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Manufacturers faced with the problem of overproduction usually adopt one of two methods to adjust their factory's output to existing requirements. One consists in partly or completely closing down the plants until demand can catch up with supply. This plan involves the laying off of factory hands for a more or less extended period. With the other method, practically the whole of the factory force is retained, but the number of working hours is more or less reduced. Instead of being fully deprived of their regular income, as in the former case, the workers will here receive at least part of their periodic pay. To which one of the two ways of procedure a factory management will give preference in any given case depends on the kind of industry, the general policies of the management and many other circumstances.

Delving into this question, however, is not my purpose here. I wish to refer rather, in the first place, to the economic waste involved with either of the methods mentioned. Very often a manufacturer is compelled to resort to one of these emergency measures in order to keep away more serious troubles or distress from his business. It is, nevertheless, questionable whether sufficient thought is usually given, and especially in the present trying times of general readjustment, to a third possible manner of bringing supply and demand into closer alignment.

Let us assume a hypothetical factory producing a standard article used all the year around, carrying a retail price P and entailing a cost price p per unit; if D be the usual trade discount, then $(P-D)-p$ is the manufacturer's normal gross profit per unit. There are regularly n workpeople on the payroll in this place, working 50 hours a week and producing a total of N units an hour; the average wage rate per hour is w. We will further assume that direct and indirect labor constitute 50% of the cost of production p per unit, so that $n.w = \frac{1}{2}N.p$, and of the balance of the cost price, namely of $\frac{1}{2}N.p$, 35% be made up of charges more or less independent of production intensity, such as overhead expenses, space charges, taxes, insurance and depreciation. It follows then that $35/100 \times \frac{1}{2}N.p$ is an expense item, a fixed burden, always present whether there be great or decreased factory activity. The item amounts here in a year to $35/100 \times \frac{1}{2} \times N.p \times 50 \times 52 = 455\ N.p$.

Let us go a step further. In the hypothetical factory chosen as an illustration (the conditions indicated parallel to a certain extent those of an actual case) business declined more than a year ago to such a degree that it became necessary for the management to proceed to a substantial curtailment of output. The prospects were that such action would have to be taken for a much longer period than would be the case if confronted merely with an ordinary or seasonal depression. To accomplish the reduction in question it was decided, in agreement with local laboring men, to cut the working time from 50 hours to 27 hours a week (3 days) and this was to continue as long as the slack demand. Also it was agreed that there should be no dismissals of workmen. It was felt in all quarters that in this manner the interests of labor would be best served.

Supposing that the hourly rate of output N remains unaltered for the 3-day week, then only $27 \times N\ 52 = 1404\ N$ instead of $50 \times N\ 52 = 2600\ N$ units, as before, will now be produced a year. It also follows that part of the fixed burden amounting to $35/100 \times \frac{1}{2}\ N.p \times (50-27) \times 52 = 209.3\ N.p$ will not have been absorbed by normal production charges in the course of a year. Hence the actual factory cost per unit will no longer be p, although all expense rates may have remained the same, but has risen to $p + \frac{209.3\ N.p}{1404\ N} = 1.149\ p$, that is an increase of nearly 15%.

If the usual trade discount D be $33\frac{1}{3}\%$ and the relation between production cost and retail price such that $P = 3\ p$, then there normally remains a gross profit of $\frac{1}{3}P$, as will be found in the expression $(P-D)-p$. Hence, with the cost price per unit standing at $1.149\ p$, this gross profit is lowered from $.33\ P$ to $(P-\frac{1}{3}P) - \frac{1.149}{3}\ p = .28\ P$. The difference $.33\ P - .28\ P = .05\ P$ must be considered as an absolute economic waste, since, while a charge to the producer, it benefits nobody, neither public nor labor. The latter must be satisfied in the case here considered with slightly over one half of its normal weekly pay, and the public pays the same price for the article as before, while for the owner there will result a lower net profit or none at all.

For many manufacturers the conditions may be more favorable than those described here. But there probably are as many instances where the indicated economic waste proves at least

equally considerable. If it were only a question of an operating loss and nothing else, it would mean that somebody else (suppliers or labor or public) must have made a corresponding gain. Nothing of the sort, however, takes place in the case of this economic waste. The more is waste reprehensible and it should be eliminated from our industrial picture wherever conditions will permit it.

The management of our factory might have done well, therefore, to consider the advisability of taking some course other than reducing the working week or shutting down wholly or partly. Why not the third plan? If a loss must be taken in any event, then why not, if possible, make it at least somebody's gain, in the interest of the whole community?

The economic law of supply and demand governing the price of a certain commodity works in such a way that with the supply given, as in our instance, the price to a large extent regulates the demand, particularly as far as goods for consumption are concerned. This means that lowering the price will increase consumption and vice versa, though the proportion in which this interaction takes place may be very different for different articles.

Supposing that, instead of reducing the working week, our management had chosen to maintain the normal production schedule and to apply that part of the fixed burden lost with a 27-hour week to a reduction of the cost price p, followed by a corresponding cut of the retail price P, this action would find expression in the following figures:

Normal production a year: 2600 N units;

Uncovered burden with 27-hour week: 209.3 $N.p$ a year, where N denotes the normal production rate per hour and p the cost price per unit. Therefore

$$\text{reduction of } p = \frac{209.3\ N.p}{2600\ N} = .080\ p.$$

Consequently, the new cost price is $p_1 = .920\ p$ and, if the relation previously adopted of $P = 3p$ be retained with respect to p_1 and P_1, a new retail price results in $P_1 = 3p_1 = 2.76\ p$, that is a retail price reduction of 8%. One third of this is due to lower production cost, one third is borne by the factory's sales and administrative departments in the form of lower gross profits and one third by the dealers.

In times of depression, a retail price reduction of 8% from the level of a boom period may not prove enough for many articles in order to stimulate retail demand so as to bring it again in line

with normal production capacity. In such circumstances and provided that labor shall not be relatively worse off than before, is it not fair to take into consideration a lowering of wage scales? It could probably be shown that in most instances where the procedure here suggested is carried out, labor actually fares better with a certain wage cut than with reduced working hours at old rates, or with only part of the men working and the rest filling the ranks of the army of unemployed. Efficient and progressive firms make every effort to keep their workers on full schedule; but for the best success labor's intelligent coöperation is also necessary.

To carry the idea a little further, we will assume that our management estimates that a reduction of 20% of the retail price P is indicated in order to bring the price in harmony with prevailing economic conditions and secure sufficient demand to warrant maintaining the contemplated normal production schedule. It is also felt, and this is an important consideration, that with markedly lower production costs, it would be far less risky and therefore more commendable to produce at times for stock than would otherwise be the case.

We have arrived already at an 8% reduction of P by applying an unabsorbed portion of the factory burden to cost of output and thereupon passing the benefit to the retail trade, let us now determine how much the wage rate w should be adjusted downward in order to permit a drop of 20% in the retail price.

Earlier in the discussion it was assumed that expenses for labor represent 50% of the cost price; but with wages changed, that is lowered in our case, that ratio may no longer hold good. However, for simplicity's sake we work on the assumption that the costs of other items, such as raw materials and power, etc., have equally gone down and that consequently labor's contribution to the cost continues to be 50% of the total. Also the relation shall be $P_2 = 3p_2$, where p_2 is the new cost and P_2 the adjusted retail price, the same as we had before $P = 3p$. Since P_2 shall be .80 P (20% lower), we have further

$$P_2 = 2.4p = 3p_2, \qquad \text{or} \qquad p_2 = .80\ p$$

Inasmuch as the virtual elimination of the economic waste previously complained of has already brought down the price to

$$P_1 = 2.76p = 3p_1, \qquad \text{or} \qquad p_1 = .92\ p$$

there remains as part of the original cost p to be covered through wage reduction alone $.12\ p$

which means that a scaling down of the wages by 12% would be

sufficient to bring ultimate retail price reduction from 8% up to 20%, provided that the other costs are becoming similarly lower, as we have assumed.

We have conditioned the wage cut in the application of our plan on the requirement that the workpeople shall be relatively not worse off. Let us examine the status of labor at this moment. Under the 27-hour week plan, with original wage rates intact, a factory hand received 27 w a week, w being the hour rate. The plan outlined above requires the men to do their regular 50 hours' work, but will net them weekly $50 \times .88\ w = 44\ w$, instead of 27 w. For $w = \$1.00$, this means \$17.00 more a week.

Briefly to summarize the advantages thus secured, we may say that no man is thrown out of work; that the workpeople as a whole fare better than under any other emergency plan; that the public is benefited; and particularly that there is no economic waste. Hence if a similar policy were carried out in the main industries, the standard of living would not be lowered but raised, and the general condition of the country would thereby be not adversely, but favorably affected, notwithstanding the contrary view sometimes expressed by banquet speakers and others.

Accountants are keen observers of business conditions and detectors of waste; and what I have written is not news to them. However, as it is with figures that many things can best be expressed and most convincingly brought home, I have chosen this method to illustrate the importance of the economic waste resulting from the non-absorption of part of the factory burden by production. As long as there are only isolated cases of this kind, the effects are not felt in the vastness of our economic structure. The matter is different to-day. The intangible losses, unseen and even unsuspected by many, that the country suffers at this time as a consequence of the conditions existing, must aggregate a very formidable total and decidedly affect the living-cost level.

Incidentally I contend that a judicious and quick adaptation of wage scales to new conditions would benefit labor, that a comparatively small cheapening of production may entail a much larger reduction of retail prices and that lower production costs permit a manufacturer much more readily to produce ahead of momentary demand.