

of accomplishment," but a single element in the science of management and largely dependent upon other factors of a more material and unromantic nature.

The happiest of "industrial relations" would be of no avail in the case of a Pennsylvania Railroad without a signal system, without running schedules for its trains, without the track-walkers' daily inspection. The tools ground by the workmen shown in Figure 7 might reflect fine industrial relations but they will not turn out as much product as the standard tool.

Satisfactory "industrial relations," if they are to endure, must have something more solid as a foundation than sentiment or philanthropy. The most liberal plan for hearing and adjusting "grievances," for collective bargaining, "social service," and even "a voice in the management" carried to the extreme of a business owned and operated by the workers, leaves us still upon the threshold, with the same task before us, that of providing the ways and means. It matters not who selects the managing personnel—provided that they be wisely selected; it matters not who makes the studies leading to the establishment of standards, who makes the route sheets, who writes the instruction cards—providing they be qualified for the work and that it be well done. The important thing to the worker, the employer and the consumer is that these functions be performed and that they be recognized as essential to the attainment of the end sought by all.

That scientific management—with its scientifically determined standards replacing "opinion," and placing squarely upon the management and holding it up to responsibilities and duties either previously not realized or evaded, and providing the practical mechanism essential to real cooperation between management and workers—makes for sound industrial relations, removes the causes of suspicion and mutual distrust, and avoids "grievances," has been amply demonstrated.

From all quarters we hear complaints against the high cost of living and demands for increased wages and salaries to meet it. Are the tremendous increases in pay, the shorter hours and other advantages which have been brought about during the past five years to afford us nothing more than subjects for academic discussion, and additional means for conciliation and adjustment of grievances? Are we after all to find the fruit for which we have been striving nothing but empty husks?

Numerous conferences have been held with a view to reconciling the differences and viewpoints of "Labor" and "Capital" and the creation of better "indus-

trial relations"; the press and transactions of our technical societies are full of the subject, and in fact organizations having as their sole object the solution of these problems have been formed. What is back of it all? Merely the insistent demand of society that the old purchasing power of the dollar be reestablished, that it be made worth one hundred cents as of yore instead of the fifty cents as today. In other words the task confronting the nation is the production of two articles where but one was produced before.

Have any of you heard of meetings or conferences being held to discuss the concrete problems of increasing production and to devise definite and practical means for doing so? You have merely heard statements that production must be increased—usually with the inference that it is "up to the workers."

In an address, wonderful for its wisdom and courage, opening the National Industrial Conference called by the President of the United States, Secretary of Labor Wilson again emphasized the need for increased production by the following statement:

The effect of these things has been reflected in the high cost of living and the consequent demand for higher wage rates to meet the increasing burden of the family budget. Yet increases in the wage rate do not always give relief. There are but two ways by which the general standard of living of the wage-workers can be improved. One is by increased productivity, making more material available for wages. The other is by taking the means of increased compensation out of the profits of the employer. If wages are increased and profits remain the same, the burden is passed on to the consuming public in the form of an increased cost of living, and comes back in that form to the wage-worker himself. No portion of improved living standards can come out of the profits of the employers unless there is profiteering.

And what gives the opportunity for profiteering? The very conditions that we are confronted with today—the destructive agencies of war, the disarrangement of industry and commerce, and the unrest and high nervous tension of our people, resulting in a shortage of supply as compared with demand. The whole world is interested in returning to the highest productive efficiency, having due regard to the health, safety and opportunities for rest, recreation and improvement of those who toil. The more productive we are the sooner we will replace the wastage of war, return to normal price levels, and abolish profiteering. There can be no profiteering where the production is ample to meet the needs of the people of the world if there is a free flow of material from producer to consumer. It is only where the production is not sufficient for the needs of the people, or, when sufficient, where artificial obstructions impede proper distribution, that there is any possibility of profiteering. Anything that restricts the highest efficiency commensurate with the physical, mental and spiritual well-being of the workers tends to retard the progress of the country as a whole.

Apparently, just as Taylor's message in 1895 and in 1903 fell to a great extent upon deaf ears, so was the great importance of Secretary Wilson's remarks lost upon this conference in which such hopes were placed.

Samuel Gompers, in an address before the Associated Advertising Clubs in New Orleans last September, stated an important truth when he said:

It is said that requests for increases in wages necessitate increases in prices which increases cost of living and in return results in more wage demands—a vicious circle that leads to no progress. It should be remembered that wages constitute only one of the factors in production costs and that high labor invariably leads to labor saving machinery and improved production processes. High wages do not inevitably lead to the vicious circle. On the contrary, they have invariably resulted in constructive changes, beneficial to workers and resulting in increased production. This is vividly brought out by the contrasts in production in low wage countries such as China and production in high wage countries such as ours.

Mr. Gompers is right. Labor saving machinery and improved production processes do and must follow as a result of high labor cost. But who is to provide these means to the increased production, so generally conceded to be essential to a reduction of the high cost of living? The worker may help—and certainly he will avail himself of them when they are provided—but he is in no position alone to bring about the improvements in conditions, and it is foolish to suppose that in general he can double his production merely by greater willingness, greater diligence or greater energy, as a large part of the general public and many executives and managers would seem to believe.

They can not be brought about by the economist—who may help by predicting their need—or by the social scientist, the student of industrial relations, by boards of conciliation or by conferences between representatives of labor, capital and the public, or by legislation. Even the elimination of profiteering, of extravagance and of strikes will not accomplish all that is desired. There is no short cut—no easy way. It is *work* that is needed, and the job is squarely up to the manager, the engineer and the worker. The increases in production and the consequent increases in pay that I have cited as examples are the results of such work by all three,—worker, engineer, manager; all a part in it, but the major responsibility is now as ever up to the management; it must take the initiative and afford the opportunity for cooperation of the engineer and the worker. If the manager cannot or will not meet this responsibility to take the initiative it seems inevitable that "labor," in order to retain and give substance to what it has gained and under pressure from the public, must assume the task—even though strictly speaking it is not its responsibility.

Taylor believed, preached and practiced the doctrine that instead of waiting for high wages and a consequent high cost of living to force us to eliminate

waste, to increase production through the improvement of manufacturing processes and the development of labor saving machinery and devices, that we should by anticipating the need put the horse where he belongs—in front of the cart instead of behind it.

In 1911 he said in the introduction to his book "The Principles of Scientific Management": "As yet there has been no public agitation for 'Greater National Efficiency'; no meetings have been called to consider how this is to be brought about." Remarks such as those of Secretary Wilson indicate that the "agitation" has commenced. It is up to this Society to take the lead in showing how the greater national efficiency is to be brought about. We have waited for the spur of necessity. Now we feel it. "Let's Go."

IX DISCUSSION

MR. CARL G. BARTH¹: When I heard that Mr. Hathaway was to read a paper on *standardization* I said to myself, "Are we to have that threadbare subject before us again?" for having dealt with it during twenty long years in such a manner that it has become part and parcel of my whole being, I am almost as sick of the word as of the word *efficiency*. For the time being I forgot to think of the evergrowing membership of our Society, consisting as it does to a considerable degree of young and inexperienced aspirants, who have joined for the purpose of receiving instruction and guidance from us elders. In view of this Mr. Hathaway's treatise on the subject is indeed a timely one, besides being exceptionally well presented in several points. A great deal of misconception still exists in regard to what Mr. Taylor meant by standards, and the word has often been used in connections to which Mr. Taylor strongly objected; and he often looked upon such use as a misapplied plagiarism of his own use of the word. Objections have often been raised against the establishment of standards as a procedure that blocks the way for improvements; and under certain conditions, if matters are not properly understood or handled judiciously, legitimate improvements may be too long delayed. In this connection I venture to quote the following from my paper "Standardization of Machine Tools," read December, 1916, before the American Society of Mechanical Engineers.

Before proceeding to any definite recommendations, it will be well to consider the objection so often raised to the adoption of standards of any kind—that standardization blocks the way for further development and improvement.

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