

department determines the task times and with the base rates, fixes the rate per unit. This process is parallel with the setting of the day rates which are necessary in day rate, premium and bonus plans. But it must be clearly understood that these base rates apply only to piece-work plans.

For employing and promoting workers from one grade to another, it is necessary to show, in addition to the base rate classification, the minimum and maximum hourly rate for each occupation or operation, that is, a hiring or inexperienced workers' rate, and a rate paid experienced employees. In standardizing such a classification a start would be made with the lowest-paid, hourly rate of the plant, and this would be increased by a standard increment up to the maximum. The generally accepted increment varies between 10 and 15 per cent. For convenience in figuring it is advisable to have integral numbers, and with a variation from 10 to 15 per cent it is not difficult to work up a classification.

For example: starting with a minimum per hour of (cents) 15, 17, 19, 21, 24, 27, 30, 34, 38, 42, 47, 52, 57, 63, 69, 75, 84;

From such a wage classification, the experienced worker's rate for each occupation can be fixed to correspond to some figures in the classification. The minimum or hiring rate for this occupation could then start say two steps below, promotion being one step at a time. For example: If a rate for a certain occupation is determined to be 30 cents per hour for an experienced worker, then the hiring or inexperienced worker's rate would be 24 cents.

The piece work base rates for the different occupations should correspond to the maximum day rates for those occupations, but for convenience in figuring, where incentives of one-third or two-thirds are standards, it is desirable to have the task-earning a whole number, and in order that this may be accomplished the base rate should be divisible by three. To accomplish this a few of the base rates would have to be made to differ slightly from the standard day rates. For example (Fig. 2):

	CENTS PER HOUR																
Straight Day Rates	15	17	19	21	24	27	30	34	38	42	47	52	57	63	69	75	84
Corrected Piece Work Base Rates	18	19 $\frac{2}{3}$	19 $\frac{1}{3}$	21	24	27	30	34 $\frac{2}{3}$	39	45 $\frac{1}{3}$	48	52 $\frac{2}{3}$	57	63	69	75	84

Figure 2

If the hourly rate of a worker is below the base rate of his piece work job, he benefits; but if the hourly rate is more, then the difference should be paid in addition to the earning on piece work.

For the Gantt bonus plan, time of performance plus a percentage of the task, the earnings are usually figured on the worker's hourly rate plus the incentive; therefore, only the incentive percentage need be shown for the various occupations. For the Halsey premium plan, the incentive percentage would be shown as is done for the Gantt plan. The following form (Fig. 3) can be made to fill the requirements of all of the plans recommended:¹

CLASS OF WORK		DATE	STANDARD HOURLY RATE		BASE RATE PER HOUR	TASK EARNING	TYPE OF INCENTIVE
Power Milling			MINIMUM	MAXIMUM			
Split Milling		5-10-11	24	30	30	40	Percent
Octagon Milling, and Spline Milling							
when reliance is placed on operator's skill in producing good work							
DEPARTMENT		STANDARD RATE CARD					

Figure 3

In describing a wage rate classification, mention has been made of several different incentive rating plans, and it therefore seems fitting to say something about their application—when and where they may best be used. There are only four financial incentive plans that I should feel disposed to recommend for work that can be definitely assigned to a worker: first, the Taylor differential piece work; second, flat or single rate piece work, giving the performance time or the production per hour expected, third, the Gantt task and fixed bonus; and fourth, the Halsey premium plan. It is understood, of course, in the application of any one of these, that time study is the basis for the determination of the rate and that the management makes ample provision, with respect to all, for a thorough-going production control.

Of these, the Taylor differential is more exacting in its demands on both the management and the worker. This two rate system, a high rate per piece when the work is performed in task time or better, and a low rate when it falls below, of a necessity makes both the management and worker get together. For the worker will not willingly accept a lower rate per piece, if it is no fault of his that he is unable to perform in task time, while on the other hand the management, having to look into the conditions to find out the reason for a low rate, will, if the conditions are at all remediable, as they usually are, take steps to prevent such things

¹This classification does not coincide with the base rates on page 137.

happening again. The very fact that it is exacting is to its credit—for the reason that it has to be coupled with a high type of management. It has been demonstrated that it can be successfully operated to the satisfaction of the worker as well as of the management. One concern to my knowledge has had this system in operation fifteen years, and periodically the question comes up, whether the low rate feature should be discontinued; to date discontinuance has been over-ruled by the foremen each time. As a matter of fact in all these years the low rate paid has never amounted to 1 per cent of the total wage paid. This concern is the only one of which I know where this system is in operation in its true form.

Very little is known about the Taylor differential piece work system, and probably for the reason that almost always when incentive systems are to be introduced, the introducers either want to work out their own ideas with the thought that a system can be made operative with little preparation, instead of first studying up the good existing systems, select one and then establish an adequate production control and scientific time study, and by so doing make a success of what otherwise might in time bring about dissatisfied workers. Therefore, when the Taylor system is suggested the usual criticism is that it is too exacting.

The flat or single rate system accompanied by the task time or the hourly production is an excellent plan. Such a system might require the performance of a task before the piece rate is paid, and in the event that the task is not accomplished, allow the day rate for the time taken; or pay per piece and depend on the worker's record of earnings to show management inefficiencies or the worker's standing as a piece worker, and whether it is advisable to keep him on such work. In well-organized establishments some person is always in touch with the workers, and whenever the latter are unable to meet task times, he investigates immediately and is able to correct any existing bad conditions.

The tendency these days is to guarantee the workers an hourly earning. This is often done where piece work plans are in effect.

Two excellent outstanding features of a piece work plan are: first, the worker gets the benefits of his efforts—the quicker the time of performance, the greater the earning per hour; second, the simplicity figuring the earning of the worker.

The Gantt task and fixed bonus amounts to a single piece rate system when the work is performed in

task time, for then the worker is paid at his hourly rate for task time plus the bonus or incentive as an extra compensation. This bonus is a percentage of the task time. However, if the worker takes longer than the task time, he receives only his regular rate for the time taken. This system, as with a piece work system, allows the worker the benefit of his efforts. Gantt's original task and bonus did not allow the worker the full benefit of his efforts. With this latter plan, when the work was performed in task time or better, the worker was paid for the time taken at his hourly rate plus a bonus which was a percentage of the task time, as an extra compensation. For example, if a task time was sixty minutes and the bonus was one third of this, or twenty minutes, and if the work was done in thirty minutes, the pay would be for thirty minutes at the hourly rate plus twenty minutes extra at the hourly rate. The Gantt revised plan, task and fixed bonus, pays sixty minutes time at the hourly rate plus the twenty minutes extra at the hourly rate for the task performance or anything better. This corresponds to what is done in a straight piece work system.

The Halsey premium plan, as originally conceived, fixed a time to complete a specific piece of work, and dividing the time saved, if the work was done in less than this time, between the company and the worker, on a prearranged basis. The premium time was arrived at from records of past performance. However, the Halsey plan is easily adapted to the refinements of time study, and in its application a task time is first determined from which a premium time is figured, so that when the work is performed in task time a predetermined amount is earned. If it is planned that this amount is to be a 33 1/3 per cent incentive, then 66 2/3 per cent of the task time is added to the task time, for the premium time. Then if the work is performed in task time, 66 2/3 per cent of the time is saved, half of which, or 33 1/3 per cent, is the incentive time allowed the worker; this in addition to the actual time taken. The earning then amounts to the sum of this time, times the worker's rate.

For example: if a task time to perform a piece of work has been determined by time study to be nine hours, then 66 2/3 per cent of this time, or six hours, is added to it, giving a premium time of fifteen hours. Then if the work is performed in the task time of nine hours, the worker's incentive is half of the time saved or three hours. His earnings then will be the time of performance (nine hours) plus the incentive