

depend to a considerable extent on the depreciation policy adopted.

c. Will it be more profitable to do a small business at high prices, or a large business at low prices? (Combination of 2 and 3 and general economics).

d. What shall be company policy as to replacing obsolescent machinery? (Combination of 2 and 3.)

e. Shall supplies ever be purchased ahead of actual needs in an attempt to take advantage of price fluctuations? (Combination of 1, 2 and 5.) (Decision rests on whether correct anticipation can be made of prices and company needs.)

f. Should salaries be advanced relative to wages to return to the 1914 relationship?

Selection and Organization of Research Workers in General Management

Three procedures are open to a company which believes that it would be profitable to do some research work in general administrative problems:

1. Members of the present force already occupied with line or staff functions may be asked to undertake this type of work in part of their time, being relieved of part of their present responsibilities to make this possible. This plan seldom results in much thorough-going research, even when the employes concerned have somehow acquired the research attitude. The difficulty is that the duties resulting from the more urgent established functions tend to absorb all of the time and energies of such part-time researchers.

2. Consulting specialists in economics, statistics, or business management may be called in to report on particular problems. The best instance of this procedure is the investigation conducted by Professor Seligman of Columbia University on "Installment Buying," which was made at the request of the General Motors Corporation. The procedure is most likely to work successfully on problems which are of a general nature, and therefore familiar to an outsider, and least likely to be successful on problems which involve complicated inter-relationships between various phases of the business of a particular concern. For the ordinary concern which is not in trouble, the outside consultant is not favored except for new and unusual problems. A specialist who has been a part of the company long enough to understand thoroughly its established policies and peculiar problems, can usually

suggest a method for handling a problem which fits in better with the established order. Of course, when the inside specialist has failed to solve the problem, and the difficulty continues, and becomes serious, the outside specialist may be of great help.

3. A new unit may be established within the organization to carry on research in the various types of problems of general administration outlined in the previous section. This unit would probably also, especially in smaller concerns, do research work in problems of purchasing, selling, industrial relations or other functions as well as for general administration. If this is planned, care should be taken that all the energy of the new unit is not diverted from the general problems to the concrete and often attractive problems of these special fields.

The first essentials for workers selected for such a research unit is that they shall have minds of the analytic type and that they shall have the scientific attitude that problems should be solved by an impersonal determination of the facts and analysis of such facts by the best available methods. Usually this requirement implies special training in statistics, economics, or business administration, or perhaps in physics, chemistry, mathematics, biology, engineering or other sciences. If the unit contains more than one worker (other than clerical), it is desirable that they have different types of training and experience. One man, for instance, may be an economist with special university training; another an engineer with experience in the company; a third an actuarial statistician, and a fourth a practical accountant familiar with the records kept by the different departments.

In dividing the work among several men, problems of the first and second type mentioned above—analysis of current rate of activity and analysis of industrial developments—might be made the special field of one man; problems of the fourth type might be assigned to a second man, and so forth. It is also usually advantageous to assign clerical helpers more or less permanently to the same jobs, so that as soon as the method of handling a recurring problem has been worked out, the maintenance of the records and routine analyses can be left largely in the hands of the clerks, thus releasing the trained specialists for assaults on new difficulties. Permanent assignment also makes it possible to train the clerical workers in specialized

statistical techniques. Calculation of correlation coefficients, for instance, and of seasonal factors, can be carried through almost entirely by clerks who are specially trained.

The attachment and name of the research unit for general administrative problems is a matter on which practice is not uniform. It may be called the Statistical Department or the Planning Department, and its head may report directly to the president, or perhaps more often to the comptroller, if that officer is responsible for co-ordinating the facts used as a basis for decisions by the board of directors. The essential points in this connection are that the field of activity of the unit shall be clearly understood, that it shall have authority to get the necessary internal facts that it needs, and that its findings shall reach with reasonable directness the officers who are really responsible for deciding policy.

Miscellaneous Principles and Suggestions

As in part a restatement of some of the points of this chapter, and in part a statement of related ideas which have not been mentioned, the following comments are made. It is still too early in the development of research for general management to lay down any set of formal general principles.

1. Every problem in management should be analyzed without passion, prejudice, or desire for personal advantage.

2. As decisions on questions of general management require a difficult combination of detailed knowledge of a particular problem and a broad view of all aspects of the enterprise in relation to

the industrial world, co-operation of specialists and general managers is essential.

3. Staff specialists assigned to assist the general management should combine as far as possible experience in the particular enterprise with a broad range of interests and the attitude of scientific research. Academic training in the physical sciences, mathematics, or economics has often proved advantageous.

4. Information from all departments should be furnished regularly to some central department in so far as it is really desirable for deciding questions of policy, for appraisal of results secured by departments as a whole, or for central control. Reports comparing the units within a department or helping to control the relative rate of activity of such units, should not be centralized.

5. The task of deciding on policies and seeing that they are carried out should be recognized as distinct from the task of investigating problems. Whether or not the same officers or employes do perform both functions is a matter on which the practice is not uniform. In general, little thorough-going research is likely to be done unless some workers are assigned to that function without executive responsibility, except for work closely related to their research.

6. As data are seldom available by which most questions of general administration can be treated with scientific rigor, it is usually necessary to include an element of judgment in the final decision. The function of the analysis is often to rule out some possible decisions and to modify in detail the decision finally adopted rather than to secure a logically inevitable "right answer."

CHAPTER XXVIII

The Response of Workers to Scientific Management

I. Experience in a Non-Union Shop¹

IN 1917, early in his business career, the writer became a student in a course of scientific management at the Acme Wire Company, New Haven, Conn., manufacturers of insulated wire and electrical coil windings, then employing about 1,000 workers. As student the writer received

¹By Ernest G. Brown, Associate Secretary of the Taylor Society; recently Chief Engineer of the Acme Wire Company, New Haven, Conn.

his training through actual participation in the processes of development, and eventually he became responsible for the technical problems of standards, process engineering and control, involving refinement and further development of manufacturing and control methods.

This company was organized in 1904 and in 1917 had completed a period of extraordinary success, due partly to an exclusive patent privilege in one line of its business, partly to a practical monopoly