

# How Taylor Introduced the Scientific Method Into Management of the Shop

By CHARLES DE FREMINVILLE  
Consulting Engineer, Schneider et Cie, Paris

Translated by ELEANOR BUSHNELL COOKE, Philadelphia

PUBLICATION of the Life of Frederick W. Taylor by Frank Barkley Copley is a notable event, as the book throws an entirely new light on the work of that extraordinary innovator by giving definite details of the manner of the development of scientific management. It is of especial importance to the French, who have been particularly alive to the significance of the movement inspired by Taylor.

Taylor himself has said that no concise definition can fully describe an art, and that the essence of modern scientific management is the application of certain broad, general principles which can be applied over a wide field. In order, therefore, to grasp the spirit of his principles it is necessary to apply oneself to a study of the facts presented by the story of his life, rather than to subject the manner in which he has expressed his principles to carping criticism or to interpret the words he used too literally.

It was about twenty years ago that the work of Taylor was called to the attention of French engineers by M. H. Le Chatelier in the *Revue de Métallurgie*. The impression produced was astonishing. It was realized that here was indeed the description of a work of unusual significance. It was no longer a question of counselling as to how better to utilize scientific knowledge in order to increase the efficiency of industrial operations or of following a scientific method in their investigation, such as had already been given in a more or less explicit manner. Taylor took the problem in hand and pursued it to its logical conclusion, working at the patternmaker's and machinist's trade in order to do so intelligently. He then called a halt on the old methods and formally indicted the existing industrial practices which tended towards an ineffective utilization of material and of labor, low production and lack of understanding between employer and employee.

Many became interested, including not only the manufacturers and technical men who were being particularly scrutinized, not to say criticized, but

even the public at large who up to this time had not seemed to be much interested in industrial work. For after Taylor had charged the limited daily output with being the cause of enormous waste, everybody felt authorized to give advice, but how very few had the ability to do so intelligently!

Immediately a concert of critics developed. Taylor discovered that the output of the shop was not the whole story. It was not necessary to enlarge upon that subject. Everyone recognized the character of a modern shop and its methods, with the sovereignty of the machine, the repetitive work, the extreme specialization, the mechanical tendency and the monotony, the speeding up, the mental depression and exploitation of the worker. What else could a man anxious to increase the production of shop do, but push to the limit the development of all these methods whose application was already frequently and often justifiably the cause of unrest? So the Taylor system was supposed to be merely the intensification of a relentless mechanism of repetitive work which yielded an output bearing the marks of indifferent quality, of extreme specialization, of monotony, of speeding up and finally of overproduction, with all the evils that these bring in their train. They said it was the end of the search for perfection in workmanship, bringing with it the disappearance of that hall mark of the artisan which is the distinguishing feature of the French product.

This was to impute to Taylor all the ills resulting from the haphazard development of the very practices which he condemned. The manufacturers have often been aware of the injustice of their ill-founded criticisms. Indeed, some of them have eventually admitted that the output of their factories was less than it ought to be, but they blamed the indifference of the worker for everything and confined themselves to forcing his utmost exertions by the lure of a premium, thinking that they were applying Taylor's ideas when they were doing just the opposite thing.

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These hasty and ill-considered attempts generally ended in an abrupt stoppage which was due largely to lack of coordination of the various operations in the shop.

In spite of this unfortunate beginning Taylor's ideas have made headway. His writings have been better understood and new applications of his methods, made with more care, have been crowned with success.

Then came the war. In this crisis even those who had only imperfectly understood the bearing of the fundamental principles realized that if an exceptional effort was the only way to secure increased production, that effort must be made at least temporarily without further delay in order to procure the artillery and munitions so urgently needed. So the application of the Taylor system became the object of governmental measures. The Minister of War, M. G. Clémenceau, prescribed its adoption in a circular addressed to manufacturers as well as to the Arsenals and Navy Yards of the War and Marine Bureaus and had its fundamental principles explained by lectures.

But it was very soon recognized that time study, the planning room and routing would make it possible to organize production in a manner satisfactory in every respect to the workers, so the government officials, whose sympathy for organized labor has never been concealed, immediately advised the manufacturers to introduce the Taylor System.

From that moment scientific management acquired an important place in industry.

Can it be said, however, that this splendid work and the spirit which inspired it, and the great personality who is responsible for it, have been generally understood and appreciated at their full value?

No work as original as Taylor's can be judged without an intimate acquaintance with the author's mind and with the circumstances accompanying the successive stages of its development. Unfortunately this knowledge has been until now entirely lacking.

What kind of a man was Taylor?

In France there were a few rarely privileged individuals who had had the good fortune to know Taylor personally, and to have met him face to face in his own country as well as in France. He had introduced them into his working environment and they had had long talks with his associates, with his experts and even with his opponents.

These men realized at once that his work was of exceptional significance, and that it emanated from

a man of a superior type of mind, a genius in every sense of the word.

How could this conviction be brought home to others? Men of genius are rare and the world does not recognize them as such without ample demonstration of their fitness for the title.

"The Taylor of whom you speak," they said in France, "is so far ahead of the one whom we visualize to ourselves; the work which you describe is so remote from the narrow circle in which it seems to have originated that you must have been laboring under a delusion." Or else—

"The friends of Taylor have created two Taylors, neither of which apparently has anything in common with the original. Either they represent him as a scientific mind of such a high type that ordinarily it is acquired only by attendance at the technical schools and the universities, which he knew only in the later years of his life; or, what is even more improbable, they make of him an economist who throws new light on modern industrial development; they even go so far as to see in him the leader of a school of philosophy which pretends to solve the most subtle social problems by entirely new methods and to reconcile the interests of labor and capital. All of this," they say, "is incompatible with such a working man's brain as he must have had and which he even seemed to claim."

Such were the objections which had to be met. Among other things, Taylor's type of mind had to be explained; a type difficult to define, as are all those which do not spring from the common mould.

We knew that Taylor was the product of a cultivated environment. It was, therefore, easy enough to concede that he had acquired a certain breadth of vision, but this did not explain his bent for the scientific point of view. How did it first show itself? What opportunity did it have for development? As he was an ardent sportsman (a tennis champion and a devotee of golf), it is probable that his instinct for precision had found in sports the food which nourished and moulded it into the genuinely scientific form. It was probably in sports also that he acquired respect for voluntary submission to discipline, for securing the most effective cooperation through intelligent functional management and for absolute loyalty in competitive work, all of which lie at the root of scientific management.

Very frequently this manner of explaining Taylor's type of mind was considered an ingenious and amus-