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# EFFICIENT AND SUFFICIENT SUPERVISION OF RAILROAD SHOPS

PAPER PREPARED AND PRESENTED BEFORE  
THE NEW YORK RAILROAD CLUB

By

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MR. PRESIDENT AND MEMBERS OF THE NEW YORK RAILROAD CLUB:

When I accepted your president's invitation to address you this evening, I did so with a full realization of the fact that but little time for preparation could be spared from my regular work; therefore, I have not come before you this evening for the purpose of holding any post-mortems over past performances nor to make any extravagant predictions for the future, but simply to talk to you for a short time about what I believe to be the most important factor in the successful and efficient operation of railroad shops—namely, efficient and sufficient supervision.

It is pretty hard at this time to avoid talking of the two subjects which are uppermost in everyone's mind, viz, the war and the Liberty loan upon which the success of the war will depend; but I feel that every loyal railroad man in the country is in fact a soldier whose duty is to keep open and operate the first link in the long line of communication that extends from the fields and factories of America to the battle front in France; therefore it should be just as unnecessary to talk to them about the need for their best efforts toward winning the war as it would be to talk to our soldiers in France.

The importance or in fact the necessity of efficiency in the railroad organization can not be overestimated, and as stated by the Director General in his report to the President, the efficiency of the railroads depends entirely upon the supply and condition of the motive power and the efficiency with which it is operated.

The supply of locomotives has never been such as to cause serious apprehension, because with 18 per cent, which is approximately one locomotive in every six out of service for repairs, which was the situation last winter, we could not well say that a shortage of locomotives existed. The important question, therefore, was to get the locomotives in shape to perform efficient service and to maintain them in that condition; and, at the present time, the big factor in this is the question of supervision of shops and shopwork.

The Interstate Commerce Commission reports the gross revenues of all Class 1 railroads—that is, railroads with annual operating revenues in excess of \$1,000,000 for the year ended June, 1917, as \$3,824,419,739. Of this amount, \$633,543,697, or almost exactly one-sixth of the gross income, was expended for maintenance of equipment. It was exceeded by only one item—transportation. In view of the prevailing cost of labor and material, this figure will be greatly exceeded in the current year.

Reports show that there are 393,000 persons employed in the mechanical department of the railroads under Federal control, of whom

255,000 are in the locomotive department and 138,000 in the car department. These are the persons who make up the maintenance-of-equipment forces, and the amount paid them for wages with the value of the material they use makes up the enormous sum under the caption "Maintenance of equipment."

To insure efficient and economical handling of this labor and material, organization is required, and the prime factor in any organization is supervision. Railroad forces, and particularly maintenance of equipment forces, have been subjected to heavy drain because of the war, and this has resulted in the dilution of the quality of labor. Because of this dilution, supervision both in kind and in quantity becomes even more important than heretofore. It is today the *big* problem in railroad operation.

Supervision to be effective, must be adequate in quantity: therefore, the number of workmen under one officer must be such that the officer is in constant touch with his force. Persons who have studied military and industrial organizations state that one man can properly supervise not to exceed from 25 to 35 men, a figure much below that which is often used in railroad work which has been known to extend to nearly 100 men.

The statements as to the number of men who can be properly supervised by one officer are based on studies made when conditions were normal. In view of the necessity for the intensive use of labor and material today, because of the demand for both, the figures stated are, I believe, too high.

Supervision to be effective, must be constant. The withdrawal of the foreman or supervising officer from his duties many times each day to answer summons from those in authority, the preparation of reports and routine office work which could be done in much less time by persons with clerical experience, the daily attendance of staff meetings which necessitates absence from usual duties for periods ranging from 30 minutes to 2 hours, are not conducive to efficient supervision.

Many supervisory positions have been permitted to become supervisory positions in name only. We find superintendents of shops, master mechanics, general foremen, roundhouse foremen, and even men in positions of lesser responsibility, required to devote so much time to office work, to personally transmitting reports to superiors, and to other work of like character, that they can devote little or no time to the direction of the active work; and by active work I mean the actual expenditure of the labor and material under their control.

Supervision to be effective, must be respected, and this applies to those of higher as well as lower rank. The possession of proper title to indicate the character of services rendered, which will com-

mand respect from those under his jurisdiction and consideration from those in other departments with whom he comes in contact, is a necessary advantage which should be given each supervising official.

Active competition for supervisory positions should be encouraged by making such positions as attractive as possible; and if this is done it will result in securing the best material available, which is highly essential if the output in both grade and in quantity is to be kept up to the standard.

Supervision to be effective, must be instructive. Some one has said that the principal reason for not getting the result we anticipated was because we failed to explain just what was wanted—a lack of understanding. To this cause may be laid many failures both of men and of plans. It is necessary, therefore, that instructions be complete, that they be concise, that they be understandable, and that, above all, they be workable.

The issuance of orders is the easiest thing in the world, but to issue a large number of orders is to insure their being disregarded. Voluminous instructions, therefore, should be carefully avoided; and if this is done, and the instructions issued are brief and are to the point, better observance may be expected; instructions alone, no matter how carefully prepared, are of little value without a proper follow-up or checking system to see that the instructions are observed and the work up to the required standard.

Supervision to be effective, must be courageous. The quality of production comes from the top, downward. We get from the average workman as good a job as we accept—no better. Supervision must maintain the accepted standards, and this requires in many cases real courage; but it is necessary, and the supervising officer is the only means whereby this can be accomplished. With the conditions now existing, the maintenance of high standards is necessary to the morale of the forces and to the preservation of proper discipline.

As previously stated, there are today in the locomotive department 255,000 employees and in the car department 138,000 employees, a total of 393,000. There are approximately 20,000 more employees in the locomotive department today than there were a year ago and approximately 8,000 more in the car department than for this date last year. Added to this, we are working more hours, many more hours, per week than we did a year ago. With the increase in force and the increase in man hours, we are not in all cases receiving the returns we should. I attribute this largely to inefficient supervision.

I have endeavored to point out some of the essential requirements of effective supervision, but it must be more—it must be responsible, as authority and responsibility go hand in hand. We can not sepa-

rate them; and if we confer adequate authority on an officer, he must have sufficient confidence in his own ability and judgment to do the work required and assume the responsibility for it.

Since the Government has assumed control of the railroads supervising officers have often made the statement that they did not know just what authority they had; and in many instances, when matters which have always been handled by certain officials have been put up to them, their reply has been, "I do not know whether I can handle this without instructions from Washington," and this has been given as an excuse for failure of almost all kinds.

Paragraph 1 of General Order No. 1, issued by the Director General on December 29, 1917, reads as follows:

"All officers, agents, and employees of such transportation systems may continue in the performance of their present regular duties, reporting to the same officers as heretofore and on the same terms of employment."

This, in the absence of subsequent orders to the contrary, seems to me to effectually dispose of any doubt as to the authority of supervising officers, and leaves the question of failure to properly supervise the work squarely up to the official involved. What is wanted by the Railroad Administration is that each railroad official or employee who remains in the service, who continues to perform the usual duties assigned to him, will, if possible to do so, do a little more work than he ever did before and do it a little better.

There can be no question as to the authority of railroad officials under Government control to perform all of their usual duties, and there has been no lack of support from the Railroad Administration when those duties were properly and diligently performed.

A discussion of the question of supervision would not be complete without considering cooperation in connection therewith, because I believe the real test of the supervising officer is his ability to obtain the cooperation of the men working under his direction. I sometimes feel, however, that the real meaning of the word cooperation is not always realized.

Webster defines the word cooperation as "To operate together or jointly for a common object or a common end," and Gladden has well said, "Men can not cooperate successfully for any purpose if the sole bond between them is self-interest."

The extent to which the supervising officer can get his force to work together for a common object depends almost entirely upon his attitude toward the men and his interest in the work that is being done. The supervising officer who considers that his full duty has been performed when he has issued instructions covering the work to be done, is not going to secure any great amount of cooperation. He must show the employees that he has a personal interest in not only the

work but in the workmen. They must know that in addition to passing out the work slips he is going to follow them to see that the work is promptly done and in a workmanlike manner. He should also encourage workmen by seeing that both material and tools are supplied to mechanics so that they may keep their machines in operation, for there is nothing that goes further to discourage a good mechanic and curtail the output than to require him to shut down his machine while locating materials which should have been delivered by a laborer or to secure tools which a tool messenger should have delivered.

There is nothing that will keep a force of men at their best quite so well as the knowledge that the supervising officer is on the job inspecting their work, both as to quality and quantity, and that good work will be noted and the workman given due credit, as surely as work that is not up to the standard will be corrected.

In addition to cooperation between employees and supervising officers we also must have cooperation between different departments if we are to get results out of our locomotive shops.

The work must be coordinated, so that time lost by one department in waiting for another is reduced to a minimum. To bring this about it is usually necessary for certain employees in one department to work overtime or to make an extra effort so that some one else is not waiting for the job they are doing, and this is one of the times when cooperation between supervising officials and employees is of direct benefit, because without it there is frequently objection on the part of the employees to work the necessary overtime to help some one else.

Absolute fairness in handling this is also necessary, because if the employee loses confidence in the supervising officer's fairness in matters of this kind objection to the overtime worked will usually result.

Cooperation between shops and roundhouses is extremely important, and roundhouse jobs should be given preference and promptly handled, because in this way many locomotive hours may be saved.

Increased shop output due to closer cooperation and better supervision over the maintenance of power will avail us little without cooperation between the transportation and the mechanical departments with respect to the use of power.

The freight locomotive miles for the period from January 1 to June 30, 1918, was 370,489,316. This mileage was made by 31,197 serviceable freight locomotives, and represents an average daily mileage of 65.6 per locomotive. An increase of 5 miles per day for each freight locomotive will result in an increase of 7.62 per cent in our freight locomotive miles and would be the equivalent, measured by any standard, of 7.62 per cent increase in our freight loco-

motive stock. It would be equivalent to adding 2,377 locomotives to our present equipment. With three exceptions, this exceeds the present number of locomotives on any railroad in the country. It is 962 locomotives more than the total number ordered by the Railroad Administration for their 1918 requirements, and represents the entire production of our locomotive builders for five months.

Figuring the average cost of a locomotive at \$60,000, it represents a capital expenditure of \$142,620,000. With the average mileage per serviceable freight locomotive down to 65.6 per cent, is there any conceivable plan by which the expenditure of this vast sum of money can be so easily avoided as by increasing our existing freight locomotive mileage by 5 per cent? Particularly when we compare the average performance with the best mileage made by any Class 1 railroad during that period, which is 101.9, made by one of the coal-carrying roads with heavy traffic and numerous branch lines and mine runs. Therefore it can not be said to have been made under exceptionally favorable conditions.

As a matter of fact there are few railroads where the average miles per day can not be increased twice 5 by properly utilizing the time serviceable locomotives are unnecessarily delayed at terminals.

In addition to the saving above referred to, this will also reduce the amount of terminal overtime paid and the number of crews which must be relieved under the hours-of-service law, and without this cooperation on the part of the transportation department in the use of locomotives the very best efforts on the part of the builders and the repair shops will not be able to supply the demand, because there has never been a supply of anything so unlimited that if wastefully used it would not at some time or other lead to a shortage.

The freight car miles for the first six months in 1918 were more than one hundred and ninety billion. This mileage was made by 2,410,907 freight cars, and represents an average of 24.3 miles per car each day. If we can increase this figure but 2 miles per day, it will have the effect of increasing the car miles 8.25 per cent, or over fifteen billion car miles. It would represent an increase in our freight car stock of 198,417 cars. This number of cars figured at \$1,350 each would add \$267,862,950 to capital, would require more than one year for their construction, and is about twice the number of cars which the Railroad Administration ordered for their 1918 requirements.

These figures are given not because it is expected that everyone will be able to equal the best under the varied operating conditions, but it is evident from the wide margin between the average mileage per locomotive and the best mileage per locomotive that the average conceals some very disgraceful individual performances which should be improved; and in the conservation of fuel, of steel, of labor, and of time this is a field that should not be neglected.

The railroads were taken over by the Government not because it desired to go into the railroad business, but because under the conditions which existed at that time increased efficiency was absolutely necessary.

The efficiency with which the railroads had been operated prior to that time was not the question at issue, because however great that may have been, still greater efficiency was required.

It has been the general impression among the people, if we are to judge by the remarks made when the subject was discussed, that Government operation of railroads would simply establish a big political machine, and that efficient railroad men would be displaced to make room for politicians, and for that reason the present organizations would be destroyed and replaced by inefficient ones. Nothing could be further from the truth so far as the present Railroad Administration is concerned. Order No. 1 of the Director General has, I think, made it clear that under Government control of railroads there would be no disposition to replace competent, experienced railroad officials or employees. In fact I can say emphatically that no railroad official or employee who is efficient and diligent in the performance of his work was ever so secure in his position as he is at the present time.

The question before us at the present time is not as to whether Government control or Government ownership of railroads is a good thing or a bad thing; that will be settled by the people after the war.

The question before the railroad officials and employees to-day is solely one of operating efficiency and still greater efficiency in order to meet the demands placed upon them. The operation of the railroads of the country as a unit during the war is the most severe test that has ever been placed upon the railroad men of the country.

The operation of railroads is not only the Railroad Administration's job, it is also the railroad men's job. It is not the Railroad Administration's reputation that is at stake, it is the reputation of the railroad men that is at stake, and that brings the issue down to each individual, just where it should be.

The question before us is not what is the other fellow doing nor what did we do last year, but what am I doing now to help increase the efficiency of railroad operation. This question will be best answered by the record of achievement.

The railroad men of the country have furnished their full quota for the front in all branches of service. They have gone over the top in the Liberty loans. They have repaired more locomotives and pulled more tons of freight than ever before, and I am sure that the record of operating efficiency will be equally as good during the time the railroads are under the control of the Administration.