact, rent on property owned and interest on the investment, and profits are inseparable in accounting. They cannot be regarded as costs to the accountant because they are not costs to the owner. They are returns to an equity, not expenses of an equity. Expense, in accounting, is expense to the investor, while revenues are the earnings of the plant as the result of its business activities.

Interest is the payment to the investor for his services, and the investor is the owner. The enterprise does not buy the services of the owners nor does any one owner buy the services of the other owners. Rather, each investor furnishes his services in anticipation of a return on his investment, for revenues normally exceed expenses. Hence, interest and dividends are essentially in the same accounting category, as was previously explained, and are charges against net revenue
rather than gross revenue. The profit or return consists of the difference between the sale price of the product and the cost of producing and selling that product. It is clear, therefore that interest upon capital invested cannot possibly form a part of the cost of the products, the ascertainment of which is a first essential to the determination of the yield or return which the business gives, and out of which the divisions of interest or profits are to be made.

Economists and accountants who would treat interest on investment as a cost are proceeding on the unconscious assumption cost determines price. The only effect that cost of production can have on price, under competitive conditions, is an indirect one, - thru its effect upon the supply of the commodity over a long period of time. It determines whether a continuing supply of the commodity will be produced. If the price is not sufficient to cover the cost of production and also allow a fair return to the investor, he will withdraw his resources from that particular undertaking.
in favor of one which he believes to be more profitable. Hence the supply in the future will be decreased, and, if the demand remains unchanged, the price will be forced up by the competition of buyers for the more limited supply. But for a short period of time, during which the total stock of goods that can be produced and brought on the market is fixed, the price will depend upon the existing demand for the total fixed supply of the commodity, and not upon its cost of production.

When a producer manufactures a commodity and puts it on the market there is no assurance that the commodity can be sold for even a price covering actual money cost, much less that any interest will be earned. If there is interest, it is not an expense to anyone but an income to the owner, and a part of the general revenue derived from the operation of that particular business unit.

The argument that interest on investment is a cost because the capitalist owner might have got interest if he had invested his capital in some other business (known as the "opportunity" cost idea) has been dubbed by Lewis H. Haney the "sad words cost". It is only necessary to call

# Am. Economic Review, Vol IX. Sup. 1 p.44. March 1919.
attention to the fact that the accountant is concerned, not with what might have been, but what is. When an investor exchanges his savings for productive goods and services and undertakes some particular commercial or industrial pursuit, the records of such investment become the records of that particular business concern, and the investor's only hope for returns on the investment lies in the chance of financial success of that business concern.

If the business whose life history is recorded is a failure, no amount of modern cost accounting work can change the situation. Accounts must show facts, - the books must be kept clean of all anticipations in any form and all "might have been's".
III
THE METHOD OF CHARGING INTEREST TO COST

In general, there are two methods by which interest may be charged to Cost. The first, known as the "Net Investment" method, is applicable to trading establishments (with only kind of inventory, so that it is not necessary to reckon fixed charges on different classes of the business) or to the very simplest manufacturing conditions. According to this method, interest charged to cost or expense will be divided between interest on borrowed money and interest on bonds, notes and accounts payable. Interest on capital owned, as a charge complementary to interest on borrowed money, is reckoned on the "net investment" in the business, that is, on the difference between the sum of the assets - cash, notes and accounts receivable, raw materials, work-in-process and finished goods inventories, prepaid interest, insurance, etc., and the sum of all the liabilities - notes and accounts payable and all accrued items. It will be noted that plant and equipment assets are omitted.
When this method is used, the charge to cost will come in two parts: first, as interest is reckoned and paid for borrowed money; and second, an amount by a journal entry, reckoned at the agreed-upon rate of interest on the investment as above defined. The interest on the borrowed money will be a cash disbursement, when the interest is paid; the second part of the entry will be carried, as in other methods, as a credit to an income account known as Interest Charged to Cost.

The first objection to this method is that in reckoning the interest charged to cost in two parts, it involves the use of two rates, one of which is bound to fluctuate from time to time, as the current market rate goes up or down. This introduces a variable element into the calculation which is objectionable, particularly when uniformity is sought in accounting for an entire industry, or when it is desired to keep the records for yearly comparisons in the same establishment. With one or more rates on borrowed money, and the agreed-upon and probably different rate on the net investment,
it would seem that the obvious inconsistency of this method would be sufficient to condemn it.

But a more serious objection to this "net investment" method, even within the limited field in which it can possibly be applied, is that it can rarely, if ever, be used without numerous modifications. For example, in the Harvard System of Accounts for Shoe Wholesalers, interest on land and buildings is specifically excluded from the "net investment" calculation, for the good and sufficient reason that it is a charge to a Rent account, which must be set up completely and independently of other expenses, if any comparison is to be made between businesses which operate in premises owned, and businesses which operate in premises rented. This difficulty would be much more serious in a manufacturing establishment, where interest on the investment must be reckoned for the equipment, usually in several different subdivisions, and on three, or perhaps four, different kinds of inventories.

Furthermore, in most businesses it is indispensable to reckon fixed charges on inventories by classes, in order to measure the results in a
satisfactory way, and whenever fixed charges require any considerable division the "net investment" method necessarily breaks down completely.

The other method, known as the "Interest Charged to Cost" method, (which is the one recommended by Clinton H. Scovell) proposes to take the following steps:

(1) Take the Value of the assets as the basis.

(2) Calculate interest thereon at some rate not stated. The principle followed is that nothing more is required than that the rate be "reasonable" and agreed upon by the persons concerned, presumably, the "ordinary interest rate on reasonably secured long term investment in the locality in which the business is situated".

(3) Devise charges for interest which will spread this estimated interest on investment over the various parts of the investment, making "charges" for rent, equipment, inventories, etc.

(4) Offset these charges by setting up an account called "Interest Charged to Cost" (but which is really "Accrued Interest estimated to be earned in the Business"), to which account the charges are credited.

*Clinton H. Scovell, Cost Accounting and Burden Application p.105.*
(5) Close this interest account into Profit and Loss, the amount being available for dividends "if not offset by losses".

As to the actual effect of such a procedure upon the final net revenue figure, it must be clearly recognized that such an interest charge cannot affect the ultimate profits however handled. If included, it increases costs, but this increase in costs is offset (when the whole course of the transactions is summed up in the profit and loss account) by the accumulation of a balance in the Interest Earned Account. If not included, costs are lower by just the amount that would have been thus accumulated, and the net trading result is the same in both cases. Facts cannot be changed by altering methods of handling them, or net revenue produced by setting up arbitrary Credits to Profits and Loss.

With these facts in mind, let us consider the first argument of Professor William Morse Cole for the inclusion of interest in cost,—namely, that the enterprise to be self-supporting must yield sufficient income to give a proper amount of interest.

on the investment. Since it can make no difference to the net income of an enterprise whether interest be treated as a factor of cost or not, it is evident that this argument can have no bearing on the question. It is, however, sometimes the aim to raise the total of the manufacturing costs on the cost sheet, in order to justify an extra profit (clothed in this interest charge) on job production orders in addition to the legitimate percentage profit. If a manufacturer enters into such a contract it must be assumed that he has all the facilities necessary for carrying it out, and no charge for the use of those facilities, other than actual wear and tear and depreciation thereof in the course of carrying out the contract can be allowed as an item of cost. Similarly no charge can be allowed for interest or rent (unless actually paid out), which, according to the theory laid down, represent a share of profits on the operations.

This, in general, has been the attitude of the United States Government toward the matter. Prior to the War, the principal government official statement was to be found in a pamphlet published by the Federal Trade Commission under date of July 1,
1916, "Fundamentals of A Cost System for Manufacturers". Under the subjects of "Rent" and "Interest", the Commission indicated that to a limited extent, for comparative purposes, interest and rent might be "considered". The pamphlet does not, however, state that interest is cost. Furthermore, in all its numerous reports made to the Price-Fixing Commission, the Commission has excluded interest from cost.

If it be granted that the manufacturer has a perfect right to make whatever rate of profit he can secure from the sale of his goods, at least let us have common business honesty on this point; and let him in his calculations of price keep his cost figures intact and accurate, so that his manufacturing cost values will in his financial statements reflect the universal meanings attached to these words by investors who buy securities and by bankers who depend upon the honesty of the balance sheet to furnish an accurate view of the assets and liabilities of those with whom they transact business.
To do this will not in any way limit the profit any manufacturer desires to make, for having ascertained the exact cost of his production, the exact cost of selling and shipping his goods, and cost of his office, administration and financial requirements, he is in a position to add to these several factors of cost and commercial expense the factor of desired profit to his selling price — all without recourse to any devious or doubtful presentation of asset values. Furthermore, the profits shown by this process will not include anticipations made before the goods are sold, but will be actual earned profits based on actual sales.

A careful examination of the methods of charging interest to cost will reveal many glaring inconsistencies. If it is necessary to charge interest on capital invested in machines in order to arrive at total costs, it should be just as essential to include a charge for interest upon capital invested in small tools and other operating equipment. Moreover, why charge interest upon fixed capital and omit to do so in respect to floating capital? The
oil that lubricates the machine, and the raw material that enters the product may be in the store-
room for months before being consumed and during this period they represent capital invested quite as surely as does a lathe or drill press. Or, viewed from another angle, why not compute interest upon wages paid from the date of payment until the completion of the article or job? In order to get in all of the so-called "costs" it might even become necessary to calculate a further charge for interest from the date of completion to that of sale, for it is necessary to carry large sums locked up in goods on hand and in accounts receivable until actual cash is realized. Interest would then be a selling cost also. Unless a concern were a heavy borrower, the result would be that its charges to manufacturing cost and to selling expense and credits to interest would result in showing a large net earning from interest when it may not have received a dollar of interest. At least, let us be logical in our classifications.

The inclusion of interest as a factor of cost
is clearly injecting into the accounting records an economic cost, (the accounting nature of which is an anticipated profit). Such procedure, to be consistent, must also include profits, in which case the figure arrived at on the cost-sheet would be the price at which the commodity should sell, but certainly not its accounting cost. In economic analysis, price equals cost, (must cover interest and profits), but in accounting, profits depend upon price. This fundamental distinction must be at all times kept clearly in mind.
PRACTICAL AND FINANCIAL OBJECTIONS TO THE INCLUSION OF INTEREST IN COST

In the preceding chapter, the methods of charging interest to cost were considered, an analysis of the accounts charged was made, and special attention directed to the fact that an interest charge to cost can in no way affect the final net revenue figure. The inconsistency of charging interest on capital invested in plant and equipment and neglecting entirely the capital invested in all forms of current assets was also pointed out. The present chapter will be concerned with a consideration of the practical and financial objections to the inclusion of interest in manufacturing cost.

In these days of efficient and economical management it is highly essential to have accurate and actual costs, as no other will be of value to those responsible for the manufacture of the product, particularly when the information is required for comparative purposes. It is generally admitted that the value of cost figures diminishes as the proportion thereof accurately allocated (direct cost) diminishes and the amount distributed by arbitrary apportionment
Everyone acquainted with conditions inherent in productive processes knows how necessary it is to devise methods by means of which the largest possible measure of the total costs of production can be identified with and charged to a given article or job. No perfectly satisfactory method of apportioning indirect cost seems possible; in fact Mr. A. Lowes Dickenson makes the statement that "the greatest problem of cost accounting is to find the least unsatisfactory disposition thereof". Thus at a time when the best efforts of every cost accountant are being put forth to reduce to a minimum the proportion of indirect costs of production, the wisdom of introducing an interest charge requires a clearer demonstration than has been given on the grounds of policy.

True costs are obtained from true facts, and true facts are those only which result from the correct recording of actual transactions. All charges to cost of manufacture should be based on

*Journal of Accountancy, Vol. XVI August 1913* p.98.
(a) a decrease in the value of some asset,— as raw materials or supplies,— would include depreciation; or

(b) an increase in some liability,— as accrued payrolls or accounts payable.

But when interest on invested capital is included in cost neither of the above takes place, but a credit must be made to some income account. Hence it is evident that such a charge has no place in manufacturing costs.

In many lines of industry, the value of the material and labor that can be specifically allocated to a particular article or job forms a minor, rather than a major part of the total manufacturing costs. When it is considered, then, that such an interest charge, instead of being a small, perhaps almost a negligible quantity, may and frequently would be a substantial proportion of the entire cost, the danger of serious error in the results is enormously increased. Moreover, as there is, practically speaking, no fixed rate of interest (the legal rate varying as between States from five to ten or twelve per cent) the charge itself as adopted by one manufacturer might
vary from that of his neighbor to an extent of 25, 50, or even 100 per cent. Production costs determined upon such an uncertain basis could only be accurately described as *speculative* costs.

The exact rate of interest which should be charged to cost is a question that has been much discussed by advocates of the inclusion of interest in cost, but about which there seems to be very little unanimity of opinion. In general, however, there have been three kinds of rate suggested:

1. A rate equal to that yielded by the safest investments,—the so-called "pure" interest rate.

2. A rate equal to that at which money can be borrowed for the particular industry.

3. A rate sufficient to attract permanent investment in the industry.

Of the three alternatives, the last mentioned seems to be the least popular and certainly the least sound theoretically, and consequently will be considered first.

The rate sufficient to attract permanent investment in any given industry might mean any one of at least three possible rates, depending upon the form of the investment. If the investment takes the
form of first mortgage bonds or any other type of well secured or so-called "gilt-edged" bonds, then the rate sufficient to attract permanent investment will be relatively low, but certainly not as low as the rate on high grade securities where no manufacturing or trading risks are taken, especially if the concern has not yet become firmly established in the field. If the investment takes the form of preferred stock or any of the other more or less hybrid types of securities the rate will be slightly higher, possibly one or two per cent, depending upon the specific legal provisions in regard to security, such as the "cumulative" feature of some preferred stocks, and the net revenue which the concern can reasonably be expected to earn yearly. And, lastly, if the investment takes the form of common stock, the return on which is a pure residual, the rate considered by prospective investors will be the average rate of return which the corporation can reasonably be expected to earn in the future, the chief factor in such an estimate being the average of the dividend rates earned and declared by the
corporation in the past. The exact percentage which this expected return must represent, in order to attract permanent investment in the industry, may vary anywhere from eight to ten per cent to forty or fifty per cent, depending upon the amount of risk involved.

The rate of interest on the preferred stock or bonded debt of the company certainly should not influence in the remotest way the rate of interest to be charged on the capital invested in plant and equipment for the purpose of determining costs. The whole justification of an interest charge is based upon the assumed separability of interest and profit in accounting, and to use a rate which so obviously includes a payment for risk certainly would be illogical and unjustifiable. Furthermore, the "effective rate" on an industrial bond or preferred stock issue is a composite result of security of principle and income, and marketability. These factors, in turn, depend upon the age, character and reputation of the particular establishment. Consequently, the rate would be different for each individual concern, and would even vary from year to
year for the same concern. A cost charge on such a basis could have no value for comparative purposes either as between different concerns or different accounting periods of the same concern.

Neither should the rate necessary to attract permanent investment in the stock of the concern be a determining factor. As was pointed out above, that rate depends upon a pure speculation (estimated future rate of return) and the dividend rate in the past. A corporation may be either over-capitalized or under-capitalized, and either of these facts will permanently influence its dividend rate, which, moreover, necessarily varies widely from year to year, according to the prosperity of the business. Another point in this consideration is that the dividend on common stock certainly represents not only payment for the use of the capital but for the risk undertaken as well. Hence the dividend rate could not be used as the basis of a charge which represents a payment for the use of the capital only.

The second alternative rate suggested consists
of a rate equal to that at which money can be borrowed for the particular industry. Let us briefly consider what such a rate represents. In ordinary industrial enterprises, commercial loans can usually be obtained up to a limit of about fifty per cent of the current assets. Money lent, therefore, has behind it 100 per cent margin of security in current assets alone, as well as plant and equipment values which usually represent another 100 per cent or more. The difference between the position of the loan and that of the capital invested in plant and equipment which stands behind it is therefore obvious.

Another consideration of importance is the fact that the rates at which money is lent to different concerns in the same industry vary as much as one hundred per cent depending upon the size of the particular concern and its general financial condition. Could anyone justify so great a divergence in the rates of the interest charge to cost of the two concerns, remembering that the interest charge represents payment for the use of capital only, payment for risk being eliminated?
The third alternative rate suggested, the so-called "pure interest rate," or that equal to the rate of return yielded on the safest investments, is the one most generally held as the proper basis of an interest charge to manufacturing costs. Interpretations differ, however, as to exactly what that rate should be. One prominent advocate of the inclusion of interest in cost states that the rate "depends upon the income which the capital might be expected to earn if invested conservatively in high grade securities where no manufacturing or trading risks are taken". The Harvard Bureau of Business Research recommends the use of "the ordinary interest rate on reasonably secured long time investment in the locality in which the business is situated".

This rate, then, represents a payment for the use of capital, for the risk involved in such investments, altho not entirely eliminated, is so small that it may well be considered as negligible for

# Harvard Bureau of Business Research.
the purpose at hand. Here we have the "opportunity cost" idea in pure essence, for by what other reasoning can an interest charge the rate of which "depends upon the income which the capital might be expected to earn if invested conservatively in high grade securities where no manufacturing or trading risks are taken" be applied to the investment in a particular manufacturing concern?

Furthermore, the introduction in production costs of a constant element tends to obscure fluctuations in actual cost due to causes which may be corrected, and thereby defeats the very purpose of cost-keeping.

Another obstacle, after the rate has been decided upon, is that it is always difficult and sometimes impossible to determine accurately the amount of capital which has gone into a company that has been in operation for a number of years. The new investments have almost inevitably become confused with the renewals and replacements. Thus we cannot tell whether the figure which we call investment is more than an approximation of the actual investment. That is a
practical difficulty in addition to the violation of the sound principle that today's management should not be burdened with the expense of the past.

Regardless of the rate chosen, an interest charge to manufacturing cost must necessarily seriously affect the various inventory valuations. The present trend in modern accounting is toward the rule that inventories of raw materials should be carried on the books at their market value; meaning, of course, the cost price of goods in that particular stage of manufacture if purchased on the open market. This principle is perfectly justifiable. Accountants for some time have recognized that plant and equipment valuations should be made on the basis of cost of replacement, not original cost. The significance of present values rather than historical values for general managerial purposes cannot be overestimated. Raw materials inventory valuations should be treated in the same manner for the same general reasons. Can the manager intelligently choose between methods,
processes or products on the basis of historical figures? Should he not base his decision upon a recognition of the present significance of all the commodities available? It seems evident then that raw materials inventories should be maintained at all times at the present market value figures, regardless of whether they are above or below the figures for the period just past.

This, however, does not mean that interest on the investment may be included in the inventory figures. There is a very fundamental difference between the nature of an interest charge to cost and adjusting the raw material inventory valuations to correspond with present values. The purpose of the balance-sheet, the most important accounting statement, is to show the relations between the owners and the business. It is "a statement of values - assets and representations of ownerships or equities all expressed in terms of dollars and cents". It deals immediately with value facts, as they affect the equities of the owners. Interest is a distribution of revenue to the investors for

Paton and Stevenson, Principles of Accounting p.452.
their services, and to include it in cost would be considering the services of the owners as cost to the owners. There can only be recognized in cost actual value outlays of the investor. Inventories of raw materials at market price do represent the actual value outlays of the investors for the materials used in production, but interest on investment certainly does not.

In regard to "goods in process" and "finished goods" these inventories should at all times be carried at their actual cost as represented by the cost accounts. Therefore, any portion of interest on invested capital which may be included in the inventory of unfinished goods or unshipped goods represents an anticipation of earned profits, offset by a corresponding inflation of the inventory, and to that extent the balance-sheet is false and misleading. In fact, a concern which has never sold one unit of product may, by charging interest to cost, show at the end of the period a substantial gain.
The inclusion of interest in cost appears to serve no purpose whatsoever except to distort inventories and therefore to make periodic adjustments to earnings and inventories necessary in order to resolve the accounts into a status which represents the results of operation in their true light. If interest on capital invested is actually a cost, why do the exponents of that theory admit the need of adjusting the inventories when the same results are obtained by the non-inclusion of interest? The Federal Trade Commission has issued the warning that interest on investment must be eliminated from the inventory values. Why eliminate or adjust something which is correct? If interest on investment represents a cost during the year it should not be necessary to eliminate it at the end of the period when the statements are prepared. Why burden the cost accounts, already sufficiently complex, with an element which is admittedly an anticipated earning?

# The Fundamentals of a Cost System for Manufacturers.
Furthermore, an auditor certainly cannot properly give an unqualified certificate to a balance-sheet in which the inventory prices include a charge for interest upon capital, and bankers naturally object to any attempt at anticipation of profit on the part of the borrower. In short, the inclusion of interest in an inventory valuation would most certainly tend to impair the credit of any concern indulging in such practice.
In the previous chapter, some of the practical and financial difficulties inherent in an interest charge to manufacturing cost were pointed out. The present chapter will be devoted to a consideration of the proper method of dealing with the interest calculations, namely, in the form of subsidiary statistical reports to the executive.

That interest on the investment is an important factor in the determination of the manufacturing and selling policy of any concern is certainly beyond question. The difference of opinion lies in the selection of a method of gathering and presenting such information.

The accounting records of a manufacturing concern and the statistics of the business deal with two separate and distinct classes of facts: the first, with those having to do with the financial status of the proprietors of the concern and their profit or loss from its operation; the second, with all those facts of work performed within.
and every fact reducible to statement in figures (whether of financial unit or not) which serve to express the quantities of labor and material utilized, gradations of kinds and quality, efficiency of operation, the condition of the market, and its relation to that particular concern.

In so far as general purpose and aim are concerned, accounts and statistics have much in common, but accounts can deal with but one unit—the pecuniary unit, which is a figure of dollars and cents; statistics may deal with units of many different kinds which have no place in the financial statements for they do not affect in any way the status of the proprietors of the business.

There are two kinds of business statistics; external statistics and internal statistics.

External statistics are those that deal with the markets for the products purchased or sold, e.g., measurements of demand and supply, of kinds and quality of competing articles. Important classes of fact in this group are those dealing with financial and trade conditions in general. The
importance to every business enterprise of having a regularly constituted department capable of keeping the management advised of these facts at all times is obvious, but it is not within the province of this paper to attempt an exhaustive discussion of this point.

Internal business statistics are the recorded physical facts of operation. A complete knowledge of these has become essential to the proper conduct of every business enterprise. Reliable statistics now constitute perhaps the only practicable means by which a large corporation can come to know itself and consequently furnish the safest basis for the formulation of administrative policies.

The primary purposes of accounting relate to the treasury, - the checking of sources and destination in order that funds and claims may be properly identified, collected and made to discharge the liabilities of the business. Its chief aim is that of resolving all transactions into net income or profit and loss. Statistical summaries of the operating and physical facts
will throw much light upon these figures.

Moreover, the utility of accounts is necessarily limited to the result of operations which are past, but statistical indices of the efficiency with which those operations were performed will serve to project into the future the significance of the accounts. Mr. A. Hamilton Church, in advocating charging interest directly into manufacturing cost, has criticized the present structure of accounting records for furnishing "post-mortem" costs only, and urges that they be reorganized to show what the probable costs in the future will be. This, in the opinion of the writer, is confusing costing proper with intelligent inference from proper costs. The cost accountant, it is true must be relied upon for all manner of statistical reports and should present to the executive body something more valuable than the average monthly statements, but these reports have no place in the accounting records proper but should be compiled and incorporated into the general internal statistics of the business.

# Industrial Magazine August 1918. p.151.
One of the principle objects sought in charging interest to cost is to give effect to the variations in amount of capital employed and the term of employment in the production of different articles or the same articles by different methods or factories. In comparing different processes of this nature, it is, of course, essential that the statistics used show total cost, including a fair return on the capital invested. Cannot the manager, however, make such a calculation in the same way as would the owner without setting up in the accounting records interest charges to cost? Surely the correct way is not to charge into cost an arbitrary rate of interest which means little or nothing, but to compare the margin between the sale and cost price, or in other words the return upon each product, with the capital invested in order to secure that return. This comparison would be a true one, would show exactly how much the capital invested really earned and would be a good guide as to whether too much or too little
capital was invested. Moreover, the adoption of
the arbitrary rate defeats its own object, for
according as the rate varies from the true rate,
if there is such, so the comparisons deduced from
the results will be erroneous.

Certainly any business man before undertaking
to invest new capital or his surplus working
capital in expensive machinery, would make a
careful calculation before he purchased such
machinery to ascertain whether the actual profits
derived from its use would pay the cost of pro-
curing such new capital and still show a surplus
over the profit derived from the hand process.
This is quite a different matter from the theory
advanced of charging the interest on the purchase
price of such machinery as part of the manufacturing
cost of the articles it produces, as it simply is
not part of the manufacturing cost; but this does
not mean that the manufacturer cannot reimburse
himself for the cost of the new capital necessary,
He certainly should and actually does, for his
selling price must include the manufacturing costs,
commercial costs, financial costs, and also an
adequate profit to compensate him for the risk he assumes in making the investment. Such calculations are functions of the manager and their proper place is in the managerial statistics— not in the accounting records.

Another contention of the advocates of the inclusion of an interest charge in costs is that such a charge is necessary where costs are used for inventory purposes to provide for carrying forward interest paid on indebtedness created for materials entering into cost where the lapse of time is a necessary part of production, e.g., in seasoning lumber. In support of this contention it is urged that where there is a substantial lapse of time between the purchase of materials and the date when they become useful or productive, the selling value of the material increases by reason of the lapse of time and that the interest will normally be recovered on the sale of the goods. This argument at first sight seems plausible but on further consideration it is clear that the payments of interest are not parts of the cost but are made by arrangement between the parties entitled to the profits.
In other words, the stockholders who have compounded with the lenders for interest at a fixed rate payable at a fixed time have in effect made an advance out of their share of the profits pending realization. It may be argued that this payment can from the point of view of the stockholders be properly carried forward as an asset, but if so it should be as a deferred charge against profits and not as a part of the cost of the inventory.

Interest on invested capital is unquestionably an important factor to be taken into consideration in the determination of the selling policy of any concern. But to say that selling price will be affected if interest is not included in manufacturing costs cannot be true, because if articles are sold at a price which cannot yield a reasonable interest on invested capital it is because the public refuses to pay more for them or competition of other producers operating under more favorable conditions has lowered the price, and no matter what a company's cost statistics may show no greater price can be obtained. The only alternative is
to make more productive lines or to cut the \textit{real} costs.

Cost accounting records, moreover, cannot make available for use all of the considerations which must be taken into account in determining the selling policy of a concern because of the limitation to dollars and cents. There remain many factors of operating costs which cannot be measured in these terms; a knowledge of these is just as essential as any item expressed in figures prefixed by the dollar sign. Cost of selling or distribution, terms of credit and risk of loss on accounts receivable must also be considered. At this point interest must enter the calculation, but to inject it into costs serves only to confuse and to render more inaccurate the cost accounts which under the most favorable circumstances are apt to contain a margin of error far too wide. Hence, both from a standpoint of proper accounting treatment and of convenience, the interest calculations should be made in the business statistics of the concern.
and not in the accounting records.

One of the primary purposes of cost-keeping is to enable the manager to make scientific cost comparisons, and great stress has been placed upon the necessity of an interest charge to manufacturing cost in this connection. Comparisons of money costs of manufacturing a product, either as between different concerns or different periods of the same concern, are practically valueless unless supplemented by data showing the reasons for the divergencies in the cost figures and explaining cost fluctuations. Accounts whether they contain an interest charge or not can only indicate the cost, but cannot indicate the causes which explain that cost. Recourse must here be had to the recorded physical facts of operation, - the internal business statistics of the concern. Since it is necessary for the executive to make use of this subsidiary data in order to explain cost fluctuations, the calculations of interest on investment (which are pure estimates, for the interest earned cannot be determined until the end
of the fiscal period) should be incorporated with the other statistical data rather than injected into the accounting records dealing with the operating expenses and revenues of the business. Furthermore, the introduction in production costs of a constant element (as interest at the current market rate) tends to obscure fluctuations in actual cost due to causes which may be corrected, and thereby defeats the very purpose of cost-keeping.
VI

CONCLUSION

The inclusion of an interest charge to cost in the accounting records of a business concern is clearly injecting into those records an economic cost, the accounting nature of which is an anticipated profit. It is fundamental to recognize the impossibility of making the accounts of a particular business concern square with the distribution of the social income. Cost to the accounting represents actual value outlays; it is the sum total of all the expenses incurred by the producer in making a gross income. In economic analysis price equals cost (includes both interest and profits) but in accounting profits depend upon price. There is no assurance that interest will be earned at all; but in case interest on the investment is earned, it is an income to the investor and not an expense. Interest and profits are fundamentally inseparable in accounting.
As to the actual effect of charging interest to cost, it must be clearly recognized that such a charge cannot affect the ultimate profits however handled. It would be but a hypothetical book entry which would be liable to abuse and would result in confusion and error as to the real costs. Regardless of the rate adopted, it would necessarily be arbitrary and represent a constant element in cost and to introduce into production costs a constant element tends to obscure fluctuations in actual cost due to causes which may be corrected and thereby defeats the very purpose of cost-keeping.

An interest charge to manufacturing cost would necessarily seriously affect the inventory valuations. Any portion of interest on invested capital which may be included in the inventories represents an anticipation of earned profits, and to that extent the balance-sheet is false and misleading. Bankers naturally object to any anticipation of profits on the part of the borrower, and hence such a procedure would most certainly tend to impair the credit
of any concern adopting it.

No objection is to be made to the estimation of interest for comparative purposes but such estimate should be recognized as being hypothetical and not representing value outlay, and as having no significance in determining competitive prices. The proper place for such estimate is in the managerial statistics of the concern, and not in the accounting cost records the purpose of which is to determine the cost to the investor of making a gross income.

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