

Let us see, however, how it works out in practice; and in this discussion I shall draw only upon my own actual experience or cases that have come under my actual observation.

I have referred to setting the premium time on a basis of the time that work has previously taken. I had an illuminating experience with that method about twenty years ago when Halsey's system was receiving much attention, it having just been endorsed and recommended by the National Metal Trades Association. A concern of which I had just become superintendent had been tabulating over a period of two years the time taken for each operation on each item of their product. I found such wide variations as from less than one hour to twenty hours for planing a connecting rod for a steam engine! All I could do was to use my best judgment in deciding what to adopt as the premium time, eliminating those records that seemed unreasonable. I also found later on that certain operations had been performed by competent and conscientious workers—for whom there was little opportunity to reduce their past times—while others had been done by men who were lazy and incompetent, whose past output could easily be doubled.

It is obvious that rates thus established must in a great measure be unfair and not result in improving the management's standing in the minds of the workers.

Even if there did not exist the objections I have cited to rates based upon past performance, a greater difficulty presents itself. I refer to the manufacture of new products, to changes in old products, and to radical improvements in equipment or methods. There being no records that may be used in setting the premium time for these, it must be arrived at by some sort of estimate—usually in the same way that old-fashioned piece rates were set. They may be high or they may be low—as a rule they will be consistently low in comparison to older rates based on records of past performance. Lack of uniformity in rates under any scheme is objectionable. In piece-work shops this is what I have referred to as "good work" and "bad work," a great obstacle to efficient management and a source of trouble, as anyone who has had experience with it, including many a foreman or superintendent, can tell you.

Halsey's premium system has been used in shops where in varying degree the premium time has

been based upon studies and standardized conditions. It has even been used in connection with an otherwise really good application of the principles of scientific management, but its use under such conditions has never appealed to me for the following reasons:

1. It seems foolish, when under standardized conditions the studies unquestionably show that a job can and should be done say in ten hours, to tell the worker that twenty hours is allowed and that he will be given half of what he saves if he does it in less.

2. Theoretically at least the management has no cause to complain if the workman takes anywhere up to twenty hours to do a ten-hour job; it is up to him.

3. There is not a sufficiently clear placing of responsibility on the management for the maintenance of standards upon which depends the performance of the work in the time the studies show it should be done. If the worker exceeds this time it is too easy to blame the workman and, as in straight piece work, the old excuse may be fallen back upon that some are good workmen and some are poor.

Effect of Changes in Method and Equipment

To illustrate more concretely the fundamental weaknesses of such pay systems, let us say that a concern which has adopted the Halsey premium system has a cylinder to be bored, planed and drilled. There will be a certain time set for each of these operations based upon records of the time it has taken to do them. At the time the premium rates were established, the practice was to set that cylinder on a pair of V blocks on the carriage of a lathe, and bore it out. They faced it by clamping a facing head on the boring bar. They planed it by setting it on a planer and laying it out and drilling it, one hole at a time.

Now let us suppose that all of a sudden there develops an increased demand for that particular cylinder; so great a demand that they put in a special boring mill which enables them to do the boring in very much less time than required by the crude method used before. Next, they put in a multiple spindle drill which enables them to drill from a jig all of the holes at one time.

When they established the time for doing each of these operations, they promised the workmen that

they would not cut the rates. Half of any saving thus effected was to be given to them. But under the new conditions, the work takes, let us say, less than one-quarter the time it took when the rates were established. The same condition in greater or lesser degree develops in connection with all the products of the plant. Little by little there creep in various improvements for which the workers are in no way responsible.

This illustration points out a very significant and common fault found in most applications of either piece-work or premium systems. The rates set were simply for boring, planing and drilling each cylinder whether there might be one or one hundred to be done at a time; the particular machines in which the operations were to be done were not definitely specified; nor was the method by which each operation was to be accomplished or the tools to be used specified.

I think it will be obvious to you that rates which may be correct and fair to both employer and employe for work done under one set of conditions will not be so under radically different conditions.

Now let us suppose that the company we have been discussing has competitors, one of whom has recently entered the field. This newcomer has modern equipment and is not handicapped by premium rates established by antiquated practice which the employer has unqualifiedly promised not to change.

His men may even on day work be turning out much more product than the workers in the older establishment who feel that it would be unwise and unsafe for them to show too great a contrast between the premium time allowed and the time taken to do their work.

Employers are prone to assume that the workers will grasp every opportunity to decrease the time taken to do work and so earn higher premiums. Experience, however, does not justify such an assumption, and as a rule it will be found that in every shop working under straight piece work or premium systems as ordinarily applied, the workers have set for themselves what they regard as a maximum that they may safely earn.

Let us return to our illustration. The newer competitor in the case cited enjoys not only a lower direct labor cost but a correspondingly lower overhead or indirect cost, and as a consequence can undersell the older company, which must either lose money or lose orders.

This condition obliges the older company, if it is to remain in business, to cut the premium rates, and in so doing to go back on its agreement with its employes. And that is exactly what happened in the case of a well known American company, with the result that it caused a disastrous strike.

I shall not take time to discuss the modifications of the Halsey plan, as to do so would only distract attention from the vital and fundamental points that I am trying to bring out. Many of these modifications have in their attempt at improvement only resulted in complicating matters and adding to the basic defects of the original scheme.

The Task Idea

Taylor was the first to formulate and advocate a system of pay embodying what for want of a better name he designated as "the task idea"; that is to say, a system under which increased earnings depend upon the performance of a definite job, or task, within a definite accurately determined time, under definite standardized conditions, in a definite, prescribed manner, and in accordance with definite requirements as to quality.

This plan Taylor described in a paper—"A Piece-Rate System"—presented before the American Society of Mechanical Engineers in 1893, in which he not only presented the task idea, but what was of at least equal and perhaps even greater importance, explained and advocated elementary time-study as a means of accurately or scientifically setting rates. In discussing the task system it should be understood that the time computed for any given job is based upon elementary time study.

Taylor's Differential Piece Work

Briefly the Taylor "Differential Piece-Rate System" provided for the payment of a high piece rate for the accomplishment of the task and a low piece rate in case of failure. While there is no necessarily fixed relation between the high rate and the low rate, which might properly vary considerably for different kinds of work, let us for illustration assume that the former is one-third greater than the latter. For example, if a worker to accomplish his task should produce one hundred units of work in ten hours, the high rate would be six cents per piece, whereas if he took longer than ten hours to accomplish the task, whether he might exceed the time by five hours or five minutes, he would