

## II.

## NECESSITY OF NATIONAL ORGANIZATION OF WORK

The heads of plants, officers and agents accustomed to administrative regulations too often have a tendency to consider military labor as gratuitous.

The desire to economize the raw material and utilize the by-products of manufacture which occupies, and justly, as set forth in the Circular of August 22, 1917, an important place among the conditions of success for every industry, ought to have as its indispensable complement, especially under present circumstances, the desire for economy of labor.

It appears, therefore, as an imperative necessity that all the heads of military establishments should turn to the study and application of methods of work suitable to the exigencies of the moment: *the employment in every kind of work, of the minimum of labor through scientific research into the most advantageous methods of procedure in each particular case.*

## III.

## PLANNING DEPARTMENTS

## A. CREATION OF PLANNING DEPARTMENTS

Work which is apparently the most simple is, in reality, very difficult to organize; its execution under the best conditions depends upon a great number of factors the search for which lies far beyond the power of the workmen.

Among these factors exist numerical relations which have to be determined. For each kind of work, therefore, there is a scientific theory which, in many cases, has to be created and developed and which ought to be substituted for the empirical methods of the past.

It is, therefore, indispensable that the study of the multiplicity of questions raised by the scientific organization of work should be entrusted, as far as possible, to special planning departments the province of which shall be the examination—at the order of the manager of the plant or on their own initiative and always in collaboration with the executive bureau—of all questions relative to improvements to be made in conditions of work, tools and the use of tools.

The absence of study and preparation, in the case of any work, means material and pecuniary losses, a fact of which it is important that the workmen should be convinced. They should, therefore, at present, frankly

abandon the empirical methods recognized as of little efficacy and accept confidently the advice and direction of a competent agency acting under the authority of the head of the plant.

Planning departments shall be established, from this time, in every plant or, at least, in each type of plant, beginning with those that shall be judged best prepared for the adoption of new methods.

Besides these, one or more central planning organizations can operate in the office of each Under-Secretary of State or Bureau, the purpose of these central bureaus being to collect information on all the methods of work thus permitting them to compare and classify them and to make general the employment of the most advantageous methods.

At first, the personnel of the Planning Departments—which will be small in number, and for which competence must be a first requisite and rank excluded as an obligation—will have to be recruited either in the plant itself or from among the group of plants in the same service.

A permanent liaison should be established, on the one hand between the Central Bureaus and the Planning Departments of plants of the same service, and on the other hand between the Central Planning Bureaus of the various offices of Under-Secretaries or Bureaus in such a way that a profitable coördination with the general organization shall exist among all the elements of the various services. (1).

## B. ROLE OF TECHNICAL INSPECTIONS AND GENERAL INSPECTION OF PERSONNEL

Each Under-Secretary's Office or Department of the A. C. (Central Administration) together with the Technical Inspections Body will have:

1. To assure itself whether the personnel of the plants is made up in conformity with the directions of Chapter IV, following, and, to this end, to propose all necessary changes;

(1). The heads of plants and their Planning Departments should consult the following works:

1. "Principles of Scientific Management" (F. W. Taylor);
2. "Scientific Organization," extract from the Revue de Metallurgie (Vol. 12, April 1915). Dunod and Piat Publishers;
3. "Taylorism", by Victor Cambon, Nancéienne Press, Nancy;
4. "The Taylor System", (Extract from the Bulletin des Amis de l'Ecole Polytechnique, Henri Le Chatelier (Dunod and Piat).
4. To control, by means of statistics kept in the plants, the increase obtained in the efficiency of labor.

2. To discover whether the Planning Departments have an exact conception of their role;
3. To look out for the maintenance of stability in the personnel intrusted with management, supervision and execution.

Finally, the Body for the General Inspection of the Personnel of the Territory, in the course of its operations in the various plants, will have to control:

1. The application of the general principles of the scientific organization of the work;
2. The importance of the results obtained especially in what concerns the reduction in personnel determined by the use of the methods of organization in question.

## C. GENERAL PRINCIPLES FOR THE GUIDANCE OF THE PLANNING DEPARTMENTS

It is indispensable that the Planning Departments determine the exact conditions of labor of different kinds and collect all the data necessary to solving the problems in every case before issuing special rules to such or such department (especially rules regarding the awarding of bonuses.)

The first concern of the Planning Departments should be to realize the maximum economy in labor. The Circular of August 22 points out two principal means to this end:

The first consists in the use of machines; the second in increasing the efficiency of the laborers by means of bonuses.

Regarding the first means, the circular mentioned above is sufficiently precise. As to the second means, it would be well, at the present time, to complete the directions.

The management of a plant should tend towards the application of the following principles:

1. To undertake a scientific study of each kind of work;
2. To specialize and train the workmen in each element of work;
3. To keep a record of the work of each workman as regards quality and quantity;
4. To prepare the daily task of each workman.

The work of the Planning Departments shall be directed according to these principles. Their activities thus determined will have the double result:

1. Of relieving of a considerable task the heads of plants already sufficiently absorbed in their work of management;
2. Of relieving the workmen of the planning of work which is beyond their ability and permitting them to devote all their time to its execution.

The Planning Departments thus take over a part of the work which now falls to the management of the plants and to the workmen. Wherefore, necessarily, a certain economy in the personnel of the management and the workshops.

The management should, moreover,

1. Choose, as far as possible, for each kind of work the most appropriate tools and the most skillful workmen;
2. Work towards a progressive suppression of gang work whenever possible. In fact, experience shows that in gang work the most industrious and skillful workman gradually takes the pace of the worst;
3. Plan the best distribution of material means, the most advantageous arrangement of the shops, their interior installation and the most economic succession of the work;
4. Keep a record of the statistics on production;
5. Plan, on a permanent basis, all the improvements to be made and to make at the right time all necessary suggestions.

## IV.

## PERSONNEL OF MILITARY PLANTS

## A. MANAGEMENT OF PLANTS

It is important, first of all, that the managers of plants be the first to realize the necessity of adopting those industrial methods which alone are able to solve the problems raised by the shortage of labor. It is under their authority that the Planning Departments will have to seek the most advantageous methods of work.