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C. B. Williams

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Treatment of Overhead when Production is Below Normal*

By C. B. WILLIAMS

Treatment of overhead when production is below normal is a timely subject, not only and not merely because this is a period of sub-normal production, but because it is time that we determined and adopted better methods of treating overhead expense. This statement assumes that our present methods of treating overhead are incorrect and it is my belief that, to a considerable extent at least, this is true.

There is an old proverb which says: "There is no great loss without some small gain." One gain that may be derived from the present period of sub-normal production, one that would accrue both to the accountant and to the business man, is the adoption of better methods of determining costs, especially overhead costs.

The present period of sub-normal production is compelling a searching investigation of our cost-finding methods in order to determine how they may be adjusted to a period like this. If we consider what is really at the bottom of this investigation, we must come to the conclusion that our former methods of handling costs, particularly overhead costs, have been wrong. Certainly, a thing which is right in principle today does not become wrong in principle tomorrow because conditions change. If in the present period of sub-normal production it is found that our method of treating overhead will not apply, then we must assume that, although it appeared to be correct in normal periods, it was, nevertheless, wrong in principle.

Frequently errors in our methods do not stand out prominently because, under conditions such as existed in the past, we obtained fairly acceptable results from the methods we were using, in spite of their errors. This has probably been the case in the treatment of overhead. If we can accept this as true, the real subject of our discussion is the proper treatment of overhead at any time.

Many business concerns and some accountants have adopted methods such as I shall propose and therefore have no especial problem growing out of the change in business conditions. It is not necessary to find a new method, but rather universally to adopt a method which has stood the test of changing conditions.

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Because the time is limited and we cannot discuss all kinds of business, permit me to discuss this question from the standpoint of a manufacturing business, because that business probably presents the most complex problems and also because it will be the business most prominently in our minds when we discuss overhead distribution.

In a manufacturing enterprise we first invest capital to provide a suitable working place and suitable machines and equipment with which to work. As a preliminary to production, we provide a force of superintendents, foremen and other supervisors, and we are then ready to employ workmen and to start production.

Let us see what these expenditures mean. A suitable place in which to work requires heat and light. It must be kept clean and in repair. It must have the services of watchmen and janitors. Expenses are incurred for taxes and insurance, and the plant depreciates. Machinery and other factory equipment consume power and a certain amount of supplies. They must be kept in repair. They involve expenses for taxes, insurance and depreciation.

Superintendents, foremen and other supervisors, who form the nucleus of the organization, must be kept together, regardless of the volume of production. All this means a certain outlay which is based on the supposed normal production of the plant, but the expense goes on at about the same rate whether the plant produces below or above the supposed normal.

When a new enterprise is contemplated, one of the chief considerations is the probable volume of business. In fact, almost every other decision depends upon this. The expected profit per unit is based on a certain volume and, of course, this expected profit is the difference between an expected cost and a known or estimated selling price. In the mind of the investor, therefore, every calculation is based on the expected normal volume of business over a period of years.

Most accountants have been in the habit of considering one year as the proper accounting period. It many cases the accounting period has been fixed as a single month. May I venture to suggest that in this we have sometimes been mistaken? Capitalists do not invest their money and erect a manufacturing plant with any idea that it is to be a yearly proposition. They do not invest their money with the sole thought of getting a particular rate of return in any one year. Rather do they look to a satisfactory

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return over a period of years; and this return is predicated as much on the normal cost of production as on an expected selling price.

This may be very well illustrated in the case of the establishment of a certain large department store, the name of which you would recognize were I to mention it. This store was started with the expectation that it would not show a profit for the first three years, and a large sum was set aside to cover the losses expected during the period in which the store was being established and a definite line of customers being obtained. Certainly, the amount set aside to cover these expected losses indicated that the owners were considering their investment from the standpoint of a period of years rather than a single year. They surely would not consider the excess of expenditures over receipts in the first year as a loss. Rather would they consider it an investment, which was expected to be returned in succeeding years. An accountant would not have thought of closing the books of the concern at the end of the first year, writing off the difference between income and expense as a loss and showing a deficit on the balance-sheet.

We have this problem in every new concern and we commonly set up what we call "organization expenses," which are written off during a period of time, the length of which may be more or less influenced by subsequent profits. Does this not prove that we are not entitled to consider the costs of one year independently of the costs of other years?

If perchance you disagree with the foregoing, permit me to give an illustration with which I am sure you cannot disagree.

In making income-tax returns, you doubtless have wished you could find a way to make the loss of one year offset the gain of another year. You have said that it was not fair to industry to tax heavily a profitable year which might come between two losing years. This has frequently been cited as one of the inequities of the income-tax law. If you have had such an idea it means that you have believed that a single year should not be considered independently of other years. If the foregoing be true about both general accounting and income-tax returns, it is equally true about cost accounting and that particular part of cost accounting which deals with overhead expense.

We have said that the management invests money in plant and equipment and hires a force of supervisors and that supervision expense goes on at about the same rate regardless of the

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volume of production. The investment is made to provide the producing machine which, over a period of years, is expected to give a satisfactory return on the investment. This being the case, are we not entitled to consider overhead from the standpoint of a reasonably long period of time, rather than from the standpoint of a single month or year?

The next question is how overhead expense should be distributed to equalize it over periods of unequal production. This can be done by using normal overhead rates. Normal overhead rates are established by determining the expenses of a normal period and by establishing a normal divisor for the same period. Ordinarily, the longer the period covered, the more satisfactory the result. The period should be long enough at least to embrace one complete cycle of normal, below-normal and above-normal production. The divisor can be any of several bases commonly used for distributing overhead, such as weights, quantities, direct labor, man hours or machine hours.

Let us assume that the business is one in which productive man hours is a correct basis. From past records, together with our knowledge of present and future conditions, we can determine the probable hours for the period or we can use engineering estimates. The number of hours divided into the expense would give the rate per hour for overhead which would be applied under normal conditions. It is, of course, necessary that a factory cost system be in operation and that the productive hours be collected in such classifications as would be required for overhead distribution purposes. The normal rates established for the departments or machines could be applied to the time cards or to the cost sheets or in any other way that might fit the cost system in use.

In establishing normal rates we must be careful

- (1) That we get a proper analysis of the expenses over a sufficiently long period; and
- (2) That we make provision for increases or decreases which may be brought about by a change in the policy or through a difference in market conditions; and
- (3) That we establish the number of normal hours at a correct figure.

“Normal hours” does not mean possible working hours. If we assume that the number of working days in a year is 300, excluding Sundays and holidays, and that the working day is 8 hours, our

possible working hours per man would be 2,400. This figure should be reduced to allow for various interruptions which will occur even in the best organized plants. It has been my observation that about 75 per cent. to 85 per cent. of the possible working hours will ordinarily be found to be normal for most industries. If we assume 80 per cent. to be the correct figure, our normal per man would be 1,920 hours a year. In a department of 50 men this would be 96,000 hours. This figure, divided into the normal expense of the department, would give us the rate per hour to be used.

Someone may say: "But suppose you do not have your normal rate correct?" In reply I would say that I have heard of accountants making mistakes, and it is entirely possible that they may err in setting these rates, but that is no reason why the method should be condemned any more than a profit and loss account should be discontinued because sometimes it is incorrect.

We must not lose sight of the importance of recording the actual expenses. We should make up schedules as we have always done, showing the expenses actually incurred, but we should apply overhead according to the normal rates, and we should present for consideration of the management the difference between the actual expense and the applied expense. A study of the difference between the actual and the normal expense is, of course, of great importance.

Normal rates must always be considered in the light of present conditions. A normal rate does not mean a fixed rate. As conditions change, the normal will change, as, for example, an increase in the rate of wages would change the amount of non-productive labor in the department and thus affect the normal rate. Again, a change in the method of processing might change the hours required and thus affect the normal rate.

In our accounting procedure we must have an account analogous to a reserve, for which I might suggest the name "undistributed expense." We would charge the various costs and credit this undistributed expense account with overhead at our normal rate per hour. We would collect for analysis purposes the regular expense in the expense accounts and would transfer the total, probably at the end of each month, to the debit side of the undistributed expense account. In a period like the present there would be a constantly increasing debit balance in this account, and this balance would measure the extent to which the factory operated below its normal capacity.

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In analysis of the business, executives should consider first the amount of profit made on the goods manufactured and sold and then deduct the loss incurred which is due to a lack of sufficient production, thus showing the net result of operating the plant, which might be either profit or loss.

In periods when the plant operates above its normal capacity the undistributed expense account would accumulate a credit balance; but again the management should analyze its business by first determining the profit made on manufacturing operations, considered from a normal standpoint, and should then add to this the profit made because the company was able to operate the plant beyond what might reasonably have been expected.

One of the chief functions of accounting is to furnish useful information. If we make a profit and loss statement for a year like 1920, showing a loss of \$25,000.00, how much information does it furnish? Probably business was quite steady during the first part of the year and gradually became poorer during the latter part of the year. Almost without exception, executives would ask how much of the loss was due to a slump in business. How often you have wished you could answer that question, and yet how easily it could have been answered if the costs had been kept on a normal basis. Then, instead of saying the loss was \$25,000.00, you could say the profit on the business which was done was \$40,000.00, but the loss due to the falling off of business was \$65,000.00, the net result being a loss of \$25,000.00.

In a good year we might show a profit on the business done as \$80,000.00, to which should be added \$45,000.00, because we operated our producing machine beyond its normal capacity, the net result in this case being a profit of \$125,000.00. This viewpoint is a fair and reasonable one, in the interest of both the manufacturer and the public. The public should always be willing to pay a price based on normal working conditions. If the plant operates below its normal capacity, the public is quite willing that the management should bear the loss. It should likewise be entirely willing that the management should obtain the extra profit due to operating the plant beyond normal. This is in the public interest, because, if we pursue a policy during periods of depression that will force the financially weaker concerns into bankruptcy, we shall thereby eliminate the healthy competition which stabilizes prices in normal times.

Another advantage in treating overhead in this way is that it gives the management some idea of the amount of loss which might be eliminated by increasing the volume of business. Under older methods of accounting the manufacturer was at his wits' end to know what to do to safeguard his interests when business could not be readily obtained. In spite of the accountant's contention that all the expense incurred was a proper charge to his costs, he realized that if he attempted to raise prices it would only result in a further loss of business because the public would not buy at the increased price. Therefore, if he did anything, he arbitrarily lowered his price in the hope of getting business, without having any idea what the correct price should be or what the effect would be on his financial showing. Under the method of establishing normal rates, he is able to know exactly what the public ought to pay for his goods and exactly what he loses because he is not turning out a sufficient volume. From an analysis of his costs he can tell how much he can lower prices in order to get an increased volume of business and thus absorb some of his overhead expense. Also because he has exact knowledge about the loss which he suffers, he is more apt to analyze factory conditions and to decide at what points economies may be effected.

I venture even to suggest that in some industries part of the undistributed overhead expense at the close of a year, if it can be shown to be due entirely to a lack of business, could, with propriety, be carried forward into succeeding years to be absorbed during periods of full production. This would be especially true if the business were one which expected to have varying volumes of production in different years. In such a case the normal productive hours should be established at a figure which would be an average for several years. In making a report, this undistributed expense should be shown as a deferred charge and be fully explained in the balance-sheet, so that no one could be misled.

Some may contend that this is not a conservative policy. Is it not better to be right than to be conservative? The mere suggestion that a certain way is a more conservative way implies that there is an unknown quantity and that, not knowing the right thing to do, we are trying to play safe.

The foregoing is submitted as a basis for discussion. There are always right and wrong ways of doing a thing. Through analysis and study of these ways and through discussion and the conflict of opinion we determine the right way.