

product, are none the less producing articles which, were these workers not on his pay roll, he would otherwise have to purchase outside; he may also wish to know various ratios and percentages as between all these groups.

A Board of Directors, seized with a spirit of economy, may wish to know whether or not the non-producers, the indirect workers, may not be reduced. Imagine trying to satisfy them by saying "We have no non-producers in our plant." With a pay roll analysis properly prepared, it is possible to present to the Board of Directors a picture of the relative pay roll expenditures, and not only for the current month or the current period but, to make comparisons with other periods. It is also possible for a manager, after having effected economies in overhead, to present a picture of those economies in the same way through pay roll analysis.

The State of New York collects and tabulates certain data with respect to the labor situation and average earnings of workers in the state. These figures are presumably intended to be of benefit to economists and to industries in general, but when it is impossible for the state to define accurately the distinction between office and factory workers, leaving the matter largely to the individual interpretation of the manufacturer, how reliable may we consider the statistics subsequently issued? Proper and easily understood rules for classifying would permit of additional data being collected by the state with the resulting advantage that comparisons of considerable value could readily be made by manufacturers when the results were tabulated.

That cost experts, in some cases at least, realize the necessity for reports covering pay-roll information of various kinds is evidenced by a very comprehensive article on "Cost Accounting to Aid Production" by G. Charter Harrison, appearing in *Industrial Management* in 1918. It emphasizes the necessity for a summarized pay roll report showing, among other things, such items as—

Number of employees on roll.
Number of employees absent or working short hours, and total hours so lost.
Actual hours worked by operators.
Pay roll of operators.
Average rate per hour of operators.
Hours worked other than by operators.
Pay roll of employees other than operators.
Average rate per hour of such employees.
Total hours worked by all employees.
Average rate per hour earned by all employees.

You and I, each striving independently to prepare for ourselves reports of such a nature, might and probably would under absolutely identical conditions arrive at

varying results because of the individual interpretations which we might put upon the classification of our employees.

If then we are to eliminate the terms "producer" and "non-producer," or give them some such interpretation as that of Denham, we are still confronted with the problem of properly labeling and defining our various types of labor activities, and we still find it important to use data concerning the worker making our product as the standard with which we may compare various facts relating to manufacturing problems.

I submit for your thought and consideration in this connection the following:

Productive Labor is that labor which involves physical effort of any nature whatsoever, which produces or tends to produce—

(a) Any change in raw material, finished or semi-finished parts or product in process of manufacture, as to form, character, quality or dimension of such material or product for the purpose of rendering such material or product useful, or preparing it for the subsequent processes or operations tending to ultimate usefulness. Such physical effort may be applied directly, or its application may be through the intermediation of power machinery or chemical or other processes.

(b) Any change whereby a given piece of material, article or structure of any kind is—

- (1) increased in value
- (2) increased in usefulness
- (3) maintained in a practical state of utility.

N. B. The term "manufacture" as herein used refers to all processes commonly known in any industry as direct manufacturing processes and is not limited to the direct manufacturing processes of the particular industry in question.

I feel, however, that such a definition does not satisfactorily solve our entire problem with respect to labor classification. Nor is it to be hoped that any definition along these lines alone will do so. As a result of the misleading character of the results obtained in all our own attempts to divide labor into two major groups such as "productive" and "non-productive," we finally reached the conclusion that any such limited analysis would always be unsatisfactory and that other divisions are necessary. Not sub-divisions of the major ones, but divisions along entirely different lines of cleavage. This second system of grouping comprises three divisions, and we have, because of the aptness of the words, dared to risk the displeasure of cost accountants by using the terms "direct," "indirect" and "general" to classify them.

Direct Labor is that labor, whether productive or non-productive, which applies itself directly to the product, the manufacture of which is the primary purpose of the organization, or the labor of non-productive individuals or departments whose efforts are auxiliary to the pro-

ductive processes of direct productive departments as sole beneficiaries.

Indirect Labor is that labor, productive or non-productive, essential to productive processes other than but supplemental to processes of direct labor.

General: All labor not falling wholly within one of the classifications direct or indirect is classified as general.

Let us now analyze some occupations in order to illustrate the manner in which the definitions will classify our plant labor.

Firemen: In the first place, we place him under the productive grouping for the reason that he changes raw material into energy available for manufacturing processes. That we are justified in calling this raw material for manufacturing purposes is indicated by the definition of the term "manufacturing." The generation of power and even latterly of heat for sale being in a broad sense a manufacturing process. It is readily apparent that in the second classification he is indirect, since he in no wise is personally concerned with direct processes.

Toolmaker: If engaged upon the making of a tool, he is a productive worker. He is not, however, applying himself directly to the main product of the plant, and is therefore indirect—a productive indirect worker. If engaged upon the repair of a tool, he will fall into the same classification, because he is either increasing the tool's usefulness, if it has broken down and is no longer available for productive purposes or maintaining it in a state of utility, if it is still operable but showing signs of needed repairs.

Crane Man: Non-productive because he is not changing any of the items mentioned in the definition as to form, character, quality or dimension but merely as to place and a change in place does not add intrinsically to the value of the part. He may or may not be direct, depending upon whether he is moving articles for purposes of direct production or articles for purposes of indirect production. If he serves the men who build the engines, he is direct; if he serves the men who fire the boilers, he is indirect.

Draftsman: He is non-productive because the work upon which he is engaged does not change material for manufacturing purposes, reference being made to the definition of the term "Manufacturing." The work of drafting is not in any sense a manufacturing enterprise. He may be direct or indirect.

Inspector: He is non-productive if his work be merely the separation of good from defective parts but

without any attempt at any time to correct any defects. In some plants it may be that certain inspectors not only inspect the work but touch up or correct all or certain classes of defects. In such a case, the inspector is productive. In either case, if he be an inspector in such a department as tool room, he is indirect; if he be engaged in direct manufacturing departments, he is direct.

Millwrights, painters and carpenters engaged in building articles of asset value for use in the plant or engaged in such work as repairing line shafts, water mains, steam pipes, painting buildings, repairing roofs or partitions, and all similar occupations would be classed as productive indirect labor.

I am anxious that there shall not be created in your minds the impression that there exists a desire on my part to be dogmatic. You may disagree with me very strongly and positively when I say that a toolmaker engaged upon repairing a tool is productive-indirect labor, but it must be borne in mind that in so doing I am not giving you that as an isolated opinion but as a deduction based upon the interpretation of a proposed definition for labor classification. The point of attack, therefore, lies in the definition itself. It would be a waste of time to argue on the question of whether or not a millwright repairing a building is productive, except for purposes of illustration in attacking the rule. As the rule is proposed he is. If he should not be, let us amend the rule and put him where he belongs.

I am not primarily concerned in having a definition of such a nature that a man engaged upon a repair operation should be considered as productive, but I am deeply concerned that upon this or some other basis proper labor classification be arrived at to the end that all misunderstandings and ambiguities may, if not entirely eliminated, be reduced to the irreducible minimum.

And further, I am not particularly concerned with the words which are used as classification headings. If productive and non-productive are not acceptable, let us use something else that is better—for example, "Operative" and "Non-Operative," and if direct and indirect are too well established in the terminology of cost accounting, let us use something in their stead, such as, for instance, "Manufacturing" and "Supplementary." Under the one method of terminology, the definitions would as easily classify our labor as under the other. I would at this point, nevertheless, like to say a word in defense of the direct and indirect terminology. As has been indicated, the words apply primarily to that labor directly chargeable or not directly