

shall be safe and sanitary. It demands that his hours of labor and his manner of working shall conduce to his health and happiness. And it guarantees to him a large wage if he does his part in maintaining the standards. On the management it imposes duties and responsibilities unrecognized under the old type of management.

There comes to me a conversation that I had not long ago with a manufacturer who was installing scientific methods. We were sitting at a table in Young's Hotel, three of us, I think, and one of them looked up when there was a small break in the conversation and he said, "The girls up there would be surprised if they knew that we were having such a long conference to determine how they could earn more money."

In another part of his paper, Mr. Drury confuses, it seems to me, the industrial development that necessitates the substitution of machinery for hand labor, resulting in the minute division of labor, with the scientific method which is of an entirely different trend, the aid of which is to study conditions, to study the best way of doing a thing, to study the easiest way; to unite all of the forces into one symmetrical whole.

Does scientific management, as Mr. Drury implies, deprive men of the opportunity to create? Does any other form of management, on the other hand, give so great an opportunity to create?

Scientific management furnishes the worker with all of the accumulated knowledge that it has been possible to secure relating to his job. This is stated in simple terms in the form of an instruction for doing the work in the best possible way known to date. With this knowledge as a basis to work from he has every "opportunity to create" intelligently and every incentive to do so. Substantial rewards are always given for suggestions leading to an improvement in method. Under no other type of management are conditions so conducive to the profitable exercise of ingenuity and initiative. I want to say very emphatically that any management that is open to the criticism of depriving men of the opportunity to create and of not giving praise to the man who works, is not scientific and is not scientific because the very foundation of science and of scientific method must be to take, not superficial conditions into account, but all of the conditions, the human, the mechanical, and physical.

The opportunity to create is ever present. The greatest difficulty in industry is to find men who can or will create, who will take the initiative even in a small degree. But creation is not man's only pleasure. Do we not have pleasure in accomplishment, pleasure in doing a job well? Do we not have pleasure in getting a large pay-envelope and do not all of us here appreciate these things? Are these sordid

aims? We appreciate any plan, any method, any development, by results. If scientific management does some of the things Professor Drury says it does, why is it that Mr. Fejss' shop has less turnover than other shops in the clothing trade? Why is it that the men and women there stick to their jobs and like it better than they do anywhere else? Why is it that the men of the Franklin Automobile Company were the only ones in the city of Syracuse that did not go out in the recent strike? Why is it you cannot get the men away from the Link-Belt Company? Why is it that the Eastern Manufacturing Company was practically forced to put in a system of scientific management in their pulp mill because in the adjacent paper mill they were getting results which the employees liked? Why is it that men write such letters as I have here, a letter from an employee of the Acme Wire Company? I will read a few sentences from the letter which illustrates the workmen's point of view of scientific management, especially as related to the bonus system:

"After I am over my surprise that intelligent people in our days can try to stop a method that soon would show up as the only method under which the workmen will work in the future, I shall gladly and frankly state my experience of working under a bonus system. I started to work for a concern which was putting in a bonus system (the Taylor system) in 1912. When I started to work the shop was still on day-work basis and all the jobs were day work. I was at that time earning eight dollars a week, but in a few weeks later I was transferred to some part of the shop where they all worked on piece work. After a little experience I could here earn from eleven to thirteen dollars, but when the whistle blew at night I would be all tired out because I started in full speed in the morning and kept it going as long as possible, but I would always be too tired to go anywhere at night. After a while the company was ready to put the whole factory on bonus basis, and I started to work after the new system, together with the whole room. At first we did not like it at all, but after a few days had passed we all found that we were not only making the same money and doing the same quantity of work, but never got tired out as we used to do, because there was a certain time set to do the operation in, which made us start in with speed which would enable us to finish the job in time, and by keeping it going with that speed all day, we would most of the time produce more than we did after the piece work system without being tired, and after the bonus system we could always be sure to get at least our day-rate pay. . . . The bonus system makes the workman and his home happy, because he doesn't come home from work all tired out. He also gets fair wages and works under human conditions, with the same rights as the fellow workman."

And from another employee of the Acme Company:

"I find it (the bonus system) a great help to me, also to many others in this factory. It encourages us to put more interest in our work."

MR. DRURY: I should like first of all to thank the Taylor Society for the attention they have given to the subject of this paper. At the time the paper was written, there was no thought in the mind of the writer that any such special notice would be paid to it, particularly by persons so much better informed than the writer as to the matters which he discusses.

You will notice that more than half of the paper is an account of the origin and nature of scientific management, the enemies which have beset it, and the services which the movement has rendered. With regard to most of the points covered in this part, I take it that there is not much issue. It was written for the general public by a person not personally concerned one way or the other in the success of the movement, and—if I may say it—gave a great deal more credit to scientific management, to say the least, than the other address on the subject before the Congress of Human Engineering.

The only novel task which the paper undertakes is a consideration of the relationship between scientific management and the industrial background, during different periods. At the outset, I tried to explain how the need arose for such a movement, basing my conclusions upon an analysis of American conditions, as they affected the people of this country at about 1880. In the latter part of the paper, I ventured to raise the question as to how scientific management may be made not only to bring its present results, but also to fit in harmoniously with the new ideals which students of sociology, education, and government, and our people generally seem determined to introduce into our social life.

I am very sorry that so general an impression should prevail that the paper was written in what is called a critical spirit. It may have been written in too venturesome a spirit; it may be that such an essay has little chance of appearing worth while to men who are forging principles out of their own very concrete experiences. But at worst it is poor suggestion, or inappropriate suggestion, rather than adverse criticism.

The writer, to be sure, is not a disbeliever in adverse criticism; but if he were making it, it would not be of the sweeping character that many seem to consider this to have been, especially in the case of a movement such as scientific management. There has been criticism of that kind; but the author of this paper believes in the sort of criticism that tries to present in their true significance great ideas and great achievements. Merely to condemn without discrimination is to block progress, and create confusion and prejudice. Very few movements or individuals are so bad that they have no good points; and it may be doubted if even the best institution is wholly free from weaknesses. Criticism is valuable only in proportion as it discriminates.

I rather believe, though, that if all the statements made in the paper were carefully weighed, and all the qualifications that belong with them were taken into consideration, it would be found that there is, in fact, very little—possibly too little—adverse criticism. I have in mind several criticisms which I believe are valid and of some importance, and of which I have spoken personally with members of the Taylor Society. But, as it happened, I hardly touched upon them in this paper, and the little that I did say did not find an echo in the discussion.

What the speakers seem to have regarded as adverse criticism is the passage where I take up the question as to whether the present practice of scientific management will be adequate to cover future needs. I may be right or wrong on this question; but right or wrong, my answer to this query should hardly be construed as a criticism of existing scientific management.

One of the speakers has said that "any man who has not come through the mill" will make the error of criticizing "practice designed to meet existing conditions; conditions with which we have got to work, to meet the needs of men with whom we have to work; based upon a comparison with theoretical conditions which do not exist in fact." I would therefore call attention to a passage where, after discussing the divergence between the present practice of scientific management and the ideal, I explicitly state: "While we therefore believe that certain aspects of scientific management are not ideal, this is not to be regarded as an adverse criticism of Dr. Taylor, or his work. If only we recall the conditions under which scientific management was originated, we are compelled to forgive and even praise the course which Taylor followed." This is followed by a defense of almost every practice which I had before described as not ideal.

When it comes to the question as to whether scientific management as now practiced will be just the thing for the future, it must be admitted that all our opinions are more or less a matter of conjecture; but since I did hazard an opinion, I do not want it to be misunderstood. In spite of the feeling that my words, seem to have left, I did not in the paper actually criticize time study either in the present or as an instrument for use in the future. Nor did I object to the practice of teaching standard methods to employees. On the contrary, in one place I called objections to the use of the stop watch "pitifully weak;" and again I said that there was nothing wrong in making the methods used by vast numbers of workmen "conform closely to one most efficient standard." And I will say now that I regard both of these practices as among the most important, if not the most important contributions which scientific management has made and will make to the world.