

during 1913-1914 of £207,817,437. Can any nation continue for a series of years to bear a continuous restriction on ordinary progress and upon the establishment of confidence, without confidence, ordinary progress, and reasonable chance of prosperity fading away? Uncertainty is the clog on trade, and by trade our nation lives. The figures should make every moderate man and woman pause.

#### STANDARDIZATION IN GERMANY<sup>1</sup>

STANDARDIZATION of industrial production has been one of the important factors in enabling Germany to maintain its industrial machine intact, in the face of the multitude of obstacles now confronting that country.

The extent to which Germany has so far succeeded in keeping her industrial machine intact, is due in no small part to the elaborate scale on which her standardization work is performed.

The elaborateness of the organization for the work, its activity, and the scale on which it is being carried out constitute a new development in industrial organization.

Practically every important manufacturing concern in Germany is officially participating in the industrial standardization program of that country. More than a thousand German companies have formal standardization organizations within their own works. These organizations are called "standards bureaus." The larger firms have branch bureaus in the separate departments, or in the separate factories. One of the well-known companies has twenty-one such branch bureaus, employing in all a special staff of more than one hundred. Another firm has a permanent full-time staff of over two hundred in its various branch bureaus. In all of the great firms the bureau reports directly to the general manager.

The extent to which industrial life in Germany has been coordinated is shown by the fact that more than seven hundred German national standards have been adopted. This includes only those in which several dif-

<sup>1</sup> From a Bulletin of the American Engineering Standards Committee issued December 6, written by Dr. P. G. Agnew, Secretary of the Committee, who recently returned from Europe, where for two months he made a study of the standardization movement and the manner in which European developments in this direction are likely to affect American industry.

ferent industries are concerned, and which are approved by the central national body. These include fundamental engineering standards such as: standard diameters, tapers, sizes of keys, threads, fits, etc.; materials; tools; measuring instruments and gages; machine parts, including handles, ball and journal bearings, etc.; gears; and sizes of paper.

In addition to this work of the central body and closely correlated with it are no less than sixty-five special industry committees actively working on such subjects as: the standardization of pipe fittings, piping and accessories; welding; steel construction; concrete and reinforced concrete; fire fighting equipment; windows, doors and stairways; foundry practice; the printing trades; merchant marine; locomotives; motor trucks; laboratory apparatus; photographic supplies; non-ferrous metals; precision tools; sand, gravel and street paving material; typewriters; highway bridges; rolling mills; and railway car construction.

A striking example of the efficiency of national standardization as it has been developed is shown in the case of a rush order placed with German manufacturers for 200 locomotives for delivery to Russia. Production of different parts was allotted to seventeen different manufacturers to be produced strictly upon the plan of interchangeable parts, no one manufacturer making a complete locomotive. No serious practical difficulty was encountered in filling the order. The inspectors made a particularly striking test of the feasibility and accuracy of the plan by ordering a complete locomotive to be assembled from parts chosen at random from the parts furnished by the seventeen manufacturers. It proved to be ready for service immediately after assembly without the necessity of any disassembling for readjustment.

Standardization engineering is now a recognized profession in Germany. The rapid development of standardization organizations within the companies has made a large demand for such work. Advertisement for standardization engineers and for such positions regularly appear in the engineering press.

An interesting development of the last few years is the appearance of consulting engineering firms specializing in standardization work. There are now five such firms in Germany. This work is closely connected with industrial or efficiency engineering, in which there is now great and growing interest in Germany. In general, it appears to be much more closely connected with the movement for industrial standardization than is the

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## TWO PIONEER PAPERS ON INDUSTRIAL RELATIONS<sup>1</sup>

By ROBERT G. VALENTINE<sup>2</sup>

### I. SCIENTIFIC MANAGEMENT AND ORGANIZED LABOR<sup>3</sup>

#### THE FUNCTIONS OF THE INDUSTRIAL COUNSELOR—POSSIBLE RELATIONS OF SCIENTIFIC MANAGEMENT AND LABOR UNIONS

IN BEGINNING my work I had to adopt as a working hypothesis very distinct tentative beliefs. One working hypothesis I adopted was a belief in scientific management, and I claim to understand it very much as you do. The second hypothesis is a belief in absolute democracy in group action on matters. Without assenting to any particular form of association, I feel that in any community or in any group of people, where you do not find a sane quiet beginning towards group action, that group or that concern or those individuals are headed for trouble. And so in accepting the facts of our time as we find them, I believe in trade unionism as one distinct form of democratic development, despite all its imperfections and its monstrous economic fallacies.

Last Saturday I was called on the telephone by one of a firm of Buffalo lawyers, who asked if I knew anything about a text-book concern in Massachusetts. I told him I had no accurate information about it. He said, "Assuming what you have seen in the papers and what you know about it is all true, would you consider that firm financially sound at the present time?" I said, "Yes, sir."

<sup>1</sup> So abundant has become the literature on industrial relations during the past five years that few realize that less than ten years ago that literature was meager, and the voice of Robert G. Valentine was as the voice of one crying in the wilderness. The two papers reprinted here are of historical value and the bulletins in which they appeared, out of print. While the members of the Taylor Society did not agree with Mr. Valentine with respect to many of his views, it has always been a source of gratification to the Society that it had the vision to give him a platform and an audience.

<sup>2</sup> Born West Newton, Mass., November 29, 1872. A.B. Harvard, 1896. Commissioner of Indian Affairs, 1909-12; Chairman, First Massachusetts Minimum Wage Board, 1913; Industrial Counselor, 1912-16; died September 15, 1916.

<sup>3</sup> An address at the Annual Meeting, December 5, 1914.

Then, "Assuming also what you know about it, would you consider that firm or would you not consider that firm as sound in its methods of management and its processes of doing the work?" Knowing the concern to be what any of us would consider an up-to-date, clean-cut business concern, I said, "Yes; I should consider it perfectly solvent, both financially and as regards the way it works its processes."

Next I was asked, "Do you think that concern is industrially solvent, meaning that the relations between employers and employees in that concern, and of all the partners in that concern in any relations they have with each other and with their employees, and with outside labor forces of any kind, and with the management itself, are not only all fixed pretty soundly, but are developing in the right direction?" I replied, "From what I know of that concern I should not consider that concern industrially sound. I do consider it financially sound. I do consider it sound as to its plant and equipment and methods and processes of manufacture and operation, but not so on the side of human relations existing all throughout." The man inquiring then said, "That is what I wanted to know. I had some doubts about it myself; and we will look into it further now, from what you have said."

Now, to me it is significant that that type of question is rising. I want to place before you that same question in another form.

Imagine that a large industrial concern desires to issue new capital stock. The ordinary process is for it to go to its bankers. Bankers talk over the situation, and if they think generally well of the plan, they ask the industrial company to have its financial conditions certified to by an impartial disinterested concern of public accountants. Bankers also get, either from those accountants or directly through a firm of industrial engineers, a certificate as to the condition of the plant and the equipment. Those certificates appear in the prospectus of the new securities, and stand to the investing public as a mark of the care taken by the bankers before they lend their names to the flotation of the securities.