

Strange as it may seem at this late day, there exists an appalling ignorance and misunderstanding with respect to the nature and scope of scientific management. This is true of its principles, its mechanisms and its techniques. This ignorance and misunderstanding is greatest among the very men who would profit most by really knowing something about it. I refer to those in administrative and financial control of industry: presidents, general managers, treasurers and comptrollers, and last but not least, bankers. Too often such men are prone to assume a knowledge of the subject which they do not possess and are too busy, too lazy or too self-satisfied to acquire. As a consequence of this lamentable ignorance and lack of discrimination in high places there has been a wide-spread application of what passes for scientific management, but what is at best nothing more than a weak, diluted imitation. We must admit that these imperfect, superficial and partial applications of unco-ordinated features of scientific management have resulted in savings or increases in production which were for the time being gratifying. Nevertheless, I feel safe in saying that in a vast majority of plants outside the mass-production industries, and perhaps even there, production might be further increased from 30 to 100 per cent for the same cost, with a corresponding advantage in all other branches of the business, through a complete and properly worked out system of scientific management.

Through the lack of understanding and the misconceptions that exist, scientific management has often been confused with mass production. There have been misguided instances of effort to apply the rigid methods of mass production in businesses where, by reason of the variety of products, the relatively small quantity of each and the necessary frequent changes in design, they were unsuitable. Mass production is not in itself scientific management. It is true that mass-production industries, because of their nature, have applied more generally and in a better manner certain elements of scientific management, and that such elements have been in a great measure built into their plants and equipment. And yet I doubt if a single mass-production company could be found with a complete and properly co-ordinated system of scientific management; nor is there one which would not profit by such a system.

We of the Taylor group are no doubt somewhat to blame for the state of affairs of which I am critical. We have been too ready to assume, on the part of

those concerned with industrial management, a knowledge and understanding of the subject as complete as our own, particularly of its mechanisms and techniques.

Following Taylor's tendency in the latter years of his life we have stressed the importance of the spirit and principles while minimizing the importance of the means developed for putting them into practice and the manner of their use. The mechanism or system developed by Taylor and perfected, under his guidance or inspiration, by Barth, Gantt and others who came directly under his influence, is remarkable for that same painstaking, far-seeing thoroughness that characterized his work on the art of cutting metals and his rules for the use of belting which are still authorities more than thirty years after being made public. Naturally, the system, or certain features of it, must be modified or amplified and adapted to suit varying conditions found in various industries. It is in this matter of adaptation that the consulting engineer justifies his existence, if in no other way. In a long and varied experience in the application of scientific management in industry, including periods when I took my own medicine as manager, I found that if I followed the Taylor mechanisms and techniques, making only such modifications as the case demanded, and *keeping in mind the purpose* back of the original, the desired results were inevitably accomplished or exceeded. Short cuts or omissions always resulted disastrously. I, like others, had to make my share of what Taylor picturesquely called "damned improvements," that is to say, ill advised changes, before I learned to look beyond the surface and appreciate the profound thought that Taylor had given to every detail of the devices that made up the system to the development of which he had devoted some twenty-five years.

Taylor's views on invention hold good with respect to managerial mechanisms. He said:⁵

Now for the average man no invention can be looked upon as legitimate invention which is not an improvement on mechanism or processes or appliances which are already in existence, and which are successful. It is thoroughly illegitimate for the average man to start out to make a radically new machine, or method, or process, new from the bottom up, to do things which have already been done in the past. Legitimate invention should always be preceded by a complete study of the field to see what other people have already done. Then some one or more defects should be clearly recognized

⁵From "Success," a Lecture to Young Men Entering Business, presented to engineering students at the University of Illinois and the University of Cincinnati, February, 1909. Reprinted in the *Bulletin of the Taylor Society*, Vol. XI, No. 2, April, 1926, pp. 24-75.

and analyzed, and it is entirely legitimate for an engineer to use his ingenuity and his inventive faculty in remedying these defects, and in adding his remedy to the existing elements of the machine or the process which have already been found to work well.

In the application of the principles and practices of scientific management much benefit would result if before attempting to work out their own mechanisms and techniques people would first make a careful and thorough study of what already exists, and use this as a basis for adaptation and further development. Valuable time would be saved and costly error or failure avoided in many instances. I recall Taylor's having made the statement in regard to the mechanism of scientific management, that probably within a decade it would all be replaced by something better. Time has proved him to have been mistaken in this. Instead of improvement in the means for applying scientific management, there has been retrogression. Today the mechanisms devised by Taylor, with such improvements as have come about as a matter of evolution, are still far ahead of common practice.

Although we who have been endeavoring to forward the movement started by Taylor may be disappointed by the faulty manner in which scientific management, or at least certain elements of its techniques, have been applied, we can derive some consolation from the thought that what has been done may pave the way to the higher level which Taylor visualized as a goal.

It seems inevitable that progress must be made by degrees and that industry must pass from rule-of-thumb management, or as Kendall put it, unsystematized management, through systematized management before approaching scientific management. As a matter of fact most of the companies known to me had, before using the methods of scientific management, employed one or more firms of efficiency engineers, or systematizers, whose work had been satisfactory so far as it went. On top of it, however, the more thorough methods and well co-ordinated system of scientific management produced results far more important than had the previous efforts. The work of the efficiency engineers in the main makes the work of the scientific-management engineer easier than it would be if it were necessary to advance directly from the unsystematized stage to scientific management.

My reasons for writing this series of articles, as suggested by the foregoing, may be summed up as follows:

1. The average quality of management in American industry is still low.

2. Poor management, particularly general management, has been one factor in bringing about and prolonging the existing business depression.

3. While there has been a wide-spread application of elements of the principles and practices of scientific management, it has been made without adequate knowledge or understanding and has consequently been incomplete, faulty and lacking in co-ordination. Hence it has fallen short in the matter of results.

4. If a sufficient number of individual companies operated under a complete system of true scientific management it would aid in avoiding economic maladjustments, and in most companies production would be increased from 30 to 100 per cent with corresponding advantages in all other departments.

5. While the prevailing inferior quality of management has been good enough to enable American industry to get by during the post-war boom period, something better, which scientific management can supply, will be required.

6. A profound ignorance with respect to scientific management on the part of those in administrative and financial control, and their complacency, are responsible for the existing low standard of management.

7. If American industry is to take advantage of the benefits afforded by a higher quality of management, the top men who control it must take the trouble to acquire a knowledge and understanding of all that is involved in scientific management, its principles, its mechanisms and its techniques. No subordinate can do this for them and it is to facilitate the task that this series is undertaken.

Rather than repeat in detail much that has been written with respect to the economic significance, the social aspects, the principles, the mechanisms and the techniques of scientific management, I shall make generous use of references to books, papers and articles. To anyone desirous of acquiring a comprehensive grasp of the subject this supplementary reading will be indispensable. As these articles will appear at two-month intervals, there should be ample time for a careful and thoughtful reading of the references given in each of them. As a beginning, I should recommend the following, in the order given:

1. "Unsystematized, Systematized and Scientific Management," by H. P. Kendall.

2. "The Spirit in which Scientific Management Should be Approached," by James M. Dodge.

3. "Prerequisites to the Introduction of Scientific Management," by King Hathaway.