Taylor, before applying for a patent, addressed letters of inquiry to all the leading steel makers here and abroad, asking them if they made, or knew of anyone who made, a steel which could be heated to a white heat—"a dripping heat"—without injury to its cutting qualities.

They all said they knew of no such steel, and yet, when the validity of the Taylor-White patent on this steel was finally tested in the courts, it was invalidated on the ground that such steels had been made and used for years—a striking instance of a court's decision entirely at variance with common knowledge and informed conviction. Taylor and Maunsel White will always be credited as the real inventors of high-speed steel, as they really were, the courts notwithstanding.

There are those who think that Taylor and his work are more highly esteemed abroad than here. If that is true, may it not be because abroad they judge by the carefully considered writings of Frederick W. Taylor, whereas here what he wrote is read with stuff between the lines composed largely of violent methods and violent denunciations.

But these things will pass away. The public will forget them or will clearly distinguish between them and the real constructive work; much as Taylor's biographer has done with such consummate skill and good judgment.

For perfectly good reasons, no doubt, the full story of what Taylor did for The American Society of Mechanical Engineers during his term as its president is not revealed in these volumes nor elsewhere. That it was a critical period in the career of the Society had been perceived by others and some remedial steps had been taken, but Taylor threw himself whole-heartedly into the work, allowed nothing to stand in his way, and brought about, mainly by his own efforts, though not without assistance from others, a complete reformation in the Society's methods of administration, securing from the Council the needed authority for a small committee, of which he was chairman, to make the necessary changes in personnel.

The full story would be of interest chiefly, of course, to the Society's membership, and some day perhaps it ought to be revealed in justice to Taylor and to certain of his associates and supporters of that time, most of whom, like him, who took the leading part, have disappeared from the scene of action.

Taylor the Cooperationist[1]

By Richard A. Feiss[2]

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THE situation that existed when Taylor entered industry consisted of the minimum of cooperation and the maximum of antagonism. In the employer-employee relationship that had grown up, there were only a few outstanding instances in which it was realized that cooperative relationship was fundamental to the entire set-up of industry. Both employer and employee possessed false points of view which precluded any basis for real cooperation and which assumed that their positions in industry were entirely antagonistic.

Taylor clearly saw that the salvation of industry involved the greatest possible increase in production at the lowest possible costs and a larger "prosperity" for both employer and employee. Such results could be obtained only by a realization on the part of both that their interests were common to those of industry itself. This meant that "friendly cooperation" was paramount. Taylor often said scientific management always involved a mental revolution of the employer and employee toward their work and toward each other.

Taylor realized that this revolution would not come about by abstract preaching. It could be brought about only by a slow process—by developing a technique of organization and methods based on sound principles and philosophy and applied in a scientific way to the specific problems in the plant. Everything Taylor did was to this end.

The revolution in the minds of management begins with the realization on the part of management that its function consists of full responsibility for both planning and executing in detail everything necessary for accomplishment. This puts upon management the specific responsibility of planning both what to do and how to do it. The duties of management are analyzed and the functions inherent in managing are set up. This results in functionalized management. Functionalized management is nothing more than specialization in management with the same benefits which are brought about by specialization in any other field.

Management properly has to devote itself as part of its function of leadership to the task of bringing

[1]Reprinted by permission from *Harvard Business Review*, October, 1924. Abridged. The caption is ours.

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about a revolution in the minds of the men in order to enlist their cooperation. The antagonism which to a great extent still exists and which is based chiefly upon the conflict in interest in the share of the results of industry had to be overcome. The theory that all the interests of the employer and employee are opposed was almost universally held during Taylor's early years. He recognized that under the conditions that had grown up in industry this feeling not only existed, but that there was also cause for it so far as the employee was concerned. The lack of a basis of cooperation necessary to industry itself was a thing that to Taylor's mind was wrong and had to be overcome.

The purpose of industry is to create wealth in the form of commodities and services for the use and benefit of the community. Those who take part in the creation of these commodities and services naturally look to industry for an immediate benefit. It follows that their incentive shall be a participation in the rewards of industry in accordance with their individual contribution. This principle is basic to the entire Taylor philosophy. From this point of view, the interests of both employer and employee are alike provided for in that as individuals each profits in accordance with his contribution.

Towards this end Taylor devoted himself to analyzing every activity and every responsibility in the business of production with a view to establishing an accurately determined measure and method for every kind of performance. It was this characteristic of thoroughness that not only made his contribution possible but made it inevitable that whatever came within the scope of his activity or interest he analyzed in detail in a thoroughly scientific manner. Because he was of an essentially practical and constructive mind, his analysis resulted not only in a synthesis as to which was the one best way in any given instance, but also in a formula or a generalization which embodied the correct principle.

The importance of developing a comprehensive and coordinated technique which involves not only the determination of method but also the determination of reasonable time required for performance is apparent. Such a technique permits of the establishing of a method for rewarding the individual according to the quality and quantity of his accomplishment. The development of some suitable form of payment, which is dependent upon performance and which is substantially greater for accomplishment in accordance with definitely set standards, is material if not essential in making effective the mutuality of interest that is inherent in and necessary for the proper conduct of business. When scientifically worked out and developed, the results effect that revolution in the minds of the men which replaces antagonism with cooperation.

Taylor's work has too often been viewed as a set system. He himself laid stress upon the fact that exact methods would and should be improved and developed, and that in all instances they should be modified to apply to a particular situation. But the principles that Taylor first enunciated as fundamental to industry must be applied 100 per cent in order to get results. In application the analysis necessary will reveal that the problems of management are of a type common to all organizations.

Time study, routing, and other functions of planning are not in themselves scientific management, but are part of the technique of scientific management. It is with such aids that the science involved in the performance of any task is discovered and perpetuated for the benefit of the industry. Significant as was the work of Taylor and his associates in the discovery of high-speed steel and the ultimate publication of his 25 years of experimentation in the art of cutting metals, its real and impressive significance is apparent only when it is realized that its purpose was merely the discovery of the science involved in a group of machine shop operations as a logical incident in the application of scientific management methods.

The value of Taylor's work consisted not only in the expounding of the correct principles of organization and management but also in the practical illustration of them by application to the actual problems of management. In fact, the great value of Taylor's work is that the principles are but generalizations derived from shop experiments and practices. He demonstrated that the accomplishment of even the most ordinary kind of work involves a science, and the coordination of all the activities of an organization involves an art. As a result, management has become one of the great professions involving both science as applied to the handling of all materials and methods, and art as applied to the handling of all its human relations.

While the term "scientific management" can as yet be applied to the management of only a few organizations, the influence of Taylor's work, his