

Mr. Brown (illustrating by means of charts) stated that the figures given in his chart were not to be taken as real. Mr. Brown went through the reasoning which he would use in trimming down his payroll in case of its being desirable for any cause to reduce overhead. He brought out that the departments made up chiefly of indirect non-productive workers would be the first to be curtailed, giving as his reason that it would be possible to produce and sell goods without an Accounting Department, Cost Department, etc., and without clerks employed for the purpose of making up reports, but that it was not possible to get along and produce and sell without a certain amount of direct operators, tool makers, and a service department to keep tools and equipment in order and in condition to use.

Mr. Brown stated that in the last issue of *Factory* there had appeared a number of articles written by various executives of important industries on "What Are the Most Important Problems for the Year 1923," and stated that a great many had emphasized the necessity of reducing overhead expense, and that at least two of these executives had written about the necessity of reducing the cost of non-productive labor. The point Mr. Brown was bringing out was what was meant by "non-productive" labor.

Mr. Griffin of the Rome Manufacturing Company remarked that it was his belief that one of the big values of a payroll analysis is to enable an executive to analyze his own payroll and make a comparison with some previous period, not only making a comparison of his own payroll against different periods but comparing same with that of other plants of a similar nature. Mr. Griffin stated that in the segregation of productive and non-productive labor, there is bound to be a great difference due to the nature of the product manufactured by the plant or establishment; that in certain plants the percentage of non-productive labor would be greater than in other plants because of local conditions. Mr. Griffin asked if it was possible to arrive at 100 per cent. efficiency in making this comparison, and also asked if an executive would not be very much misled if he analyzed his payroll on the basis of Mr. C. F. Brown's chart and compared it with the payroll of another plant where the business was entirely different and the percentage would be entirely different.

Mr. Brown said that Mr. Griffin had suggested one of the important reasons for reaching an agreement, but that he would like to ask Mr. Griffin how he would make a comparison under existing conditions and methods; that at present there are only productive and non-productive, whereas the chart went further. Mr. Brown stated that comparisons would always be difficult, but that some definite understanding should be arrived at, so that it would be possible to segregate the effects of peculiar local conditions in order to arrive at a basis of comparison. Mr. Brown submitted the instance of the Corona Typewriter Company maintaining its own print shop for turning out its own factory and sales forms, stating that in another typewriter factory located in a larger city this same expense would appear as "purchased expense materials," and that the new payroll analysis would serve to segregate such items as printers' wages in this case and permit of a comparison of the two typewriter factories more nearly on the same basis, and that, therefore, any comparisons which can be made now would be made much clearer by the new system. Mr. Brown pointed out that the chart as made out applied to only one product, but that where two or more products were made the productive labor column could be divided, if desired, into as many parts as there were varieties of product.

Mr. Ewell of the Auburn Button Company brought forth the idea of, in the first place, a man running a machine and being forced to deliver the pieces to his machine and take them away from his machine himself; and, in the second place, providing a helper, say a cheap boy, to do this work for him. Mr. Ewell's thought was that by employing a helper the operator would be enabled to turn out more pieces per day at less cost as far as the operation itself was concerned, and wondered if it would be possible to show, by dividing labor this way, where

the productiveness of the plant had been increased or the productive labor account bettered by the increase in indirect labor.

Mr. C. F. Brown in reply to Mr. Ewell stated that his payroll analysis would not show that; that Mr. Ewell's problem was a matter of cost; that the chart would show that his productive labor was decreasing in proportion to production and that indirect productive would show an increase.

Mr. Andersen of the Bowen Products Company remarked that the problem to him was a deep one, but that it was his thought that the terms "chargeable" and "non-chargeable" were better than the terms at present used, but that the whole proposition boiled down to who is going to make and use the analysis, i. e., who is going to decide what is productive or non-productive, or direct productive or indirect productive, etc. Mr. Andersen felt that many industries were already loaded with comparisons which do not mean much on account of the lack of satisfactory adjusting factors for various levels in wages and the cost of living in various periods or places.

Mr. Andersen continued, citing the problem of the Rome Manufacturing Company, which manufactures 4,000 different articles of which there are 12,000 component parts, in applying this chart for comparative purposes against a chart made up by an automobile or typewriter manufacturer. Mr. Andersen agreed that the terms "productive" and "non-productive" as used were loose, but believed they were used because it was the easiest way to classify, and wondered if ordinary clerical help could be depended upon to make correct analysis under new system. The problem to Mr. Andersen was "Now that we have this chart what are we going to do with it?"

Mr. Percy S. Brown partly answered Mr. Andersen's questions by saying that the Corona Typewriter Company was using ordinary clerical help in the analysis of their payroll, and that once the defining of various operations or occupations was disposed of this form of payroll analysis is not at all complicated.

Mr. P. S. Brown also called attention to the fact that Mr. C. F. Brown had mentioned in his paper that a ratio column could be added to the chart, which would indicate whether or not rates had been reduced. As Mr. P. S. Brown sees it, this chart is for the benefit of the factory manager and superintendent, rather than for the general manager and board of directors, who are primarily interested in the total amount of business.

Mr. C. F. Brown felt that no plan would fully meet all abnormal conditions, and that even in cost statements there is not one that tells the whole truth. He believed that there is a real comparison, if the wages of men are not used, in hours worked. It was also his belief that Mr. Andersen was satisfied with the use of the terms "productive" and "non-productive," and he stated that he also would like to retain the use of these terms, but asked that it be defined as to what is meant by productive and non-productive. Mr. Brown brought out that he was not attempting to destroy a theory which had been in vogue but merely went farther in his definitions.

Mr. Andersen, speaking further on the clerical help necessary to do this, stated that he should have asked if ordinary clerical help was competent to do this analyzing in a business which was constantly changing, and that at the Bowen Products Corporation there is a card system defining what is productive and what is non-productive as far as payroll analysis is concerned, but that he does not know of anyone who has attempted to define these on a common ground.

Mr. Bateman of the Auburn Woolen Mills would like to see a payroll analysis such as this connected up with cost, and said that to him it would not be of any value unless it was connected up with cost. Mr. Bateman believed that Mr. Brown had made this payroll analysis for his own board of directors, and that it must be concluded, therefore, that such a form of analysis, so far as general application was concerned, is only of academic interest.

Mr. C. F. Brown did not agree with Mr. Bateman, stating that such a report from the payroll department would tie up with cost through the same information which goes to the cost department. In other words, a man has spent a certain amount

WASTE OF MATERIALS

By H. M. SUTTON¹

of time on an operation, in which case this is automatically thrown into direct productive hours. In the case of a toolmaker a charge is made against the manufacturing of a tool, i. e., the payroll department shows him as indirect productive and the cost department posts his time against the cost of that tool, and in the same way a toolmaker making repairs to tools is shown. Costs are handled in the same way and reports come in in the same way. Analysis is made in the payroll department and the cards would pass on to the cost department.

Mr. Bateman said that he had often studied a chart of this kind and had wished that it would show him where the cost of an article was too high; that such charts were history, and that he would like a chart that would tell him something beforehand.

Mr. P. S. Brown in reply to Mr. Bateman referred him to his labor cost and expenses, stating that his rate department does some of this by determining rates and the best method for handling the job and that the chart is merely an auxiliary to this.

Mr. P. S. Brown, as an illustration of the lack of a common ground for defining terms, referred to a meeting of the Taylor Society in New York some time ago, at which time he had been asked what the ratio was of direct to indirect labor at the Corona Company. When Mr. Brown asked the questioner to define direct and indirect he was unable to do so.

Mr. E. F. Papworth believed that there was a feature of this chart which seems to have a direct connection with cost, i. e., in the case of typewriters you could take the number of hours worked and divide by the number of machines assembled and shipped, and in this way make comparison from time to time.

Mr. C. F. Brown said that this report could be made up for any period desired, i. e., weekly, monthly, etc., or certain classes of information every two or three weeks or months, and that Hollerith sorting machines were used in classifying.

Mr. P. S. Brown did not believe that there was a bit more work involved in this method than in the old method aside from the recaptulation of the data.

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work turned out. To get maximum results from this appeal, it follows first that facilities in the shop must be such that he may if he desires produce a big day's work, and second that he be in a frame of mind where he will want to produce. Bringing both of these conditions to pass is distinctly a management duty, and until the management has seen to it that its part is fully played, the incentive appeal will meet only half-hearted and temporary response in that even the 25 per cent may be withheld by the workmen due to lack of confidence thus created.

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SPRING MEETING

Hotel Onondaga, Syracuse, June 7-9

See page 43 for program

THERE has been much comment and discussion of "Waste In Industry." One important phase of waste however has not been given adequate attention in the technical press or discussions, nor is it at all emphasized in the report by Mr. Hoover's committee made in 1921. We refer to waste of materials.

Reduction of waste through standardization of sizes and specifications has made great progress. This work has been fostered by various engineering societies and has lately received further impetus through the Department of Commerce and the United States Chamber of Commerce.

Saving waste through utilization of by-products has been the study of chemical engineers for several decades and some remarkable results have been attained.

But the more careful utilization of those materials themselves which form the basic cost factors in several industries has apparently received careful attention in only a few plants.

As managers and management engineers we are perhaps too prone to emphasize most the gains to be made through mechanical improvements, wage incentives, and better coordinated management. The facts will bear out, however, that a much more careful analysis of the utilization of materials in manufacturing should be made.

The experience of engineers with whom the writer has been associated has demonstrated that avoidable waste of materials in several industries is a very important factor in high factory costs. Materials frequently equal or exceed in cost the total direct labor expended on a finished product. In some industries the cost of purchased materials amounts to more than all the other costs of running the business. Any reduction in waste percentage is therefore important.

Material waste is of two classes—avoidable and unavoidable—but in few plants is any distinction made between the two. Waste (i. e., some waste) is a necessary and ever present evil. Consequently if the waste figure does not vary by a very marked amount it receives little attention in the average factory.

A careful analysis of the waste made, the reasons for it, and the possibilities of improvement will almost invariably show possibilities of saving. Wood-working wastes are frequently susceptible to reductions of 10 to 20 per cent (of total lumber used)—in some instances as much as \$50,000. per year saving. In knit-

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