

skilled craftsmen, to the detriment of the latter's trade. I deny that this substitution is a special process of scientific management. It has been going on in all industries of which the output is a considerable number of identical articles, since a time long antedating the introduction of scientific management. The shoe trade is an example; and in the government service we have also a very prominent example in the manufacture of the service rifle, which in the early days was made in all its parts by an experienced and skillful gunmaker, but is now much more satisfactorily made by the combined efforts of a large number of workmen, each of whom performs a single operation or a limited number of operations; with the result that better rifles, interchangeable in all their components, are produced with incomparable cheapness as compared with the former cost.

As to the desirability of this process of substitution I will speak later on, but at this point I wish to state that at the Watertown Arsenal they charge that low-grade workmen are favored in premium opportunities at the expense of those of higher grade is not sustained by the facts. High-grade machinists receive \$3.52 per day, low-grade machinists receive \$2.56 per day, while certain machine operators receive \$2.40 and \$2.24 per day. During a certain period for which the records were easily available, there was paid the high-grade machinists increased earnings in premiums of \$426.14 each, which was equivalent, for each of them, to 121 days' pay. During the same period there was paid to the low-grade men—the \$2.56 per day men—a sum averaging \$144.44 each, amounting to 56 days' pay. It is thus seen that the high-grade machinists were very much more fortunate than those of the lowest grade. During the same period there was paid to the \$2.40 and \$2.24 per day machine operators sums amounting respectively to \$49.00 and \$14.00 for each; so that it seems that these men, who are of the class whose work is mentioned as being frequently substituted for that of high-grade machinists, not only did not fare as well as did the high-grade machinists, but came out more poorly than even the low-grade machinists. The reason for this is that there is very little repetition work at the Watertown Arsenal, and it is therefore not practicable to substitute machine operators or handy men to any extent for skilled craftsmen; and the truth is thus illustrated that the extent to which this substitution can take place depends, not upon the practice or otherwise of scientific management, but upon the character of the output of the establishment.

The second point; that all machinists do not have equal opportunities for earning premiums, may have some foundation. Some jobs do not lend themselves readily to time-study, either because of their character, or because of the fact that they are not to be repeated. Effort is continually being made to increase the amount of premium work at the Watertown Arsenal, and a fair degree of success has been attained. During the month of May last, 10 molders out of 11 had some premium jobs; in the machine shop, 167 machinists out of 199, and 27 machinist's helpers out of 82 had premium jobs; among the laborers 27 out of 61 had them; and in the carpenters shop, 6 carpenters out of 16. The management tries to give all employees some chance at premium jobs, and when a man does not get a chance, his pay suffers no diminution as compared with what it has been, or with that of similar workmen in the vicinity. There is thus nobody hurt, while some are benefited. In its essence, the complaint amounts to one of too little premium system, instead of too much of it.

As to the complaint that the time allowed is too short for the performance of the jobs which are assigned, it can

be met by the statement of the actual result in earnings. The Commanding Officer of the Watertown Arsenal makes a report each month of the premiums earned by the employees of that establishment. In his report for the month of May, 1915, the premiums paid for that month range from practically nothing to \$49.08, which was the extra sum made by a man whose day rate was \$3.28, whose total day-rate pay for the month was \$83.23, and whose premium therefore increased his pay by 59 per cent. The percentage of extra compensation earned by all of the men on premium jobs while so working, on the average, was, in the foundry, 28.13 per cent; in the machine shop, 24.02 per cent; by machinist's helpers, 24.2 per cent; by laborers, 32.53 per cent; by teamsters, 31.33 per cent; by blacksmiths, 17.86 per cent; by blacksmith's helpers, 20.59 per cent; and by carpenters, 32.79 per cent. The average premium in the month of May of all of the men earning premiums was \$9.94, which was earned by 327 out of about 650 employees. This average would have been greater if these men had worked on premium jobs all the time, but this, of course, was not possible. The total sum paid in premiums during the fiscal year ended June 30, 1915, was \$31,308.96, and in addition, \$2,816.48 was earned in premiums during the period between January 25 and March 9, but was not paid because during that period premium payments were suspended on account of special agitation of the subject which was going on in Congress at the time. The total extra sum earned in premiums during the fiscal year 1915 was thus \$34,125.39, which was shared by about one-half of the 650 employees.

The fourth objection, as to the method of doing work which was prescribed by the time-study man, has reference to a forging job, during the time-study of which the time-study man had told the blacksmith to put a second piece into the fire while he was forging the first, so that it might in the meantime be getting hot. As a matter of fact, upon objection by the smith, the point was not insisted upon; but in making up the time to assign to the job the assumption was made that this simultaneous work should be done, that is, a piece should be heated while another was being forged. In the actual performance of the work the blacksmith did it in the assigned time and thus earned the full premium of 33 1-3 per cent.

I will not take up your time by going over the other complaints in detail; there was no difficulty in answering all of them, and showing them to have as little foundation as the ones which I have specifically described. As to the number of accidents, the records show that there were not as many among the premium workers as among the day workers. There had been no evidence of failure of health upon the part of the men, and no complaint of it. A number of men questioned on the subject denied it, and no man could be found who claimed, or would admit, that his health had been injuriously affected, and no man claimed that he had been overworked. As to the rejections for spoiled work, the records show that these also have been no greater among the premium workers than among the day workers.

Reasons for Opposition.

The question remains to be answered as to why there should have been presented numerous signed petitions for the abolition of the system. If the reason given for the petitions were real ones they ought to have disappeared upon showing that there was no foundation for them. I think that in many instances the petitions do not represent the real sentiments of those whose names were attached to them. Upon inquiry some of the workmen stated that they liked the system, and had refused to sign the petitions.

Several stated that they did not wish to sign, but had done so under compulsion. It was discovered that the facts alleged in the petitions were not advanced by the actual signers, at least by a considerable number of them. Many signatures were obtained without showing the subject-matter of the petitions which were signed, under which subject-matter these signatures were afterwards copied, to appear in the same handwriting, the signers knowing only that they were signing a petition against the Taylor System. One workman wrote that if there were excluded all who signed the petitions unwillingly, and those who signed without knowing what they were signing, there would be nobody left but the framers. Still, it must be stated that some of the workmen, including men who were earning good premiums, declared voluntarily their opposition to the system.

I think that the petitions have been due to the influence of the labor organizations. I can see some reasons why labor leaders should not like the system; one of these being that since it offers more to Labor than the unions do, its success would threaten the membership of the unions. Another reason for opposition upon the part of Organized Labor is that the system increases the productivity of the individual, which Organized Labor has fought in all the forms in which it has made its appearance. Labor-saving machinery is not now openly opposed by labor unions, but all large employers know the hostility which is felt towards its introduction. Scientific management, being a labor-saving method, comes under the ban, in spite of the fact that increased individual productivity redounds to the ultimate advantage of the working class, as well as to that of everybody else. In the ordinary case the opposition is perhaps to be explained by the fact that, while the ultimate advantage of increased individual productivity is easily demonstrated, the immediate effect upon some individuals is apt to be disastrous, and an immediate remedy for this kind of result has not been produced. At the Watertown Arsenal, however, it can be said that the disastrous effect has not made its appearance, as there has been no diminution of the working force to offset the substantial increase of wages which has been enjoyed by a large proportion.

I think there are two points of genuine opposition to the system, or at least of criticism of it, by the workmen. One is the inequality of its operation. No man likes to see opportunities for increased earnings offered to his fellows, which have not been afforded to him, even if there is no decrease, or contemplated decrease, in his own earnings. This seems to be in accordance with one of those characteristics which go under the name of "human nature." I think myself that this condition is unfortunate, and that efforts should continue to minimize its effect. However, it is something to which we are accustomed in all kinds of piece-work, by which comparatively unskilled workers earn, by giving large output, sums which equal those paid to persons of much more general skill, employed by the day. The second point is that people do not enjoy being paid in accordance with their output. It is much more pleasant to receive good pay irrespective of output. Experience with piece-work in well conducted establishments, such as those under the Government, and the actual experience of those in charge at the Watertown Arsenal, leads to the strong belief that the advantages of payment in accordance with output would not be given up in exchange for return to the ordinary day-wage system. The advantages, however, would be given up in exchange for equal advantages gratuitously bestowed. Interviews with the employees have led me to the opinion that the teaching of the unions at the Watertown Arsenal is that, if the men would join in the expulsion of the premium system, the political power of the

unions would be used, and is sufficient to secure the same increase of pay as is had under the premium system, but granted as regular day-wages.

Legislation.

Matters were in this state when, at the last session of Congress, the attempt to enact legislation forbidding premium-payment and time-study took on a new form. Up to that time it had not been possible to secure consideration by either House of Congress of any of the bills embodying the prohibitive legislation which had been introduced; but when the bill making the regular appropriations for the support of the army was under discussion upon the floor of the House, the following legislation was proposed as an amendment to the bill:

"PROVIDED, That no part of the appropriations made in this bill shall be available for the salary or pay of any officer, manager, superintendent, foreman, or other person having charge of the work of any employee of the United States Government while making or causing to be made, with a stop-watch or other time-measuring device, a time study of any job or any such employee between the starting and completion thereof or of the movements of any such employee while engaged upon such work; nor shall any part of the appropriations made in this bill be available to pay any premium or bonus or cash reward to any employee in addition to his regular wages, except for suggestions resulting in improvements or economy in the operations of any Government plant; and no claim for service performed by any person while violating this proviso shall be allowed."

General legislation on an appropriation bill is not usually admissible, and may be thrown out upon objection by a single Member, upon a point of order. It is probable, however, that this legislation could not have been thus thrown out, for the reason that there is a rule that a provision limiting the conditions of expenditure under which appropriations may be disbursed is not held to be general legislation. A point of order was, in fact, made against this provision, but it was withdrawn when it became apparent that, if pressed, it would have been overruled. There was practically no debate upon the proviso and it was adopted by a large majority. In the Senate there was considerable debate, and some very interesting speeches. The debate is recorded in the Congressional Record of February 23d of this year, and there may be found published, appended to the remarks of Senator Weeks, a good deal of literature which has appeared from time to time in connection with the establishment of scientific management at the arsenals. The same matter was afterwards republished as Senate Document No. 800, 63d Cong. 3d Sess. The Senate rejected the prohibitive legislation, but it was restored in conference between the two Houses, and is now part of the law. It is not, however, as effective as it was designed to be by its proponents. For one thing, it applies only to the fiscal year ending June 30, 1916; and for another, it is not applicable to expenditures from any other appropriations than those made in the bill for the support of the army. The officers who conduct the arsenals are paid from such appropriations; their conduct or direction of time-studies is therefore prohibited, and time-studies have ceased. These had been made at the Watertown Arsenal only; but premium-payments had been made both at the Watertown and the Frankford Arsenal. The work at the Frankford Arsenal being repetitive in its character, lends itself readily to piece-work, and has been transferred to this class, which is not prohibited by the legislation. The work at the Watertown Arsenal is practically all done under appropriations made, not in the Army Bill, but in the Fortification Bill,