expenses.[18] Mr. Gantt emphasized strongly the desirability of ascertaining that part of expense of operation which was due to idleness of various causes. The result has been that in the last few years much attention has been given to the establishment of "standard costs" or standard rates for overhead distribution. In fact, I question whether the pendulum has not swung too far in this direction in that the actual cost is too often disregarded by simply taking the difference between actual and standard directly to Profit and Loss. I feel that Mr. Taylor himself would have heartily approved of setting up a normal or standard overhead rate, but that he would have most emphatically condemned our using the resulting theoretical cost figures alone without being able to compare them with the facts—the actual cost of the product, including all expense of turning that product out.

2. Organization

What seems to me to be one of the really significant developments is that made by the Joseph & Feiss Company in functional organization. Among other valuable features, this organization is tied absolutely to the cost classification so that the expense of performing each function is definitely tied to the man responsible for that function. It is hoped that this matter will be the subject of a future paper before the Society.

3. Fatigue

The publication in 1917 of Merrick's articles on "Time Study for Rate Setting" (followed later in book form), with the fatigue allowances presented, can by no means be overlooked as a distinct addition and extension of Mr. Taylor's pioneer work in the study of rest and delay allowances.

4. Executive Reports

Much remains to be done in the field of executive reports, both as to subject matter, form, and period of time covered. There are two noteworthy developments which must be mentioned here: one, the admirable administrative guide called the "Progress Chart," devised by Mr. Gantt; the other, the advanced thinking presented in a paper entitled "A Technique for the Chief Executive" presented to the Society in 1921 by John Williams.[19]

[18] This distribution was such as to load all expenses of running the business during a given period on all products made during that period, the variations from period to period being ascertained and watched by means of shop and general expense rates worked out currently.

[19] Printed in *Bulletin of Taylor Society*, April, 1922, Vol. 7, No. 2.

5. Control

We are familiar, of course, with the refinements of control worked out by Mr. Barth and Mr. Babcock at the H. H. Franklin Manufacturing Company. I am not sure that the latter gentleman has not at the Holt Manufacturing Company out-Babcocked himself in securing a degree of control that seems to come pretty close to the ultimate goal. With Mr. Babcock's permission I quote from a statement on this subject which he gave me under date of December 29, 1923:

> A significant fact which should be noted in connection with the results of scientific management at this plant is the absolute control and regularity with which our product is produced. For a period of 496 working days, starting with March 13, 1922, up to the present time, our shops have not failed in one instance to bring through exactly the number of units of product which were scheduled to be finished on each of the 496 working days.

6. Adaptation of Methods

As is pointed out later, one of the most serious shortcomings of which we as a group are guilty is an over-readiness to accept as suitable, under a wide diversity of conditions, methods which have proved satisfactory in one or more instances. I am glad, however, to record the fact that a distinct advance has been made in the last two or three years; first, in analyzing the particular situation in hand, and second, in devising methods to meet that situation.

C. Application to Broader Fields

This record would be incomplete without referring even very briefly to the significant extension of Taylor principles to fields outside of production proper. Probably as fine an example of Scientific Management as we have today is to be found in the non-selling departments of the Jordan Marsh Company of Boston, Mass. Should the members of this Society have an opportunity to investigate that development I am sure that they would be struck with the extent to which the principles, and even the detailed methods, with which they are familiar in a factory, have been applied to a department store. The work which has reached such a high plane in this firm is being extended in several other similar establishments. Similarly, the managements of general offices in manufacturing plants, and banks, etc., particularly as regards layout and office procedure, are being reorganized in several instances in accordance with the principles found so effective in the factory.

It would be impossible in the space available to give due praise to the splendid development of the principles and methods which such firms as the Dennison Manufacturing Company, and the Joseph & Feiss Company have made in the selling ends of the business. I believe the leadership which a few of these firms is showing in the field of distribution is destined to have a profound affect on American industry.

A significant line of development also is experienced in the maintenance department of a large eastern mill. Gratifying savings in cost of actual repairs as well as freedom from breakdowns have been made through careful inspection, through standardization and advanced planning of all maintenance work so far as it can be foreseen, through elementary time study, and through the payment of bonus.

Reference should here be made to the widespread adoption of budgets and quotas as simply an extension of the general principle laid down in "Shop Management" of setting up standards and of measuring actual performance (whatever form it may take) against such standards.

Reference has been made to the early efforts of Scientific Management plants to regularize production. It is gratifying to note that these attempts have been followed up and extended to cover the span of the business cycle.

Following the extension of the principles of Scientific Management to the selling end of several businesses, has come the effort, as yet scarcely under way but destined to receive increasing attention, to raise the level one stage higher by extending the same principles to the control of the total activities of the business. This attempt to coordinate sales, production and finance, coming to be known as "master planning for balanced management," is occupying much attention today in progressive firms.

D. General Influence on Industry

Mr. Taylor as early as 1895 said:

> This system of management will be adopted by but few establishments, in the near future at least, since its really successful application . . . . involves such thorough organization that . . . . but few manufacturers will care to go to this trouble until they are forced to . . . .[20]

Although this prophesy regarding the number of establishments has been borne out, nevertheless the influence of Taylor philosophy on industry has been tremendous. Many organizations which would be very loath to admit it, show unmistakably the influence of this movement. The growth in numbers of really scientifically managed plants has been slow, but what is of much more importance, there has been a growth, and this growth has been entirely healthy and permanent.

[20] "A Piece Rate System," paragraph 89.

1. Although some other "philosophies" of management can claim many more original converts, nevertheless the plants which have really achieved true Scientific Management almost without exception are running along as merrily today as they were five, ten, or twenty years ago, while the examples of these other systems existing today are exceedingly rare. The object lesson of this permanence resting upon thorough conversion has not been without its effect on industry generally.

2. This permanence is particularly striking in view of the readjustment period since the war. The present writer raised the question just prior to the depression as to whether the methods or even the principles of Scientific Management would not have to be very closely scrutinized and possibly materially modified during the coming years of a declining market. Rather extensive investigation, both personally and through correspondence, has revealed the gratifying fact that these principles have in no way been found wanting, and that in most cases not only the principles but the methods used have stood up together with altogether healthy refinements and modifications made to adapt them to changed business conditions.

3. Scientific Management has affected industry generally by pointing out the only known method of attempting even a partially satisfactory solution of wage problems, that is, by making a sharp distinction between the *amount of work* and the *amount of pay* for that work. Only through a determination of a standard output may industry be assured against a disproportionate increase in the cost of living due to possible decreased production with increased wages.

4. Another significant influence has been the lesson pointed out so forcibly that it is the little things which produce profits. Seldom can dividends be paid out of revolutionary inventions — they must ordinarily come through constant attention to what someone has called the "tremendous trifles."

5. Possibly the greatest effect, although as yet not very widespread, is the emphasis which Scientific Management has placed on the responsibilities of the management as against those of the workman. It has been shown conclusively, I believe, that it is the *management's duty* to bring about thorough standardization and accurate planning and control before asking the