neers, but it seems to me that much is still left to "hunch."

In maintenance of relativity, I am referring to the location of vital elements in relation to other vital elements. This relationship occurs particularly in dealing with tasks and time study. For instance, if a time study is made of a man taking pieces of work from a stand three feet high and placing them in the chuck of a turret lathe, a distance of four feet from the platform, whenever this particular time is used the conditions mentioned should be relatively the same. I do not mean that they should not be improved, but when they are improved, a revised time study should of course be taken. The relative standard is not maintained if the man is forced to lift the pieces of work from the floor instead of from the three-foot stand provided when the study was taken. The maintenance of relative conditions is obtained by the formation of trained habit and the exercise of eternal vigilance.

Maintaining the physical condition of the equipment is the most common version of maintenance but I am not thinking of the subject in the ordinary sense. Maintenance, as ordinarily construed, pictures the repairing of something already broken. True maintenance involves the replacing of the part before it breaks. In carrying out a program of true maintenance, the following are involved: (1) the determination of the probable life of wearing parts from experience and inspection, and the establishment of periodic replacement; (2) the provision of a definite lubrication scheme, the performance of which is the first duty of some individual; (3) provision of a definite inspection scheme with a view of determining a repair at the beginning of the formation of a defective growth, and preventing serious material and time losses.

12. *Attitude of Personnel.* What relationship has a man's attitude to the effective operation of some portion of an organization? If a man were a machine, we could say that it has no effect, but he is human, and his attitude therefore cannot help but affect performance. What does work mean to a man? How does he approach it? It means to him just as much as he is interested or not interested in it. Work to a man may be a curse, a punishment, slavery, drudgery, just routine, a livelihood, an occupation, an opportunity to create, or a worship. Interest in work begins when a man takes to work for an occupation and continues to the point where a life work is a worship.

I do not know of any formula for checking the loss that would occur due to having a man operating a facility whose attitude toward his work was one grade lower than the attitude of another man who might be obtained to operate that facility, but I am sure that there would be some difference. Over a space of several grades, the result would certainly be pronounced.

How does one know what a man's attitude toward his work is? Unless you are interested in him, you will never find out. Why is it that an employe always knows more about his superior than the superior knows about the man? Usually this is because the employe makes an effort to find out what is necessary to please his employer or what he can get away with. The duties of supervision are frequently such that a foreman does not spend much time studying his men.

This matter of attitude is an important one if we expect to get the best out of our conditions. It is a part of the very nerve and fibre of the organization, and is reciprocal in its action. Both attitude toward work and attitude toward fellow human beings control effective operation.

13. *Selection of Personnel.* Much of a man's attitude toward his work depends upon whether he is really doing that which he would like to do. A man whose heart is set on becoming a farmer, makes at best only a fair machinist. Does a man always know what he wants to do? He may not, but he can more frequently tell you what he would like best to do. He can tell you what he likes and what he dislikes.

As a nation, we are looking more to the proper selection of our personnel, but we apparently have much to learn along these lines. We are so accustomed to looking around hurriedly and then taking the best that comes around. However, if we practice the basic conditions as listed here, it is not long before it is possible to obtain a better grade of applicants from which to select. Human beings though we are, the average good man likes to work where he knows things are done correctly.

14. *Leadership.* In discussing leadership, we are considering the most important of the basic conditions. There has been no undertaking of group activity that has reached a successful end that has not had the benefit of leadership. That we recognize that condition is indicated by our customary procedure of electing a head for practically all groups of human endeavor. The mere election of a man to the post of leadership does not endow him with leadership qualities. Usually he must have displayed some indications of being in possession of these qualities.

In a detailed discussion on leadership, a number of qualities could be drawn up that would describe the ideal leader. I shall limit myself to the discussion of a few of the most important. Leadership, to be effective in scientific management, must be: (1) courageous; (2) imaginative; (3) initiative; (4) persistent; (5) healthy; (6) appreciative; (7) educative.

Let me state positively here that the leader must believe in scientific management to make it work. Many fine pieces of organization work have been completed with only mediocre returns because the man at the helm could only use a fraction of the power of the organization. The degree of development of an organization should be consistent with the degree of leadership that is going to operate it. If the leader can continue to grow the development of the organization can continue.

If the leader has a wise imagination he will continually see improvements that can be made in the operation of his organization. Once the improvement has taken definite shape in his plans his initiative will put the plan in motion. His educative presentation to those who will execute the details will put the thought across smoothly; his courage and persistence will see the completion of the thought; and his appreciation will reward those who have aided him in the accomplishment. And if you can conceive of any but a healthy man carrying on under these conditions, I applaud your imagination.

To my mind, two big errors of leadership have been made in the past when seeking to gain effective utilization of facilities. The one consists in thinking that it is not necessary to worry about the details of a job being done correctly, and the other that men of their own accord will fit themselves for the best of their capacity. If ever a problem was one of leadership the problem of the proper education of the personnel is that one. The leader must know through his accounting scheme that the details are being done correctly, for after all is said, effective utilization of facilities is a problem of doing a multiplicity of small things correctly.

Discussion

R. B. Bleecker.[2] I have only a brief comment and question. One thing occurred to me as an additional basic condition and that is the economic trend of the industry in which the organization is located. I realize that Mr. Bryant was confining himself to the field of production. Nevertheless I believe that one must take into consideration the economic security of the particular industry in deciding at what rate facilities should be installed and developed. The results of the best financial and sales policy, for example, will be affected by the condition of the industry as a whole.

A question arises in my mind as to whether "definite product in definite quantities"—and qualities—should not be a subordinate heading under "maintenance of standards," perhaps changing that heading to read "maintenance of physical conditions and operations." The maintenance of standard physical conditions and operations assumes definite quantities and qualities of product.

The only other thing that occurred to me is that in the selection and training of the personnel the technique of the psychologist might well be applied.

Hugo Diemer.[3] Mr. Bryant has stated that it is necessary to "replace the world-old idea of authority by birth, ownership or rank with the concept of authority by fitness and function" before multiple control can be made workable. He rightly stresses the importance of special capabilities for executive jobs. Students and promoters of scientific management have conducted job analyses in the shop and office, and it is generally recognized that the personnel or industrial relations manager should be consulted in setting up standards for higher executive jobs. It is here, however, that we find the greatest amount of incompetence coupled with vanity and class consciousness. To correct this situation it is necessary that management be sold on the importance of framing, recording and codifying policies.

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