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The Pricing of Inventories

By J. PAUL SUTER

In the old days, every butcher shop had a number of customers who specialized on buying dog meat. They were mostly old ladies—dear old souls, highly refined, indisputably aristocratic, but rather short of cash. They usually brought Fido with them; and they were careful to point out to the butcher that, because of the delicate state of Fido's stomach, only fresh dog meat could be considered. The butcher was sympathetic. He understood. The scraps which he handed out to the old ladies were fresh, and sometimes they were more than scraps; and he was careful never to breathe his suspicion that the benefit derived by Fido from the meat was mainly aesthetic. He winked at the guileless fraud whereby the old ladies lived, and in doing so he furthered a rather odd economic paradox: to wit, that an old lady and her dog could subsist more cheaply than the same old lady without the dog.

Now, this has nothing to do directly with the pricing of inventories. Indirectly, it has quite a vital connection. It is a paradox. So are many inventories, as priced by reputed accountants at the end of each half-year. It was an expedient, on the part of the old lady. So is an inventory value, when it is twisted to what the executives of a company desire it to be and the principles of sound pricing are ignored. Above all, there is a way of making paper profits by taking inventories instead of by selling goods. In such cases, the executive who revels in the "good" statement he has thus obtained is the old lady, and surely the hoodwinked stockholders, whose profits never quite reach their hands, are in the position of expectant but disappointed Fido. One other comparison might be noted in the fact that the good old days came to an end; and just as inevitably must halcyon days vanish and stark hard times appear for any manufacturer (or, indeed, for any one else) who persists in ignoring the truth.

How, then, should an inventory be priced? "At cost or lowest market, whichever is less," answers the accountant. We cannot gainsay him, nor shall we find much ground for argument if conditions happen to indicate the market price. We may inquire,

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however, as to the meaning of cost in its application to inventories.

Assuming that the costs are determined correctly (for we are not trying to cover the broad field of cost finding) we still are left in the dark as to what costs should be used. Shall they be this month's costs, or last month's, or those for the month before? "Oh, the latest costs, by all means," answers a whole school of pseudo-accountants. Very well; but here I have a thousand tons of a certain article on hand. Last month, I produced a hundred tons, and, because of the small production, it cost me the high price of fifteen dollars per ton. The month before, with a production of seventeen hundred tons, I rejoiced in the low cost per ton of eleven dollars. Shall I price my thousand tons at fifteen dollars, when I know well that nine-tenths of it was produced at eleven dollars? If I do, I shall add thirty-six hundred dollars to the paper profits for the period I am covering, without having an honest penny to show for any of it. Shall I not, rather, if I am thinking straight, price one hundred tons of my inventory at fifteen dollars, and the remainder at eleven?

I shall not be using the latest cost. I shall be using the cost of the latest production equivalent to the inventory I am pricing.

This is the simple statement of a law that has almost universal application in the pricing of inventories. Substitute the word receipts for production, and the rule is extended to cover raw materials and all other supplies that are purchased by a manufacturer instead of produced by him—always provided, of course, that the cost thus determined is not higher than the market.

It will be objected that, under some conditions, this rule would be impracticable of application. Suppose, for example, that my thousand tons represented only one item in an inventory of more than five hundred products of my manufacture, and that many of the items were equivalent to the productions of several months. The task of analyzing each item, so as to obtain a price by applying against the inventory precisely the adequate equivalent in production, would be considerable. True, such a task might be well repaid in the information it would afford as to slow-moving materials in the inventory; yet there is an easy way of avoiding so much labor. That way is to use an averaging process at the end of each month or other cost period, and to compute the cost

of goods sold by using first the balance at the beginning of a month, then enough of the current production to equal the quantity sold, if that quantity exceed the first-of-the-month's balance. Of course, if the quantity sold should be less than what was on hand at the first of the month, the cost of the entire sales would be computed at that first-of-the-month price. In the first instance, the price of the inventory at the end of the month would be the same as that of the current production. In the second instance, the inventory would consist of the entire current production, plus what was left of the balance on hand at the beginning of the month, and as a consequence the inventory price would be somewhere between that of the production and that of the previous balance.

Put abstractly, this operation sounds rather complicated. Really, it is absurdly simple. The small boy who has five green apples and then buys ten rosy-cheeked apples is proceeding according to the above practice the minute he decides that he will eat the five green apples first. Being informed of his decision, if we are told that he has twelve apples left, we know at once that this number must consist of two green and ten rosy-cheeked apples. If, however, the remainder of his stock consists of only seven apples, we are equally certain that these must all have rosy cheeks. All that we need in order to arrive at the value of his "inventory," and, incidentally, at his cost of consumption, is the price that he paid for each of the respective lots of apples.

If, to our minds, apples are apples, and we do not care to distinguish the green from the rosy-cheeked in our inventory, we shall use the same method regardless of which kind of apples is eaten first. As soon as five apples are gone, we shall consider that the value of the green fruit has been subtracted from our records; conversely, we shall carry the ten apples that are left at the cost of the ten that had rosy cheeks, and we shall not care how many of them are green.

This is not inaccuracy; it is common sense. I can not carry apples and potatoes, nor pig iron and bessemer ingots, indiscriminately in the same inventory account; but if, for merchandising purposes, my apples are alike, and it makes no difference of selling price or quality which ones I sell first, why should I trouble myself with the intimate history of each piece of fruit,

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or of each bushel of potatoes, or ton of pig iron or ingots? Let me keep in separate accounts such items as should be distinct; then, once I have assigned an article to its proper group, I may safely lose sight of its identity.

Proceeding further, if I compute my manufacturing costs in monthly periods, what shall I gain by going back of the beginning of the month to analyze the make-up of my inventory items? That first-of-the-month balance necessarily stands at an average price. I am justified, then, in treating it as an integral quantity. If my quantity sold equals or exceeds it, well and good—it is gone. If I sell less than the quantity at the beginning of the month, what I have left of it simply joins with my current production or receipts to produce a quantity, at an average price for the two, which will be my inventory at the end of the period.

Some manufacturers, perhaps, may consider it advisable to keep the inventory analyzed each month, and to use strictly the oldest production first, but in most concerns, especially those of any great size, such a practice will not justify the labor required to carry it through.

A hearing must be given, however, to the man who inquires, "Why use the previous balance first? Why not first use the production or the receipts?" Two answers occur, at once: one, that the use of the previous balance, before the production is touched, automatically brings the inventory down to date, so that at all times the stock on hand is priced in accordance with the latest equivalent production; the other, that this plan enables one set of clerks to compute the cost of sales on all articles where the quantity sold is less than or just equal to the previous balance, while another set of clerks is determining the cost of the current production. When the number of distinct inventory accounts runs into the hundreds, this second consideration has a good deal of weight.

It is well to note, however, that special conditions may indicate a variation from the above practice. For example, a persistently rising cost of manufacture may make it advisable to use the current production first. During the great war, one of the largest corporations in America instructed its cost accountants to use either the previous balance or the current production first, whichever was the higher in price. This practice delayed

the closing of the corporation's books, but it resulted in a conservatively priced inventory. That the precarious conditions of war time, with the probability of a declining market, justified such a course hardly any one will deny. This practice has much the same effect as would have been produced by setting up a reserve for shrinkage of inventory values. In a period when all costs were abnormally high, and when the future was even more obscure than at ordinary times, such a procedure was eminently wise.

We do not insist, then, that the previous balance must be used first; but we are willing to stand or fall by the statement that the equation

$$\begin{aligned} &\text{Previous balance} + \text{production and receipts} = \\ &\text{Cost of sales (or of consumption)} + \text{balance at the} \\ &\text{end of the period} \end{aligned}$$

should be maintained at all times. This is merely another way of stating that the credits should equal the debits—which is hardly a revolutionary opinion to express. It seems fairly obvious, also, that the price of the inventory at the end of the period must be that of the previous balance or that of the production (or the receipts), or else must be a figure somewhere between the two. When we have gone still further by applying the same rule to the cost of goods sold or consumed, the trail has begun to be well defined.

The subject is not adequately covered, however, until some reference has been made to the reasons for discrepancies between actual inventories and book figures. Such shortages or overages often have a material bearing upon the price at which an inventory should be carried.

It will be found that these differences almost invariably arise from some one or some combination of the following conditions:

- (1) Actual physical shortages or overages, due to theft, loss, seepage, etc.
- (2) Errors in the book records, such as
 - (a) Invoices taken into account twice;
 - (b) Material received, but no invoices taken into account;
 - (c) Inaccurate production reports;

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- (d) Material sold or otherwise disposed of, without being deducted from the inventory records;
- (e) Mechanical errors in adding, deducting, posting to wrong accounts, posting wrong quantities, etc.
- (f) Errors in the previous inventory;
- (g) Errors in the current inventory.

(3) Physical shrinkages or increases in the materials inventoried, due to drying out, absorption of moisture, chemical changes, etc.

The manner of handling most of the differences arising from the above causes is self-evident, in so far as they relate to the pricing of inventories. Errors in the book records should be corrected, as a matter of course, and these corrections should be considered in finding a price for the balance. If quantities produced have been reported wrongly, it must be borne in mind that under a manufacturing cost system, any change in the number of units produced changes the cost per unit and thus affects the price of the inventory. The error may not be sufficient to warrant all the labor of reworking the costs, but any steps taken to ignore it should come about as the result of deliberate decision, and not through oversight.

Another rather obvious point, but one nevertheless that should be mentioned, is that the price of the book balance may be absolutely correct, and yet may not be the price to use on the actual inventory. Suppose—to quote one of several conditions that might result in this seeming paradox—that, though the book balance of some certain commodity is equivalent to, say, two months' production, a physical inventory discloses that, owing to a genuine but hitherto undiscovered shortage, the quantity actually on hand is less than that produced in the latest month. Under the rule usually followed of "using the previous balance first," the inventory will be carried at the price of the production for the latest month; and yet the book balance should not be, and probably will not be, at that price.

Still another special condition may be brought about by actual physical shrinkage in materials inventoried. It is perfectly possible that I may have on hand in one inventory a thousand pounds of some fluctuating substance, and that, without my having used or otherwise disposed of any of it, I may find only

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nine hundred and fifty pounds of that substance on hand in the next inventory, the weight reduction having been caused by natural drying out of the material. Clearly, the smaller quantity is worth as much to me in total as the larger—in fact, the cost of the drying process may make it worth more. Yet, to one unacquainted with the peculiar conditions in my industry, I shall have achieved somewhat the same economic paradox as did the old lady and her dog.

Indeed, I may go that one better. I may have in my inventory a valuation with no quantity whatever against it, and still not be outlawed. This condition comes about sometimes where expense of a given kind is applied to certain materials, while other like materials go directly into the production without the necessity for any such expense. In certain industries much cost bookkeeping is saved by carrying this "inventory expense," as it may be termed, in a different account from the materials to which it applies, those materials being combined in the accounts with others of like nature that are used without special treatment. As the specially treated materials are used, the expense applicable to them is written off to its proper production channel. This is somewhat of a side lane, which does not call for more than passing mention, but it illustrates an interesting exception to the usual inventory procedure.

A good many other side lanes might be entered, and crooked by-paths, too, but in the end they would lead to the same conclusion, which is, that the pricing of inventories is a matter for common sense. It is a matter, also, in which the most rigid honesty pays best in the end—not commercial and financial honesty only (if indeed they differ from other sorts) but that highest kind of intellectual honesty which compels a man to face the facts squarely and write them down truthfully for what they are.