

ON THE CONTRIBUTION OF SCIENTIFIC MANAGEMENT TO INDUSTRIAL PROBLEMS¹

By H. S. PERSON²

THE time has not come for a definite statement of the contribution of scientific management; in fact, that time may never come, for industrial problems are continually changing and with each change scientific management has something new to contribute. It is today contributing more to the solution of industrial problems than at any time in the past, and it seems certain that a decade from now the evidence of its influence will be still greater. Such are the facts, although one can count on the fingers of one's hands the plants which may properly be called scientific management plants; for it has in one fashion or another penetrated industry, not only in the United States but in every industrial country, inspiring here a new mental attitude, there a new plant policy and in another place new methods of operation—in the majority of instances without identification as scientific management.

For, although there has been much opposition to scientific management, among executives as well as workers, that opposition has on the whole been superficial; superficial in that it has really been directed against the man Taylor, his incidental observations and his methods of exposition, rather than against the substance of his philosophy of management and even his system. At the same time that some managers and workers have damned Taylor and scientific management, industry has been coming little by little to his mental attitude, his philosophy of industrial management, and has even approved and adopted now one and now another of the elements of his system—provided it was not labeled scientific management.

It should be borne in mind that no one prior to Taylor had enunciated a logical and comprehensive philosophy of management, and devised a system of operations to give any managerial philosophy and body of principles a concrete expression; therefore any theories and mechanisms of management existent today which

conform to those of Taylor, may be attributed to the influence of his exposition. It should be borne in mind also that Taylor too modestly declared that the elements of his system were not original with him; that he had merely taken them from here and there, put them together into a purposeful relationship and given them a new meaning. We say that the Wright brothers invented the aeroplane, but when we examine the parts of the original aeroplane separately we find nothing which did not exist before; what the Wright brothers did invent was a new combination which would accomplish a new purpose. So it was with Taylor's discovery or invention or formulation of scientific management.

The fundamental element of Taylor's philosophy of management is that the solution of the problems of management must rest on a factual basis and that tradition, guess and prejudice must be eliminated. That is an axiom of industry today, although practice has too little accompanied preachment. Perhaps the next most fundamental element of his philosophy is that the factual basis must be determined by utilization of all the apparatus of investigation furnished by science (hence the name scientific management), and today as never before industry is using the approved methods of science, experimental and statistical. Another element of Taylor's philosophy, derived by his scientific investigation of his problems, is that when a large number of people are working together at specialized tasks for the accomplishment of a common purpose, these specialized tasks group into two grand divisions each of which requires a special temperament and skill. One is the group of specialized tasks pertaining to planning and preparation; the other the group of tasks pertaining to detail execution. For the segregation of the first of these groups he devised the planning room, where *what, how, and when* should be taken care of; and today in industry an establishment without a planning room is very much of a back number. Organized labor has been known in some of its controversies to make much of

the point that the particular employer is so inefficient in management as not to have a planning room, with the result that jobs do not come through regularly, materials are not always available, and in general there is "unemployment within employment." There are even signs that workers are coming to recognize the value of the stop watch as an instrument of investigation "when properly used;" and one of my most interesting experiences was the appearance in my office one morning of an industrial engineer and a secretary of a local, inquiring if the Taylor Society could furnish a stop watch—they "had been looking all over the city for one;" were "in a hurry to make some investigations in order to confront employers at a conference with facts." Leaders and advisers of organized labor, in sufficient number to be significant, are coming to the point of view that the establishment of a standard time in which an operation may be performed will eliminate one of the guesses on which wage rates are based, with a consequent nearer approach to stability of conditions, rates and workers' income.

One might write at length concerning the manner in which and the extent to which the Taylor philosophy has influenced managerial and labor thinking, and Taylor methods have been incorporated into production systems. But it is not necessary; the reader can prove the point for himself. He has but to reread Taylor's "Shop Management," recall the actual changes which he has observed come into production methods, and put the two together.

The Taylor principles and system of management, as first presented, were concerned principally with *shop* management; it is natural therefore that their greatest contribution should have been towards better factory management. But not less significant, although at present less extensive, has been their contribution towards better management of an enterprise as a whole; better definition of the purpose and policy of an enterprise and better coordination of the major departments—selling, production and finance.

For it has occurred to some managerial minds that the problems of the enterprise as a whole are similar in broad outline to the problems of the shop, but on a greater scale. Just as shop management may bring specific orders, jobs, workers, machines and materials into a harmonious and economical relationship, mutually profitable to employers and workers, so the management of the enterprise as a whole may bring orders in mass, workers in mass, materials in mass, and equipment in mass into a similar harmonious and economical

relationship, mutually profitable. The decisions pertaining to the enterprise as a whole, like the decisions pertaining merely to the factory, should and may have a factual basis; that factual basis should and may to a considerable extent be determined by the methods of science; even the major specialized tasks of management of the enterprise as a whole may be grouped into two grand divisions—planning and preparation on the one hand, and execution on the other. There should and may be a super-planning room for the enterprise. Therefore the development of sales engineering and market analysis, the formulation of budgets, master plans and schedules of sales, finance and production, and consolidated reports of departmental progress to check against these plans; just as in the shop there are now schedules and progress reports. It is the application of the principles of scientific management along these major lines as well as in detail, which has permitted certain firms to go through the recent depression with 98 per cent of normal sales, processing, and consequently employment of workers.

Now this is a matter of utmost importance. Wise managers and wise workers should strive for stabilization of the operations of an enterprise. It is not sufficient merely to stabilize the operations of the shop *when there are orders* (this is what scientific management in its early developments has accomplished); it is even more essential to stabilize the business and assure a *predetermined regular flow of orders* (which is what scientific management in its later developments is accomplishing in a number of enterprises). This is true for several reasons, two of which stand out; regularity of employment and income to workers and of profits to employers is more essential to human comfort than mere occasional economy resulting in occasional high wages and high profits; also regularity of orders, processing and employment has a great deal to do with detail economy, high wages and good profits. Scientific management has reached into the field of general management as a matter of necessity—it was inevitable. For as soon as it had taught managers how to develop the shop management of least waste, with its better wages and better profits, it realized that this management is dependent upon continuous performance; therefore, with the vision and persistence of Taylor, his managerial descendants have not hesitated to carry their principles into the field of general administration. If the reader should make two lists of enterprises, one of plants in competitive industries which have maintained reasonably regular operations and employment during

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² Managing Director, Taylor Society, New York.