boxes; and whether you call it paternalism or not, I want to say that I would like to see it done here.

CHAS. DAY: I have been greatly impressed by Mr. Hopkin's able address and believe that he has directed attention to one of the most important subjects with which Scientific Management must deal. Until the matters to which he has referred have been dealt with along substantially the lines suggested, we cannot assume that we are dealing directly with the individual in the broad and helpful manner which is necessary.

I would like to know whether Mr. Hopkins believes tests as a basis for the selection of employees, along the lines suggested by Dr. Munsterberg have, or are likely to prove practicable. For example, in public service work there are certain occupations which are hazardous unless operatives possess the necessary physical and temperamental qualifications. Insofar as I know, specific tests of a scientific character are not applied by any public service companies in the selection of men for such posts. The tests which Dr. Munsterberg developed in connection with the selection of motormen illustrate what I have in mind.

I will be very glad to hear from Mr. Hopkins on this point.

D. M. BATES: I would like to hear from Mr. Hopkins and any other gentleman, as to what, if any, responsibility the concern takes regarding compulsory examinations and medical attention.

About twelve years ago I was with the Bancroft Company in Wilmington, Delaware. One of our young girls was taken ill with small-pox, and we suggested to all the employes in that plant that they be vaccinated. I suppose that 90 per cent of all the people in that one plant—400 to 500 people, men and women—were vaccinated. In the four or five years following there were various things that occurred, death or disabilities of one kind or another, and several cases were traced back in the minds of those particular families to that vaccination. I always felt afterwards if we had another such case of small-pox, I would rather go to Siberia than advise vaccination. So I wondered what liability the company sustains in recommendations of that kind—a recommendation to vaccinate.

Five or six weeks ago, at the Lewiston Bleachery a boy with poor sight walked into a strand of cloth running down into our bleach-house from the "gray-room," and broke his arm in one or two places. We had him properly cared for by the doctor, paid his hospital expenses, and then the question came up as to whether we would pay his weekly wages until he got back. I would have been glad to do that, prior to one year ago. We covered weekly wages for a man for a period of 15 months, and he finally got well and sued us for damages, and the man lost the case. It was defended, however, by the insurance company. We told the insurance company our position, and they advised us in the future to get a release before making wage payments. On the next case that came up, that of this boy, we said, "We will give you the wages; we will pay you, but we must have a release so that you cannot bring any suits against us afterwards." We said, "If you think you have a suit against us, go ahead and bring it now, but we are not going to pay your wages for six or eight weeks and then have you sue us on top of that." And I cited to the boy's father, who was there, this case where we were sued by a man after paying him wages for 15 months.

We had two or three conferences with the boy's father and the boy, and I talked with them. They signed a release, and we paid the boy's wages, and now the boy has recovered the use of his arm and is back at work. The arm, however, is not strong and the physician says there is some lack of the bone-making materials, calcium and phosphate, in the boy's system, which might result in the arm never developing its original strength. This is a matter entirely beyond our control. If that arm does not work out into a strong arm, I would be willing to give the father back the release, if he wanted it, as I have no desire to take any advantage of him should he desire to bring suit. But, this case brings up an interesting point as to how far a concern is responsible for the advice given by its regular physician to one of its employes, who at the time of an accident and afterwards is ready and desirous to avail himself of the physician's advice and assistance. I would like information on this point.

H. T. NOYES: Do you not find organized labor strongly opposed to physical examinations? It is in our city. Would not a factory having physical examinations suffer in consequence?

MR. HOPKINS: I think the danger of which Mr. Noyes and Mr. Cooke have spoken is very real, but the labor opposition as stated by me, lies in the belief that it may work as a spy system back into the home. At any rate we have the full usefulness of it, although against the company's position there was a suspicion. It has come to be understood that the employment office does not know what the doctor finds or what advice he gives.

Our whole point is the greatest good to the greatest number. I believe I could get that across to the labor leaders. We are against injecting into our organization an individual who might be a contamination for the rest. We have not ventured to insist upon physical examination. There must be a verification in regard to his heart and his lungs and his teeth. We do not demand perfectly good teeth, but he shall not have an infection in his mouth, or in connection with his heart or his lungs. They must be good.

MR. NOYES: We started physical examination two and a half years ago. It was not compulsory. Seventy-seven per cent of the workers submitted to it. We started again one year ago, and this time we made very thorough examination, giving one half an hour to each applicant, and the fact that we made the examination so thoroughly seems to stimulate the men to make application for examination. And they were so pleased with our examination the second time that all the old employes save five, voluntarily made application. We had some talk with the five, and recommended it, with the result that every person in our plant voluntarily submitted to it. They were pleased with it because the examination was so thorough and the advice we gave them was good. We got it over the second time by giving them very thorough examinations and good advice.

H. P. KENDALL: I am much impressed by what Mr. Noyes said about the favor in which the examination was received by his employes. When I visited his plant he had some 1100 employes; I would not have believed it would have met with such a full response.

There has been discussion in our concern at one time and another about having physical examination but it has always been abandoned on account of the belief that it would make trouble.

We have gone this far, that all women applicants who are accepted must pass the approval of our factory nurse who gives them a superficial examination, who may ask them for a doctor's examination. This gives her a chance to get acquainted with each accepted applicant, and often she can advise well those whom she rejects. And the factory nurse believes they go away with a better idea of what they shall do for their health than otherwise would be possible.

A PROPOSED MODIFICATION OF TASK AND BONUS[1]

By C. W. MIXTER[2]

The idea of the writer's modification of task and bonus is to accept that method as sound in principle, but to so redesign it as to afford greater satisfaction to the workers and lessen the expense of the employers. These remarks are intended to apply only to typical or prevailing conditions of industry as carried on under Scientific Management.

Jobs on task and bonus under Scientific Management fall into two classes. (1) Jobs with respect to which we feel most certain as to the accuracy of the time allowed, and (2) jobs fit for task and bonus, but with respect to which we feel less confident as to the accuracy of the time allowed.

Under ordinary day wage, if a man should perform a job in two hours and then go home, the time for which he would be paid would obviously be but two hours. If he did the job in three hours and went home, the time for which he would be paid would be three hours. The more time he takes, the more time he is paid for. Contrariwise, should he regularly work all day but gradually shorten the time for performance of this job from eight hours to six, to four, to three hours, etc., the time paid for doing this particular work would be constantly less in exact proportion to the lesser time taken. This brings out the fundamental defect of time wage; the workman works entirely for his employer and not at all for himself. All the gain from time saved on jobs goes to the employer, and the workman has no direct incentive for taking up slack. The method longest and most widely in use for taking up slack is the piece rate method which is at the opposite extreme from the day wage, so far as reward for fast work is concerned. All advantage of gain from time saved on a job, so far as wage cost is concerned, goes to the workman.

To obviate the disadvantages of day rate and piece rate, various systems of wage payments have been adopted, the more prominent among them being the premium system, the task and bonus method, and the Taylor differential piece rate. It is with a modification of the Gantt bonus method that we are concerned here. Under the Gantt bonus, the man is guaranteed his daily wages for the time spent on the job, irrespective of whether or not he accomplishes the job in the time allowed. This is illustrated graphically in the diagram Fig. 1. The diagonal line, AB, represents the daily wage line; the horizontal axis in the diagram represents time spent, while the vertical axis represents wages paid. If a task is set for a workman to occupy four hours and he accomplishes it in that time or less, he receives in wages the equivalent value of his daily wages for four hours plus an additional bonus of 33%, or 1⅓ hours.

The objection which the writer has experienced to the use of the Gantt bonus is that there is a sharp demarcation between accomplishment of the task and failure to accomplish it. If the workman exceeds the task time by ever so little, he is penalized in that he loses his bonus and is paid only the regular daily wage for the time expended. It is, as it were, that the workman is climbing a hill represented by the line CD in the diagram and is required to finish the task before he reaches the point D. If he fails to accomplish this task he falls over the precipice at D and suffers injury exactly as he would did he fall over a real precipice, in that he loses a certain reward for work done.

It has been observed that workers under the Gantt system, who find themselves well within the task time will work at their top speed. On the other hand, workers who are closely approaching the task time, will not exert themselves particularly to reduce their time, as the reward for so doing is not sufficiently greater than that for just accomplishing the task to make the special effort attractive. Following this reasoning still further, it has been found that some workers who find that they cannot complete the task in the allotted time will deliberately slow down and consume as much time as possible without getting into trouble with their superiors.

To obviate this tendency on the part of the workers, the modification of the Gantt bonus described below, has been proposed by the writer. The principle is shown in the diagram herewith. It comprises a gradually decreasing bonus for the worker, who exceeds the task time up to a limit of 10, 15 or 20 per cent., as the case may be; after which the worker will be paid at only his regular day wage rate. For the worker who performs a job in less than the task time, an increase in the bonus is provided which, in the case shown, has a maximum of 10 per cent. of the Gantt bonus. This maximum is reached when the the worker shortens the time to a point where the time saved is equal to the excess time allowed over the task time before the worker begins to earn only day wages. That is, if a decreasing bonus is allowed for a period in excess of the task time equal to 10 per cent. of the task time, then an increasing bonus over the Gantt bonus is provided for all time saved up to 10 per cent. of the task time. For any saving beyond this 10 per cent., the worker is paid the task time plus the Gantt bonus of 33 per cent. plus the writer's modification of 11 per cent. This method, it is believed, will compensate for errors in the time study or for conditions over which no control can be exercised and of which time studies cannot take cognizance. For instance varying temperatures, varying rates of humidity in the atmosphere, and similar conditions, which may or may not affect the time in which the work can be done. Thus, if a job is in hand, the time of performing which may be affected by the humidity of the atmosphere, a time study taken on an extremely dry day will not necessarily give the proper time for the same job if performed on a day when considerable moisture is present in the atmosphere. It would be obviously unfair to penalize the employe for failure to accomplish the task under these conditions and yet under the Gantt bonus, he would be so penalized.

Referring again to the diagram, which is intended only to outline the writer's modification, the variation permitted over the task time is represented on the diagram by distances FJ and FK, in this case each being 10 per cent. of the task time. A man requiring the time AJ for his work will be paid an amount represented by the line LJ, or at his daily wage rate. For work accomplished in a time less than AJ, but greater than AF, as AN, he will be paid an amount represented by the line NP, of the distance between the base line AJ and the line joining points D and L.

For those employes who perform the job in less than the task time in the case under consideration, a gradually in-

[1]Abstract of a paper read at the Annual Meeting, Dec. 5, 1914.
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