

E. THE POWER AND STIMULUS OF KNOWLEDGE

As a final consideration under the industrial or non-human aspects of the discussion must be mentioned, partially by way of summary, the numerous factors which considered as a whole form the possibly less tangible but nevertheless eminently comforting features of operation under scientific management. I refer to the confidence, the sense of security, the power and stimulus, the aplomb which spring from the knowledge that we have *real control* of our business through the ordered regulation of its activities according to adequate knowledge and best practice—one of those by-products of Scientific Management which are often of such transcendent importance.

There is something immensely stimulating about it all, something akin to the inspiration and confidence we feel when in the presence of a man who is a master of his subject and whose opinions and actions we know are based on thoro knowledge and thoro understanding. Who has not experienced the enthusiasm which comes with the final solution of an intricate problem; who has not experienced the stimulus of directing interdependent forces in perfect confidence toward a solution which, be what it may, we know must be the proper one because arrived at through absolute adherence to natural law. In the one case it is the enthusiasm of the chemist when he knows he has ferreted out a new element; in the other it is the confidence and the power of the master at his work.

This enthusiasm, this stimulus is nowhere more infectious than in industry. Striking proof of this is afforded by the avidity with which the "efficiency" gospel has been bandied back and forth between adherents and opponents during the eight or nine years it has been public property, and by the readiness with which very many of the largest and most progressive firms in the country have accepted and successfully applied the principles of modern management. It is fortunate that this is so, for in the search for and utilization of better methods wherever found lies the hope of American industry. The metal working industry generally has been tremendously spurred forward not only by the development of high speed steel, but also by the example of those plants which have not been content with being forced to adopt this means of increased production but which have voluntarily followed this measure up with others of far-reaching importance, and who have thereby postponed in their cases the time of diminishing returns. Tho lacking the same stimulus, there are increasing signs that the textile

and other industries are shortly due for a less revolutionary yet none the less peremptory awakening. They also must catch up with the, as yet, comparatively few examples of advanced management among them.

The fear of the power of knowledge even more than that of the power of capital may well cause competitors to demand forthwith a balance sheet of knowledge. Tho capital is needed to put knowledge to work and to keep it there, capital without knowledge is likely quickly to disappear in competition with those who possess both. Knowledge without capital is a stronger asset than is capital without knowledge, for knowledge may be capitalized while capital cannot be educated. We may well pause to consider our probable future status when our competitor and not ourselves is one who knows how long work should take; who knows the capacity of each machine, of each department, and of his plant as a whole, and who takes measures to see that these various factors are properly balanced; who has worked out, standardized and reduced to permanent form the best methods of performing work; who really knows costs (as far as from their very nature they may be known) and knows at how low a figure he can sell in dull times and still make a profit or secure more work to keep his organization and plant intact even at no profit, and who knows when he does quote a specified selling price whether he is losing money on the sale or not. We may well consider our relative positions when he is the one who knows that there is no inherent inconsistency between wages plus and cost minus, because he knows, appreciates and acts on the fact that "maximum prosperity for the employer, coupled with maximum prosperity for the employee ought to be two leading objects of management." Such a competitor, we know, really *controls* his business and has a check on its efficiency—we are but alchemists, he is the chemist of industry.

III. THE HUMAN FACTOR

Just as increased production may be frowned upon if unaccompanied by decreased cost of the product and either of these may be censured if, thereby, quality is allowed to suffer, so none of these accomplishments can be recommended or tolerated if at the same time labor—the human element—be not kept in satisfactory adjustment and correspondingly benefited.

Important tho it be for the country at large that we have high production and low costs, that we establish a strong industrial basis, it is of greater im-

portance that while we are making *things* we do not forget that our first and infinitely more important duty is the making of *men*—of good citizens.

Scientific management has from the first been a storm center around which questions of labor have raged. Because of its effects in so many particulars on human relations it must continue to be so.

Time and space might profitably be given to showing how, in the evolution of scientific management, more and more emphasis has been placed on the necessity of maintaining just human relations and of promoting the best interests of all concerned; how the very structure of the mechanism itself is designed to safeguard, to increase and to satisfy those interests; how its very nature is such that, so far from militating against those interests, it is vitally dependent for its very continuance on a proper maintenance of them. Certainly such considerations must prove of vital interest and concern to anyone who deplores and looks beyond the present troubled days. Profitable and interesting as such a story might be, however, I believe it to be still more profitable and pertinent to summarize, even somewhat categorically, some of the specific accomplishments known personally or through reliable authority which show in concrete cases the embodiment in actual practice of the theory and principles of scientific management. A theory may be ever so beautiful in the abstract; to judge of its soundness we must examine its results in practice.

Before turning to the discussion of concrete cases, it should be remembered that in considering the relations between industry as such and the individual, one is dealing with questions of tremendous significance and complexity. Many of the unsatisfactory conditions under which we work today are heritages of an age long past, just as many of the more satisfactory conditions today are in turn the successors to those once less satisfactory. The massing of workers, the economic dependence of the employee on the employer, the specialization of processes and the minute subdivision of labor, the aggregation and power of capital—the problems and ills of the individual arising through such factors have not, as is sometimes intimated, been brought on by scientific management; they are inherited problems and abuses with which, in common with other agencies, scientific management must deal. There is and can be no panacea for industrial ills—industry is not such a static thing as to make possible any such consummation. No movement can be justly judged from this standpoint—it must be judged according to the vigor and success with

which it attacks and solves or ameliorates such unsatisfactory conditions as it may encounter under given circumstances. In the case of scientific management then, our inquiry must be, not whether it has completely solved partially unsolvable problems, but whether it is entitled as its exponents claim to be ranked as a movement which, as a cardinal principle makes a vigorous attack upon these problems a definite part of its policy, and which is in fact, perhaps more than any other one agency contributing in a substantial degree to their satisfactory adjustment. It is from this standpoint that the following discussion is offered.

A. INDUSTRIAL PEACE

It would be impossible to say to what one feature the freedom from "labor trouble" characteristic of plants operating under scientific management has been most due. Certainly no one feature in itself has brought this about, and probably not any one feature has been most potent, for high wages is by no means everything for which the workman looks to the management. The absence of labor unrest is due undoubtedly to a combination of causes—to increased personal individual production and improvement in quality with the resulting personal satisfaction; to high wages unaccompanied by overexertion; to individual and impartial opportunity, assistance, recognition and reward; to an adequate machinery for the speedy adjustment of grievances; to conditions of work, of pay and of opportunity measurably better than the labor union in neighboring plants of the same type has been able to obtain and at the same time to absence of ultra "welfare work" and similar measures which smack too much of paternalism and which tend, the workers feel, unduly to lighten the weight of their pay envelope. It is due to a spirit of cooperation—the "mental revolution" which is such a vital part of scientific management—to fair dealing, to a proper work environment, to a spirit of democracy, and to a feeling on the part of the employee that his best interest is being and will be looked after. It is due in fact, to the various factors discussed above and yet to be discussed considered collectively—it is inclusive of them all.

Summarize the causes as we may, however, the fact remains that in scientifically managed plants there has been remarkable freedom from the turbulent and distressing manifestations of industrial maladjustment characteristic of the last four years. It would be too much to expect that they entirely escape the epidemic of industrial unrest, but it is extremely sig-