

Plant Facilities

Conditions Basic to Their Effective Utilization

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Introduction

AT THE December meeting of the Taylor Society, a paper by Mr. John H. Williams on "Is There an Optimum Size of Organization?" was read and discussed. The net result of this discussion seemed to be that, leaving out the human element, there was no limit to the size to which an organization might grow. When the human element is considered, it was the consensus of opinion that the quality of the human element at and near the top controlled the size at which the most effective operation would be found.

It seems to me that in attempting to discuss "Basic Conditions of Effective Utilization of Facilities," we can start at the point where we left off in discussing the previous paper. For the benefit of those who were not fortunate enough to be present at that meeting, I will quote from Mr. Williams' paper:

1. There is no optimum size for organizations in general.
2. Theoretically, there is no optimum size for each particular organization.
3. Practically, there is an optimum size for each particular organization dependent upon:
 - a. The extent to which the personal equation (as distinguished from a repetitive function) enters into the service or product of the organization.

In other words, an organization rendering a personal service must be much smaller to be effective than one whose product is produced through repetitive or continuous process methods.

- b. The extent to which authority is decentralized and there is an incentive for co-operation between the managers of the units exercising authority.

As an organization increases in size, the multiplicity of detail automatically brings about decentralization of activity. Unless authority is decentralized proportionately with activity and there is an incentive for its effective use, decisions are so far removed from the point of action as to be ineffective and to materially slow down the whole procedure.

¹Paper presented at a meeting of the Taylor Society, Columbus, Ohio, May 1, 1930.

c. The extent to which the accounting procedure is standardized on a basis which will enable effective comparison as between units in terms which will be stimulating to the managers of such units.

Accounting is the measuring rod of management. Without it the whole thing becomes purposeless from an economic standpoint. If you have two organizations comparable in every way, one, however, with comparable accounting; that is, with full knowledge of relative performance in terms of responsibilities, and the other with ordinary accounting, where results are not comparable in terms of responsibilities, this one difference may well determine the point of optimum size.

Probably the most critical time in the life of most organizations is that in which they become too large for the domination of one man and before they become adjustable to multiple control. The major necessary adjustments to make multiple control workable are as follows:

1. The replacing of the world-old idea of authority by birth, ownership or rank with the concept of authority by fitness and function. This involves the concept that Smith may have authority over Jones in certain matters and Jones over Smith in others.
2. The development of the idea of leadership as a substitute for authority on the part of the chief executive.
3. Visualization of the undertaking in terms of responsibilities and the assignment of authority on that basis.
4. Setting up accounts in conformity with authority in place of concepts of expense.
5. Introduction of a flexible budget and some form of reward, which should be in proportion to results accomplished, for persons exercising authority.

With this as a basis, we can proceed with our discussion.

What is it that makes effective utilization possible? One might ask, "Why not discuss the principles of scientific management?" Essentially that is what we are going to do, but I am going to split it up a little differently. There probably are other headings that could be added to these I am listing, and I hope they are brought out in the discussion. The basic conditions are: (1) a comprehensive plan or purpose for the organization; (2) standardized conditions; (3) inter-related or balanced equipment; (4) knowledge of the science of processing the product; (5) methods conscious-

ness; (6) control; (7) supervision; (8) definite product in definite quantities; (9) uniform material control; (10) payment for performance; (11) maintenance of standards; (12) attitude; (13) selection of personnel; (14) leadership.

Basic Conditions

1. *A Comprehensive Plan.* The first basic condition to consider is a comprehensive plan for the operation of the entire production unit. This plan must have a definite purpose for which every man in the organization is a willing worker. What purpose of an organization can be created that will induce every man to work interestedly for the benefit of the organization? Will a man's heart be in his work when the avowed purpose of the company is to make dividends for the stockholders? No! To be an effective employe (and this includes the manager and all the executives) a man must feel that he has a real job, that he is helping to serve mankind through the work of his brain and his hands, that he will profit directly by his efforts, that he has an opportunity to help others, and that others are helping him to attain the same goal.

The developing of this purpose into a practical application results in the formation of a plan for the operation of the organization so that every man can attain this purpose. In order to have intelligent co-operation in an organization, it is essential that the entire personnel understand how each one can co-operate. This takes us into the realm of organization where functions and duties are outlined. As a product of research along these lines, we have organization charts, standing orders, policies, and a host of defining mediums all designed to clarify and simplify the management problem.

The plan of operation should be such that the performances of daily tasks are educational steps toward advancement into tasks of greater responsibility. The personnel should be so trained by such a plan that there will always be a trained man to step into a vacancy. To retain the youth and vigor of an organization there should be an outlet for the personnel trained as well as an intensive plan of training. An organization that sends men to other organizations when it can no longer promote them need not fear stagnation of personnel.

The head of such an organization must have a clear conception of the plan of operation, of the

interlocking relationships of the various units and of the effect that changes in one unit of his organization will have on the correct working of other or all the remaining units. The operation of such a plan calls for active and healthy leadership, a basic condition that will be discussed later.

2. *Standardized Working Conditions.* The subject of standardized working conditions is one of the most talked of and the least provided for of any of the basic conditions. What is meant by standardized working conditions? That the subject is not generally understood is evident when one views the amazement expressed by able men in the machine tool industry when they see a rack of standardized bolts for the first time. Bolts have been used on machine tools since their very beginning, but it is only recently that we have been able to get machines with standardized bolt slots. How many users have carried the thought to standardized bolts? There should be a bolt of the correct length ready for every job that will be done in the shop. I have found that, in a shop using medium-sized machine tools, a range of bolts in 1 inch steps from 2 inches to 12 inches, in 2 inch steps from 12 inches to 24 inches and in 4 inch steps from 24 inches to 48 inches will provide adequately for a shop doing work of a jobbing nature. Before we leave the subject of bolts there is one more standard condition essential. All of the nuts must run all the way up the thread (usually not longer than the step to the next shorter bolt) and each bolt must have a washer. Apply this thought to all small tools and you have the correct small tool condition for the entire shop. The standardization of each kind of tool is an individual problem that must be studied from every angle of the use of the tool.

At the machine we find an exceptional opportunity for standardizing working conditions. Credit is certainly due the machinery manufacturers for the improvement in manipulation features of their product. The user of the machine has generally not kept in step with the builder. Cleverly worked out devices for saving time are ignored or removed from the machine. On the other hand, the machine builder occasionally must go into another plant to find out how efficiently his machine can be operated.

What is needed around a machine to make it operate effectively? The following should be provided: (1) space for the machine; (2) space for