and men. As it voluntarily pays higher wages than the men could win through force, scientific management weakens the main motive for organization, and makes the employees hesitate to compromise themselves with their employers. In short, scientific management did not need to lay itself out to any noticeable extent in order practically to rid itself of trade union connection.

Scientific management was not extensive enough in 1904-1909 to have been any important factor in the temporary checking of trade unionism which then occurred. Its spirit, however, was one with the spirit of the great corporations which were making themselves independent of unions. Its spirit was the very essence of centralized power, of managerial self-sufficiency, of workingman subordination. Against its winning persuasiveness the outside labor union could hurl itself in vain.

It was not to the workingman, however, that organized labor was to make its appeal. A million or two men are not sufficient to control the industrial world. But a million or two voters are not to be neglected. It was in the political arena, therefore, that organized labor was to show its greatest strength; and it was to Congress that labor went for aid in its contention with scientific management.

Congress happened to have a very direct concern in scientific management, inasmuch as the system was being introduced in the government arsenals, and was later to be proposed for other departments,—as, the post office. On its floors, therefore, ever since 1911, bills and resolutions in great number have been introduced calling for investigations or prohibiting the continuance of the system. In particular, riders attached funds for the making of time studies or the payment of bonuses.

The first victory for labor was won in March, 1915, when the House forced the Senate's unwilling consent to provisions in both the army and navy appropriation bills forbidding the use of funds for either of the purposes just mentioned. The shaft failed to hit the mark, though, as it developed that the condemned devices were financed through the fortifications appropriation, and not through the army or navy appropriations. In the 1915-16 session of Congress the fight was therefore taken up again with renewed vigor, and riders withholding funds for time studies and bonuses were attached to the fortifications, army, navy, post office, and sundry civil appropriation bills. All these measures went into operation last July, and had the important effect of suspending bonus payments at the Watertown arsenal, the one point where the Government had extensively introduced scientific management, and also preventing, for the year at least, the installation of scientific management in the other branches of the federal service covered by the bills. A yet more substantial victory, however, is the goal of labor. The Tavenner Bill, introduced and fought over last session, and on the calendar for consideration next session, would permanently forbid by statute the use of time-measuring devices on, or the payment of bonuses to, any employee of the United States Government, declaring any such act a misdemeanor punishable by fine or imprisonment. The Van Dyke Bill, which now rests in the hands of the Committee on Post Offices and Post Roads, contains similar provisions, but applies to the post office only.

Such tactics on the part of the labor men, and the response being made by Congress, seem to be, and, we believe, are, both unjust and a menace to the future progress of the country. Yet it is not hard to see how the situation arose; nor is it impossible to find weaknesses in scientific management itself which invited such attack. It is true that the arguments presented to Congress were pitifully weak. The two counts against scientific management are first that it involves overwork; and second, that to have one's motions timed by a stop watch is degrading. But neither government commission nor critical private investigator has been able to unearth any extended instances of overwork. Even so watchful a critic as the late Professor Hoxie testified that he had "a strong impression that scientific management workers, in general, are not overspeeded."[1] And as for the stop watch, the real objection, surely, cannot be to the thing itself; but only to some peril that it is felt will grow out of it. But what this peril is, is usually not very clearly indicated.

Yet underneath these surface arguments, there exists a real clash involving fundamental principles. We are called to witness a struggle, which it would be folly to try to evade, and which is bound to continue until both scientific management itself, and the general character of our national life will have been profoundly affected. Taylor himself never regarded scientific management as perfect or complete. We may, therefore, without prejudice to him, or his work, inquire into those aspects of his system which are at the real root of the present controversy, and which the world of to-morrow probably will not accept, save in modified form.

In the first place, and of most importance, the confidence which the system places in the unselfishness and public spirit of the management is excessive. Not that managements may not, and have not, in notable instances, possessed great virtue. But there is no reason to suppose that those particular organizations known as industrial corporations can be made so universally and fundamentally superior to city coun-

[1] Scientific Management and Labor, p. 92.

cils, labor unions, churches, chambers of commerce, *etc.*, that they alone of all organizations should be allowed to go their way unchecked, unwatched, possessing the complete and unchallenged confidence of the public, of labor, of the government. Taylor was eminently right in urging managements to assume this high character; and one of the most hopeful signs of the time is the noble way in which they have responded. But should not the pre-eminence which any management enjoys in this respect rest upon the voluntary recognition of its achievements and character, rather than upon a pious insistence that organizations of employees or of outsiders must refrain from passing an opinion upon matters so out of their sphere? That would not be a popular attitude if assumed by the president of the United States. Even a bank cashier, though selected for his integrity, does not refuse to have his accounts examined.

In the second place, the principle of Dr. Taylor that the management should acquire and sum up in itself *all* the skill and science required in industry is an ideal that is likely to fall increasingly short of realization. In no shop has scientific management yet succeeded in placing *all* of the work on the task basis, though sometimes this end is fairly closely approached. Not even in the best and most widely praised shops is the time allowed for the work so scientifically correct, that all jobs are equally exacting, and that the men take no thought of limiting their output a little on the easier jobs. Yet time study based on existing methods is the least serious of the tasks which scientific management has obligated itself to accomplish. How likely, then, is it that when it comes to devising entirely new methods of work, the small group of men in a shop known as the management will be able themselves to hit upon all of the best features. As industry increases in complexity, and as the laboring man grows in education and intelligence, we may be sure that a time will come when the laboring man will know more about many things than the management possibly can. Hence this system's vision of an industry animated almost altogether from the top may turn out to be considerably distorted.

In the third place, scientific management has relied too largely upon the daily wage as an all-powerful link binding a man with ties of loyalty to his employer. Pay is undoubtedly the one most important relationship that needs careful treatment in order to insure the loyalty of employees. But it is by no means the only factor. Much of the best work of the world in science, in government, in art has been done for small pay. Even in business the British man of affairs is apt to be as much influenced by the hope of a peerage, as by that of large profits; the American financier as much by the love of playing the game as by the pleasure of disposing of the proceeds. It is to be hoped, therefore, that managers may acquire greater skill in analyzing human motives, and be able to control various additional forces that lead men to labor.

In the fourth place, scientific management has given only superficial attention to the important topic of fatigue.

There is a widespread impression that, in addition to what has already been noted, scientific management has been yet more careless in its estimate of the worth of workmen; that it has ignored much of their humanity, and consciously and inexcusably been indifferent to their welfare. There is much gross exaggeration in this. Dr. Taylor once declared: "The interest of every man who is in any way engaged in scientific management, in the introduction of the principles of scientific management, must be first the welfare of the working man. That must be the object. It is inconceivable that a man should devote his time and his life to this sort of thing for the sake of making more money for a whole lot of manufacturers." As far as Dr. Taylor's own actions were concerned, his life put the stamp of sincerity upon these words. And it is equally true of most of the other men active in introducing scientific management that they have been kindly and even magnanimously disposed towards labor.

Yet, as Mr. Robert G. Valentine has well said, many of the impressions which Taylor conveyed in describing his ideas did violence to his real spirit. He used to speak, for instance, of pig-iron handlers at Bethlehem as having the mentality of the ox; and designate whole classes of workmen as being analagous to the dray horse, or the grocery-wagon horse; while others were of the trotter class. Such language did Dr. Taylor and his cause immeasurable harm. Yet he had no thought of insult. In later life he would in like manner swear before classes at Harvard; though probably he had genuine respect both for the institution and the students. It was merely his picturesque and forceful mode of expression, schooled as he was in the ways of the shop.

Possibly, however, it should be put down as one of the weaknesses of scientific management that it takes workmen too much as they are, forgetting that a larger social program might conceivably make of them quite different and better men.

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.

Take workmen as Taylor knew them about 1880, and a paternalistic system was eminently fitting.