improvements in management technique and because of the combinations taking place right along in industry. The force of competition of one industry against another—rayon against cotton—and of one machine against another—the Diesel engine against the steam engine—is compelling improved efficiency of management which is cutting down labor forces. It seems to me that this tendency is being accelerated at the present time and that the number of people employed per unit of production is going to decrease continuously. Therefore this question is a tremendously serious one, especially so since these displaced people are not the down-and-outers and the inefficient. I for one do not see the remedy and it is the remedy that we need. I had hoped that the papers and discussion this morning might take hold a little more firmly of that problem. We have to know trends and their scientific and mathematical basis but these are useful only if they point out a remedy.

Annual Business Meeting

THE Annual Business Meeting of the Taylor Society was called to order at four o'clock, December 4, 1930, in the Small Ball Room of the Hotel Pennsylvania, New York. The meeting was opened by President Kendall and the presence of a forum recorded. Reading of the minutes of the previous meeting was waived. The report of the Treasurer was received, placed on file and mimeographed copies distributed among those present at the meeting. The Managing Director then made an informal statement concerning the work and problems of the Society. It was voted that the Managing Director send Mrs. Frederick W. Taylor, about to sail for Europe that evening, a message of grateful appreciation for her generous interest in the work of the Society.

The committee which had opened and counted letter ballots for the election of officers reported the result of the election as follows:

Officers

President and Director (1 year): Henry P. Kendall, President, The Kendall Company, Boston.

Vice President and Director (2 years): Arthur T. Davenport, General Manager, Sweet-Orr & Company, New York.

Treasurer and Director (1 year): Edward W. Clark, 3rd, E. W. Clark & Company, Philadelphia.

Directors (2 years): Francis Goodell, Naumkeag Steam Cotton Company, Salem Mass.; Hudson B. Hastings, Yale University, New Haven, Conn.; H. S. Person, Taylor Society, New York.

Nominating Committee

The following were selected as a Nominating Committee for the ensuing year:

Ernest G. Brown, Bristol, R. I.; T. C. Eckstein, Chicago, Ill.; B. Eugenia Lies, New York; A. B. Rich, Framingham, Mass.; N. I. Stone (Chairman) New York.

Maintenance of Standards[1]

Some Conclusions Concerning Maintenance Practices Based on a Number of Plant Inspections

By VICTOR S. KARABASZ
Professor of Industry, University of Pennsylvania

THE utilization of the scientific method in the solution of business problems is relied upon by every modern manager. All pertinent facts with reference to the specific business situation under consideration are gathered, classified and evaluated, and upon this study a decision is made, rather than upon mere guess or opinion. We live in an age where fact is rapidly supplanting opinion, where careful study, investigation and research are replacing rule-of-thumb methods. In a business, therefore, which is in tune with this age of fact and research standards must necessarily be developed, because standards are the result of careful investigation and research.

A study of the works of Frederick W. Taylor will show the tremendous importance which he placed upon the establishment of standards, and even a casual study of the BULLETIN OF THE TAYLOR SOCIETY, from the earliest days of its publication, will indicate that this basic management step has been among the subjects receiving most attention.[2] Further evidence of the emphasis placed by the Taylor Society upon the establishment of standards is seen in the book published under the auspices of the Society entitled "Scientific Management in American Industry,"[3] in which one of the major divisions deals with management standards. By establishing standards one lays the foundation or base of modern management, and as a firm base or foundation is necessary for a safe superstructure, it is impossible to overemphasize the importance of standards.

If it is true that standards form the base or foundation of modern management, upon which the superstructure (control) is built, then it must also be true that if that base or foundation is not maintained, but is permitted to waste away or disintegrate, the superstructure becomes unsafe and must eventually collapse. It was the recognition of this situation that led Taylor and his associates to recognize the fact that standards were only valuable as long as they really were standards and that their maintenance was quite as important as their original determination or establishment. As early as 1893 in a paper entitled "Notes on Belting,"[4] delivered before the American Society of Mechanical Engineers, Frederick W. Taylor had the following to say with reference to maintenance:

> Serious repairs to belting, as well as to all other machinery, in a mill should be prevented as far as possible by systematic and careful inspection at regular intervals, and the writer has found a tickler, having a portfolio for every day in the year, from which reminders to inspect and examine are issued daily, an invaluable aid in caring for the machinery of an establishment. With this method a belt should rarely slip or give out while in use, and most repairs can be made out of working hours.

In this paper Taylor not only established certain definite standards for belting, but he also immediately devised a method of maintaining these standards, an idea which should be kept in mind by all who are establishing management standards. Taylor always recognized the fact that the mere establishment of a standard was only a part of a task and that the complete task was not accomplished until he had perfected a method which would assure the maintenance of the standard which he had established. The fundamental principles of maintaining standards, which Taylor set forth as early as 1893, are the principles which are

[1] Paper presented before a meeting of the Taylor Society, New York, December 4, 1930.

[2] See paper by H. K. Hathaway entitled "Standards," *Bulletin of the Taylor Society*, Vol. XII, Nos. 5 and 6, October and December, 1927, pp. 491 and 540.

[3] Harper & Brothers, New York, 1929.

[4] *Transactions of the American Society of Mechanical Engineers*, Vol. XV, 1893, p. 237.