

## THE INSPECTION DEPARTMENT IN ITS RELATION TO THE MANAGEMENT OF MANUFACTURING ORGANIZATIONS.\*

By Fred. B. Corey, Consulting Engineer, Pittsburgh, Pa.

**F**ACTORY organization and management is a science that is steadily increasing in complexity and importance, on account of the increasing magnitude of our modern industrial establishments. Its practical application demands a thorough knowledge of men and of methods by which men can be organized into a great machine to operate with minimum friction and at maximum efficiency. In the consideration of academic theories and sociological ideals, we must not lose sight of the fact that the main reason for the existence of most manufacturing corporations is the payment of dividends on their capital stock. Whatever other advantages may accrue to the employees, or to the community, are merely incidental. The value of any scheme of organization or method of procedure must, in general, be gauged by its effect on the net earnings, either for the immediate present or the distant future.

In any manufacturing company, consideration of the inspection department should begin with a study of the relation of that department to the management of the company and to the various departments of the organization. These relations must be positively fixed and thoroughly understood. In many cases, the inspection department is not rendering the service of which it is capable or operating at maximum efficiency, on account of lack of co-operation between it and the departments effected thereby.

It is, of course, the primary function of the inspection department to inspect and pass upon the material submitted for its action, approving that which meets the requirements laid down and rejecting that which fails to come up to the adopted standard of excellence. At the same time, this department is in a position to render valuable assistance to the sales department and the purchasing department as well as to the engineering and production departments, if the proper spirit of co-operation exists throughout the whole organization. I wish to call attention to methods that tend to promote such departmental co-operation.

In the majority of manufacturing corporations, the inspection department is under the authority of the factory manager or superintendent. In other words, that branch of the organization which builds the apparatus decides whether that apparatus is properly built. It is unnecessary to point out the inherent weakness of this arrangement. The judgment of the inspector may continually be biased by the fact that he is a part of the factory organization and is responsible to the factory management. It is, therefore, evident that the highest standards of quality and workmanship hardly can be maintained continuously if the members of the inspection department are in any degree subject to the control of a factory superintendent or any other executive who is directly responsible for the factory production and has no connection with the engineering or sales organizations. This statement should not be understood as expressing a doubt in regard to the loyalty or honesty of purpose of any factory official. We must recognize the fact, however, that defects, due to

drawings or specifications, are often disregarded by inspectors if they know that no criticism can attach to their superiors on account of their approval of the apparatus, especially when a rejection would prevent meeting a promised date of delivery.

In a smaller number of manufactories, the inspection department is under control of the chief engineer. With this arrangement, the judgment of the inspector is liable to be biased by the fact that any defects in the finished product, due to improper specification of materials or any failure of the apparatus to function properly, might be considered as reflecting on the abilities of the engineering department. The inspector will often hesitate to reject a device if he thinks that the objectionable feature may be attributable to his superior officer, as it would imply a difference of opinion that might reflect discredit on the inspector's judgment. Moreover, there is often a tendency among young and subordinate engineers to refuse to recognize slight defects in a design for which they are personally responsible, and to severely criticize an inspector who points out what he considers may be a defect in such apparatus or holds material on account of insufficient engineering data for its proper inspection. Therefore, it will be seen that in most cases the executive head of the inspection department should be as free from control of the engineering department as from the manufacturing department.

The only logical plan of organization is that in which the head of the inspection department, whatever may be his title, is responsible directly to the general manager of the company or the chief executive in control of the factory output. He should report to the same officer as does the works manager or the chief engineer. At the same time, he must be in full sympathy with all other departments. He must command the respect of the other department heads and be ready always to co-operate with them to further the interests of his company.

The executive head should exercise a most thorough control over all the activities of the department. To that end, there should be no recognized paths of communication between this department and the heads of the other departments, except through his office. The strict enforcement of this rule is essential to the efficient working of the department and to the avoidance of misunderstandings and duplication of effort. This requirement, if rightly understood, will not be interpreted as limiting the useful activity of any member of the department, but will be recognized as a necessary feature in the conduct of inter-department business.

The executive head of the inspection department should be thoroughly familiar with general engineering practice and standards. He should be well informed in all shop methods, including foundry and machine shop practice, and be thoroughly versed in the use of testing machines and gauges. He should, if possible, be conversant with chemical laboratory methods and apparatus, so as to be able intelligently to direct that part of his organization. Moreover, he should be familiar with the uses of the factory product and the conditions under which it is to operate after it has passed beyond control of the factory. He must have absolute control of every inspector in the plant and be held responsible for the quality of material and workmanship of all that the plant produces.

In the majority of manufacturing corporations, all dealings with the customers are conducted by the sales department exclusively, which is the logical arrangement. For this reason, complaints, on the part of the customer, are made directly to the sales department and usually

\* Presented before Section D of the American Association for the Advancement of Science at the Philadelphia meeting, December 30-31, 1914.