

failure of individuals to take action through such associations as are represented by the trades. That is the why of interstate and state commerce commissions; of trade commissions; of pure food laws. If the trades do not voluntarily create regulative organizations, the governments will. While it may be a long time before the consuming public perceives the advantages of standardization of product (to the extent possible without destroying individuality), the time will come. Mr. Hoover's committee on the investigation of waste may be a sign pointing to the time. The executives of production should beat the consuming public to it. Mr. Smith's paper gives seven good reasons why important trade economies—and therefore national economies—will be effected by trade standardization of products and parts, without destroying individuality and the opportunity for wholesome competition within the trade.

MR. HOOVER'S address before the American Engineering Council is worthy of permanent record in the BULLETIN; especially in this issue because of what it says about standardization. The quotation from that article on our front cover sums up in the fewest possible words the argument in favor of standardization—savings in national effort—and answers the principal argument against standardization—it need not stamp out of manufacture either individuality or invention or decoration. It is to be hoped that so strong a body as the Federated American Engineering Societies, with all the vigor that such leadership as Mr. Hoover's can give it, and in cooperation with other influential organizations such as the Chamber of Commerce of the United States, will begin a campaign of education on behalf of standardization which will not cease until it is taken up by every trade association in the United States. There is a war to be paid for and but one way to secure the funds,—savings by more economical national effort.

THE address, "Risk—A Retarding Factor in Production," made a profound impression on the audience, notwithstanding Professor Friday's own appraisal of his suggested remedy as bizarre. It is doubtful whether a single person in the audience thought the remedy practicable or desirable. Yet one engineer in discussion said, "I should like to say I have never in my life heard a paper on fixing things

in this country which has made the impression on me which this paper has made. I think it is the biggest thought detonator this Society has ever had." Why should a group of practical engineers and executives be so interested in an economist's discussion of a general economic problem, an impossible thing ten, even five, years ago? Because they have come to realize that economic problems are practical problems of management. They have come to realize that the development and especially the maintenance of scientific management in the plant would be promoted were some of the obstacles imposed by the general economic machinery of society removed. The executives of a plant and a consulting management engineer spend one or two years on developmental work, and considerable money, and begin to see measurable results, when along comes some disturbing influence out of the general economic situation and nullifies all their efforts. So some engineers and executives are beginning to think about general economic problems and consider whether they can be attacked in an engineering fashion; whether some of these obstacles to their work may not be eliminated. That is why his hearers listened with such keen interest to Professor Friday's analysis and proposed remedy; why they listened with similar interest to Professor Fisher's address, "How An Unstabilized Dollar Interferes With Efficient Management," at the Springfield meeting (the address will appear in the June issue); why the Taylor Society is introducing into each of its meetings one address on such general economic problems.

IT is with deep regret that we announce the death, suddenly, March 2 at St. Petersburg, Florida, of Miss Frances Mitchell, Mr. Taylor's secretary for many years, and later Secretary at Boxly for the Frederick W. Taylor Co-operators and the Taylor Society.

Her loss will be greatly felt in connection with work now in progress, especially in her devoted interest to many details involved in the publication of Mr. Taylor's biography.

A part of the power that grows out of the Scientific Management movement is attributable to the fact that it inspires on the part of the individual worker in all grades willing unselfish service.

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## STANDARDIZATION OF PRODUCTS<sup>1</sup>

### I. AS A NATIONAL ECONOMY

By MELVIN T. COPELAND<sup>2</sup>

WHEN the armistice was signed in 1918, the Conservation Division of the War Industries Board had prepared conservation programs for two hundred sixty-nine industries. In undertaking to discuss standardization of products as a national economy, I assume that I am expected to present some of the results accomplished through these conservation plans and to point out my general conclusions regarding the applicability of such measures to business management during times of peace. In so far as these plans resulted in standardization, it was standardization of the products of an entire industry. Incidentally it involved some degree of standardization in numerous individual plants. In many other cases, however, a single plant previously had carried standardization much further than could be done by the industry as a whole. A manufacturer of men's shoes, for example, might operate his factory entirely on a single grade of product in one or two styles. Such a restricted range of output obviously would not be sufficient for the entire industry even though the policy of standardization was sound for the individual plant. My discussion consequently will deal chiefly with industrial standardization, not with plant standardization.

The task of the Conservation Division was to bring about a husbanding of the resources and production facilities of the country "by means of scientific, commercial, and industrial economies." The chief methods of conservation employed by the Division, in so far as they related to standardization of products, may be summarized in general terms briefly as follows:

1. A maximum reduction in the number of styles and varieties, sizes, colors, and finishes of the product of an industry.

2. The elimination of styles and varieties that re-

<sup>1</sup>Papers presented at the annual meeting of the Taylor Society, New York, Dec. 4, 1920.

<sup>2</sup>Director Bureau of Business Research, Harvard University; formerly Secretary of Conservation Division, War Industries Board.

quired more than the strictly necessary amount of material.

3. The elimination of features or accessories that used material for adornment or convenience which were not actually essential to the serviceability or utility of the product.

4. The elimination of patterns and types of products that were less essential to the civilian population.

5. The standardization of sizes, lengths, widths, thicknesses, weights, gauges, etc., of materials, parts and sections of a product by means of which strength and durability could be obtained with the employment of a minimum quantity of material and labor in manufacturing and with a reduction in the quantity of material, (parts and finished product) carried in stocks.

Although the Conservation Division did bring about a degree of standardization, this was accomplished by a process of elimination. We took each industry as we found it, and with the help of the business men themselves determined the styles, types and sizes of the products that could be discontinued without unfair injury to producers and without serious sacrifice to consumers. This policy for securing conservation was diametrically opposed to the one that was followed in most European countries. The English government, for example, introduced a standard shoe and standard clothing primarily as a means of price control. Starting with one standard product, the government found it necessary to permit more and more variations constantly increasing the style range of the standardized article. Manufacturers were not compelled to restrict their output to the standard product. Although the effect of the regulations in England was to cut down the output of articles that did not conform to the standard, nevertheless some manufacturers continued to produce a wide variety of styles. According to the American schedule of conservation, on the other hand, all manufacturers confined their output of shoes, for instance, to white, black, and tan, limited the