

viewed by them with particular apprehension and suspicion, and that the only way to disarm suspicion and secure co-operation was to show them in unmistakable manner that they would be the first to benefit by the change.

As soon as the dispatch station was ready for operation, the writer addressed the workers of that shop. He pointed out to them that repeated increases in wages without a corresponding increase in production were not benefiting the workers, as they were being offset by rising prices to which manufacturers had to resort to make up for the increased cost of production. The only way to break the vicious circle was to bring about an increase in earnings through increased production, which would mean a lowering of production costs without which a reduction in the constantly mounting cost of living was impossible. The dispatch station and all that would follow it were intended to help increase production through elimination of waste of effort and materials, through insuring a steady flow of work, standardization of materials and methods of performing various operations.

I knew that mere assertion would not get very far with the workers and was therefore careful to see that the first changes to which they would have to submit should have their compensating advantages, as the following illustrations will make clear.

Under the old system, work was distributed to the workers throughout the shop by the foreman and his assistant. The worker had no occasion to rise from his or her seat from morning to night as long as there was work to do. Under the new system each worker was given enough work to last about an hour and was required to take it to the dispatch station and receive a new supply of work. This would mean an hourly interruption in work and a loss of from two to five minutes. Piece workers accustomed to the old ways would surely object to the change.

Under the old system it was impossible to keep track of the time it took to do each piece of work either by piece or week workers. The dispatch system provided a convenient means for recording the time taken to do each piece of work whether it was paid for by the piece or by the hour. Both piece and hour workers would naturally object to this, as it would enable the management to "know too much" about the relation of time and output.

Again, piece workers were accustomed to do

very much as they pleased in the matter of attendance. They were not required to ring the time clock either on coming in the morning or leaving in the afternoon, since they were not paid on a time basis. Under the new system it was necessary and feasible to have a record of their attendance. This was going to make it possible for the management, for the first time, to know whether low earnings were due to short time spent in the shop or to other causes, and this naturally was not to the liking of the piece workers. These few illustrations will show that there were sufficient legitimate as well as illegitimate reasons for objections to the new system by the workers, and the writer set himself the task of offsetting them by definite gains to the employes.

One of the most fertile sources of loss of earnings to the piece workers was idle time caused by irregular flow of work. Under the prevailing system of division of work it takes no less than 125 operations to make a coat. In a shop employing only 250 workers there will be an average of two workers to an operation and there will be several operations employing but one worker each. The absence of one worker employed on such an operation will cause a deficit of from 50 to 100 per cent in the output of the shop on that one operation. As soon as the accumulated reserve of work in the shop on that operation has been used up, all work will have to stop on operations following the one on which the absent worker is employed.

Under the old system workers were accustomed to these interruptions because of lack of work, and the piece worker took it as part of the hazards of piece work, trying to make up for lost time by demands for higher piece rates. Under the new system of planning and dispatching of work the management expected to eliminate or to reduce to a minimum interruptions of this kind. However, it would not have been reasonable to expect the workers to share that expectation as they knew nothing about scientific management. All they did see were some of the obvious disadvantages to them, as indicated above.

It was therefore decided to offer the workers an improvement over the old order of things in the form of payment to piece workers for idle time. The new rule provided for payment at the rate of 65 per cent of the average hourly earnings of the piece worker. Under the old system, there being

no time records for piece workers, neither the worker nor the management knew accurately what the hourly earnings of piece workers were. In order that we might know it now, it was manifestly necessary for every piece worker to register the time of his arrival at and departure from the shop, and to have him report at the dispatch station when receiving and returning work, so that a record could be made of the time work was given out and received. Payment for idle time was something unheard of before—something that even the union had never asked for—and therefore it made a profound impression upon the workers. It was a concrete illustration of the benefits from the new system that accrue to the worker.

It called for a great deal of patience and faith in the new management, on the part of the members of the firm, for in addition to the great expense involved in the introduction of the new system, it now had to submit to a totally new item of expense in the form of idle time which in the first year amounted to several thousand dollars. It may be said in passing that the very presence of the item of money paid for idle time in the weekly shop reports served to act as a sharp reminder of the imperfections in management that caused idle time. At meetings of the production staff it served as the starting point for discussions of causes of idle time and means of their elimination. Step by step the factors interfering with the steady flow of work were attacked and eliminated or minimized as far as was possible, until payment for idle time became so negligible as to be hardly worth noticing.\* But it helped to draw attention to and to do away with numerous sources of waste which in the aggregate far exceeded the amounts paid the workers for idle time.

The loss of time caused by the hourly walk to the dispatch station was more than made up through the physical benefit derived by each worker from the hourly change of position from a sitting posture, the relaxation derived from the walk to and from the station, and rest from work. This average loss of two to three minutes, or about fifteen minutes per day, was found to be even more effective than the ten minute physical exercises practised in the middle of the afternoon in many modern plants. As a matter of fact, the records

\*It declined to one-fourth to one-half of 1 per cent of the payroll.

of output of both week and piece workers showed that not only was there no falling off of production, but that production actually increased under the new system, fully bearing out the expectations of the management.

One of the means of preventing idleness among workers through the absence of one or more workers on a certain operation, is to train each worker to do more than one operation. The old-time tailor could make the whole coat, but under the system of division of labor, each worker specializes in but one operation out of more than a hundred.

The writer shared the feeling generally prevailing among economists, sociologists and social workers, that this extreme specialization causes great monotony in the worker's life from which he would be glad to find relief. Therefore when it was decided to provide training for employes so as to teach them to do more than one operation, no opposition on the part of the workers was looked for. In fact, the writer believed that the workers would gratefully embrace the opportunity of breaking the monotony of working at one operation all the time, the more so that it offered several economic advantages to them. To know two or more operations enabled the worker to earn more money while learning a new operation than the 65 per cent which he received while sitting idle; and it offered the workers greater certainty of employment with his present firm or greater ease of finding employment with a new firm when looking for employment; and he had the satisfaction of knowing that by being able to take the place of an absent worker he was thereby saving dozens of his fellow employes from temporary idleness and loss of wages.

One can therefore easily imagine the surprise of the management when it was found that the workers were strongly opposed to training in spite of the fact that they were paid while being trained. The reaction was a purely psychological one. Most of the workers to be trained were women. The repetitive character of each operation on which they were employed enabled them to perform it almost mechanically with a minimum of attention and of mental concentration, leaving them free to carry on conversations with their neighbors to the right and to the left while going on with their work. Learning a new operation called for