

necessity for it has not been felt because we are confident that our operators have placed emphasis on the matter of workmanship and have assured themselves that this workmanship is meeting a quality standard which they fully appreciate. This confidence was created through our intimate contacts with these men and their work.

Now, because of increasing demands for our product, we find it necessary to expand our manufacturing facilities. We decide to place the manufacturing activities under the supervision of a shop foreman. He carries on the same practice of discussing manufacturing difficulties with the operators, points out their faults to them and impresses upon them the need for careful workmanship and the checking of their work after completion.

As our business expands further, the duties of our foreman become more and more varied, methods of manufacture, cost, maintenance of output, and personnel problems are occupying a large part of his time. Our foreman advises us that, because of these new duties, he is no longer able to spend as much time with his operators and to satisfy himself regarding standards of workmanship.

The question that now confronts us is how we can best safeguard the quality of our product. To safeguard the product means to see that each unit is as nearly as possible like every other unit and equal to or better than the units we have manufactured in the past.

A certain responsibility of the foreman has become too large for him to handle along with his other duties, and he must now delegate it to some other individual. This responsibility is to determine who in his organization does not have the proper conception of quality workmanship in order that he may apply corrective measures where the need is the greatest. It must also be recognized that a large operating organization is composed of men of varying experience, all of whom have the human trait of fallibility. With this in mind, a barrier must be set up to screen out the poor workmanship while the corrective measures are being applied by the operating foreman.

The man to whom this responsibility is assigned is known as an inspector. Bear in mind here that the main duty of this inspector is to keep the foreman advised as to the quality performance of each workman so far as the nature of the work permits. This, I believe, forms one of his most important

functions. The inspector is, therefore, purely a service man to the foreman, or in turn to the operators, assisting them to reach their quality objective. The inspector does not create quality in the product.

Whether this inspector or, as the work expands further, the inspectors continue to report to the foreman or whether they are later grouped together in one body reporting through an executive to the management will depend principally upon the nature and variety of products manufactured. This is largely a matter of opinion with the management. As I see it, the way this is done is of lesser importance: the main objective is to be sure that at all times quality is being built into the product rather than a fruitless effort being made by the inspector to create it. The management is then assured that the standard of quality is always present in its product at a minimum cost.

Of course, there are many other managerial problems to be considered in setting up an effective inspection, such as the type of inspection, that is, whether it will be on the basis of detailed inspection, circulating inspection, statistical inspection, or spot checks by observers. Other matters of importance, such as inspection cost control, records of inspection performance, and control of waste through defective material must be given their share of attention.

However, in the consideration of these details the fundamental point is to see that a recognized quality of workmanship is being maintained by the man who is making the product. Therefore, the inspector should be so trained that he has this continually in mind and does not tend to become a rejector rather than an inspector. By this I mean that he should not be a man whose only interest in inspection is to screen out the defective material as it passes through his hands.

In discussing the matter of inspector training, I think it best to confine our remarks principally to the inspection supervision of the lower ranks. My reason is that, in organizations of any size, there are usually several inspectors under the supervision of one man. It is this man whom we expect to carry out the principles previously outlined.

The supervisor of the inspection organization, as well as any other, of a manufacturing industry requires very careful selection for certain character-

istics. Our first prerequisite is that the man shall have shown some evidence of supervisory ability. It is not enough that he should be the best workman. His educational background and ability should be sufficient to enable him properly to administer the company's cost and production systems as applied to inspection. He must also have technical knowledge or experience so that he can properly cope with the technical points arising on his job. It is not always essential that the man have this experience prior to starting on certain inspection work, but he must at least have the background so that he can rapidly absorb it.

When we look over these requirements we find they are just about the same as those required for any kind of supervisory position and not necessarily for inspection work alone.

In addition to the above prerequisites, however, the inspector should be exceptionally outstanding in the matters of co-operation, tact and analyzing ability, so that he may be able to handle the most important phase of his job; namely, service to the men building the product. He must be able to appreciate that the way in which he can get his job done accurately, quickly and cheaply is to have the operators who are building the product do their work correctly, and the best way for him to obtain this end is by unlimited co-operation with them.

Of course, it is important that all supervisors have the spirit of co-operation, but I think the inspector is an outstanding example of a case where all phases of the work are likely to suffer if this qualification is not exemplified in his dealings with others.

In order to teach the inspection supervisor to operate on his job in this manner, we have found it very advantageous in our company to sell him these principles through the medium of a training course. In this course of instruction other supervisory subjects, such as cost control, production control and personnel problems are included.

In order to select the proper men for inspection supervisors, we have instituted what we call a pre-supervisory training course. Each inspection department head is asked to name from his organization two men with the necessary attributes for a good inspection supervisor. The selections of all the department heads are placed together in a class which meets weekly.

No promise is made the selected men that they will become supervisors because they have been chosen for this training work. They are told that we wish them to attend these classes for the purpose of becoming better acquainted with the fundamentals of our business. After the completion of the course the men continue, at least temporarily, in their old positions.

The subjects discussed in these classes are as follows:

1. *Co-operation as a Supervisory Responsibility.* Under this subject co-operation on the part of the inspection supervisor is brought out as a definite responsibility equal in importance to that of inspecting the product.

2. *How to Give Orders and Directions.* Here the men learn the different ways of giving orders and directions, and how to fit them to various individuals and occasions.

3. *Job Teaching.* At this time the men learn to recognize and emphasize the essential parts of a job, to concentrate on the essential, and to teach only one lesson at a time. They are also instructed in the rules of good teaching, and correct teaching practices in the classroom are demonstrated in the classroom.

4. *Introducing the New Man to the Job.* In this class the men receive instruction in the practice of making new employes feel at home and taking care of their initial needs. We also point out the necessity for close contact between the supervisor and his new men during the "breaking in" period, in order to establish the confidence of the new man in his work, his supervisor and the company.

5. *The Setting of Individual Production Standards.* The members of the class are instructed in the theory of, and receive practical training in establishing, output standards for inspectors. This course applies directly to a plan in effect in our plant for the purpose of measuring individual output. This plan also acts as an indirect wage incentive to the inspectors.

6. *Analyzing and Planning the Job.* This subject is intended to train the men in orderly thinking on their jobs. We endeavor to teach them how to isolate the important problems from a mass of details concerning difficulties in their work. We also cover the necessity for planning for future needs on the job.

7. *Rating of Quality.* The importance of a quan-