

and I are different kinds of people and we personally handle things differently. Personality should be taken into consideration. Mr. Feiss can accomplish things for another reason that does not apply to all plants.

To illustrate this, and to show the difference between his plant and others: He has the rarest opportunity for promotion that I know of. Practically all of the people in his shop deal with the same kind of work. The girl who goes there for the first time, to baste, begins to handle threads and cloth. The sub-divided work of making a garment, bringing cloths together and sewing, needs a great many separate steps and he is able to offer promotion to nearly all of the people that start down and go from one step through to another, and through experience in one step they are fitted for the next. He has a rare chance to offer promotion to his people which does not exist in all plants. Mr. Feiss has a chance for promoting people, which means a great deal. I think it governs some of the *esprit de corps*; he holds people because that fact is true. Conditions must differ in industries today. His conditions will differ five years hence, and they will differ all about us and over the entire United States. Therefore, we must not think of the solution of any one problem as really a permanent solution. We must take into account the facts and the conditions; and those facts and conditions change.

There is one interesting thing that I want to dwell on, and in which I heartily agree with Mr. Feiss. Mr. Feiss emphasizes the fact that the workman wants justice and opportunity. I think that is very true. We have tried to carry these out in our business. He has another thing also, which I admire, which he did not mention, and which is this: All of his employees observe the same working hours. There is no difference in his plant between office and factory. Personal privilege has all been abolished. Mr. Feiss is probably the first one at work at his place; he is there all through the working hours; and no doubt he is the last one to leave. They are all on an equality in his plant. He has brought that about. Why do a lot of you give the office people privileges which the factory employees do not enjoy? Why do they have shorter working hours? What is the real justice lack of it? I fail to see it. I believe that is a problem which a good many of us will face to advantage in the next five or ten years.

Mr. Feiss makes one claim, with which I am not prepared to agree entirely, namely, he says that personal relationship is the basis of scientific management. If it is true, that the big problem of the world today is the problem of distribution; that the big problem of labor and capital is—as to how things shall be divided between the two, then I am willing to agree that personal relations have a chief importance in connection with all problems that confront us in industry. I would rather say, however, that personal relationship is one of the most vital problems of industry, rather than to put it quite as broadly as Mr. Feiss does. Mr. Taylor did recognize this fact, that his doctrine should be a means of bringing labor and capital together. And why? This is my belief: he was trying to preach the rule that everything should be based on truth and knowledge, knowledge known to the employer; known to the employees, and on the fact that our minds are constituted alike; that if you put in the same things, the same knowledge and truth, the answer seems to be always the same. Thus if we can deal with the problems that confront us in industry, and get the facts and knowledge before us all, there should be a solution to them.

It seems to me that the paper of Mr. Feiss is a real contribution, that it should be viewed, however, in the light of the slight modifications I have emphasized, and that under

different conditions, different methods would apply naturally and obviously. This I hold is real good Taylor doctrine.

A Taylor system or one Taylor method or Feiss method would of necessity die, but the real Taylor doctrine will always live. A vital force must be a living force, and a living force is one that grows and changes. Thus in the years to come the particular methods of Taylor, the particular devices, may change with conditions that arise which are new. There may be new discoveries that will upset his method of cutting metals, but the real truth that he preached, that we must face in industry every problem in the light of real true knowledge, is one that will continue.

Mr. JOSEPH L. COHEN: It is one of the main features of Scientific Management that it trains the workman. This training aims to create an efficient workman who will work into the organization of the business. A workman may therefore be regarded as valuable to the organization as a whole when he not only knows his own particular work, but when, first, he has learned the particular routine of the firm and can go about his work efficiently; secondly, when he has developed a fine attitude towards fellow workers and thus helps the smooth running of the firm; thirdly, when he has a satisfied feeling that the employer and management are fair to their workmen and that none are discriminated against; and, lastly, when his knowledge of the firm and his interest in the work is so great that he might be able to suggest some valuable change in organization or even invent some new process.

The chief characteristic of these qualifications is that they are of value only to the particular firm where they have been developed. Obviously, therefore, it is wasteful to permit any forces in industry to come into play which result in divorcing men from the firms to whom they are of special value. It is because of the special value of having men of such a calibre that money is spent on their training and that expenditure is entailed on what used to be termed "welfare work."

"Without this coöperation," says Mr. Henry P. Kendall, "this interlocking of interests, scientific management is but a word." Mr. Feiss has developed the view of "personal relationship" as the very basis of scientific management. It was clearly the opinion of Frederick Winslow Taylor that the greatest blessing that would result from the adoption of the principles of Scientific Management is that it would make the workman a "happier and better man". It would achieve this result by educating and training him "to his highest state of efficiency", to the capability of doing "a higher class of work", to a friendly attitude toward his whole working conditions and especially to his employer.

From this view the workman is both an individual and the member of a closely knit social organization known as the factory. As a workman he has certain value and receives certain wages but there are other qualities more intangible and more elusive which are also of value to the firm.

There is one great disturbing factor which causes the work of months to be wasted and destroys not only the workman's special value as a coöperating unit, but even tends to lessen his very efficiency as a workman. Periodically, yet frequently, he is liable to be unemployed because of lack of work and on many occasions in his life he is nearly certain to be reduced to poverty because of it. How can the workman really have that feeling of loyalty to the firm when he sees his mate or himself dismissed and perhaps reduced to penury when he is not guilty of any particular offence? Until therefore, unemployment is solved, true coöperation

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between employer and employee must, at best, remain uncertain of attainment.

Mr. C. Bertrand Thompson, in an article on "The Relation of Scientific Management to the Wage Problem" wrote: "In spite of the prevalence of the talk about sanitation, safety, welfare, *esprit de corps*, etc., the most vital point of contact between managers and the men is the pay envelope. There is no solution of the problem of apparently conflicting interests between employers and employed that does not involve fundamentally the question of wages." Now wages are a resultant of two multiples, the number of weeks in each year the laborer is at work and the average wage per week. A man earning a regular \$16 a week is better off than another earning \$27 a week for thirty weeks in the year. This elementary fact has yet to be clearly grasped, though it is now generally conceded that a very large percentage of workmen are subject to unemployment every year. Scientific management has hitherto paid most attention to the size of the workman's weekly wage rather than to its continuity throughout the year.

In order to remove this stigma and, much more important, in order to remove the cause of it, scientific managers are preparing to face it as the very next problem which challenges their attention. Already something has been done in this direction if for no other reason than because scientific management becomes impossible, as well as costly, with a shifting, unstable, casual personnel. A number of factories have reduced their labor turn-over from over a hundred percent to less than forty percent. This is representative only of the best firms and they are still exceptional. Further progress may be expected in two directions in the near future. Other firms will learn to lessen their labor turn-over percentage and the more progressive ones will still further decrease their already lowered percentage. Furthermore it may be anticipated that short time will come to be practiced more and more as the advantages of keeping a habitual staff are more appreciated. Perhaps, however, the most remarkable and least expected achievement recently accomplished by a progressive firm is the actual training of the workman to some subsidiary work in which he might engage whilst work in his primary occupation is slack.

But there will still remain a residuary percentage of unemployment. To meet this residuary percentage the machinery of insurance could be resorted to. Even if unemployment cannot be wholly abolished, much of the suffering resulting from it can be if some little care in organization be exercised. Doubtless many managers will fear the anticipated heavy costs of carrying such a proposal into effect. But these fears are groundless. An average progressive firm will be able to help materially those whom it is forced to dismiss during slack periods by an increase in cost amounting to one-half of one percent of the payroll.

The different types of organizations in which this method of meeting unemployment has been successfully carried out and the elasticity of the schemes show that this kind of establishment fund is likely to have a great future. The comparatively small benefit is found to be sufficient to prevent the unemployed workman from becoming a public burden. It helps him to retain his self respect and efficiency. Unemployment instead of resulting in the workman's complete breakdown as a result of which he is likely to be dragged down to a lower level in the social scale, becomes an uncomfortable transitional period when he can take a forced vacation. If scientific managers were really prepared to grapple with this problem it is safe to assume that they would succeed in removing one of the greatest sources of waste which interferes with their progress.

The problem of unemployment can be approached and, indeed, should be approached through both avenues, through the direct action of employers in their own establishments and through state activity. In both directions the experience which they have accumulated, the methods which they employ and their enthusiasm for the elimination of waste offer scientific managers a unique opportunity for public service.

Mr. HENRY L. GANTT: First, I want to indorse some things that Mr. Noyes said. Mr. Noyes made the statement that Mr. Taylor's work was larger than any system, or any scheme, or any determination of laws of cutting metals. His work was to base everything on knowledge and facts. I will take the liberty of reading what I said on that subject at the opening of my address last night:

"His reputation does not depend upon the fact that he designed and built the most successful big steam hammer in the world, or that he developed a method of treating tool steel that trebled its cutting power, or that he determined the laws of cutting metals, or even that he was the father of scientific management. These were incidents in his career, and only the logical results of his methods. At an early date he realized how much of the world's work was based on precedent or opinion and undertook to base all his actions on knowledge and fact."

That is my estimation of the work that Mr. Taylor did. That is far larger than any one of the incidents that I have mentioned and has a farther reaching result. Mr. Noyes took issue somewhat with Mr. Feiss on the question of personal relationship as a basis of scientific management. Management means primarily management of men. Management of materials and forces is comparatively easy. We are learning the laws which control materials and forces, and the best engineers are learning to manage them, with comparative ease. The real problem then is the management of men. I might enlarge on that subject a little. Last winter I was called upon to discuss a paper of Professor Jones of the University of Michigan on "Business Administration". Mr. Jones took the ground that all administration was administration of human affairs, and that the way to study administration was to see what history had to tell us about the administration of human affairs. He found the most extensive literature on the subject to be concerned with war; and that the great leaders of men had been the great generals. The men who had followed these great generals had been influenced by them and directed by them because of the personality and the ability of those men. He found very close relationship between leadership in war and leadership in industry, and drew the conclusion that the same laws applied to both.

If this is the case, it is well for us to see what the greatest warrior of modern times has to say about the importance of leadership in war, and thus arrive at some appreciation of the importance of leadership in industry. Napoleon said:

"In war men are nothing; it is the man who is everything. The general is the head, the whole of any army. It was not the Roman army that conquered Gaul, but Caesar; it was not the Carthaginian army that made Rome tremble in her gates, but Hannibal; it was not the Macedonian army that reached the Indus, but Alexander; it was not the French army that carried the war to the Weser and the Inn, but Turenne; it was not the Prussian army which, for seven years, defended Prussia against the three greatest powers of Europe, but Frederick the Great."

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