

As another conspicuous illustration of his true spirit and intentions; his insistence on his particular way of closing a company's books being rigidly adhered to for three successive closing periods after he had withdrawn, is worth mentioning. After that, he was satisfied that those responsible would have become so thoroughly familiar with the principles and methods involved, that he could fully trust them to make no *detrimental* modifications in them.

Since Mr. Taylor's system, with many of his particular mechanisms and other detail methods, have become more generally known, numerous ingenious persons have been at work trying to invent improved mechanisms to take the place of some of his earlier and rather crude ones, and some of these have been highly successful and should, eventually at least, be taken advantage of generally; but as these things never appeal the same to persons who are being initiated into the system, as to persons who have become thoroughly conversant with it, it still appears best to begin our installation with some of the more primitive, but for that very reason, more obvious, mechanisms and detail methods, just the same as we never put an apprentice to work at once in the most highly developed and improved manner. To become highly proficient in anything requires an individual development that approximates more or less to the development of the trade or art itself.

It is some of these devices that Mr. O'Conner has referred to, and such of them as I have been made familiar with certainly appear to be decided improvements on the replaced devices originally introduced by me; for the plant Mr. O'Conner represents is one of my former clients.

Independent of the evolutions of Mr. O'Conner and his predecessor, Mr. Ballou, I have also long ago given up the original storing away of the job—move—inspection—and instruction cards, etc., in pocket sheets in the route files; but when it comes to his deviation from the handling of the job cards in the special machine boxes introduced by me as a substitute for the original planning board, I must warn him to be very careful that he does not get into greater difficulties than he is trying to avoid.

When it comes to the difficulties Mr. O'Conner experiences these days by pressure from superiors who are not conversant with the details of his position, to effect similar improvements, with their resultant economies, in other functions of the system, he has my undivided sympathy, though with business at low ebb

every effort must be made to reduce system expense to a minimum.

But, unfortunately, the expense of a planning department cannot be reduced proportionately to the reduction in volume of business any more than other major portions of the total indirect expenses; and if this is attempted, the result will be the impossibility of rehabilitating the planning department as fast as the volume of business again increases.

How to make the best of this difficulty forms the principal topic of Mr. Wilfred Lewis' discussion of Mr. O'Conner's paper, and I shall, therefore, not go further into the matter.

WILFRED LEWIS<sup>1</sup>: The problem treated by Mr. O'Conner of maintaining the methods of scientific management under varying business conditions has been impressed upon the Tabor Manufacturing Company for the last eighteen years, and in no other company, perhaps, has the variation in business conditions been so great.

We were fortunate in the beginning to have the personal help and guidance of Mr. Taylor himself under a great variety of conditions and against very strenuous opposition which delighted in reporting the times and places where the Taylor System had been tried and thrown out. But we had faith in our leader and his magnetic personality carried us safely through a multitude of storms.

We had very few established forms and records, in the early days before Taylor's paper on "Shop Management" appeared, and those who have followed the pioneer work done for us by Mr. Barth and Mr. Hathaway can hardly realize the burden imposed upon them in the development of a system from which later installations are relieved by a growing nucleus of information and an active Society devoted to its promulgation.

Probably no stronger contrast in business conditions can be drawn than is painfully evident at the present time between this year of grace and its predecessor, but when, as in our case, the rising market in 1919 was met by a fire and it became necessary to move to a new plant ten miles away in a very severe winter, we surely had a monkey wrench thrown into our system that was stunning in its effect; but later on in the spring when we began to revive under a mountainous accumulation of orders, it was a pleasure to see the system begin again to function and prove, as Taylor always contended, that when properly introduced it had come to

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stay and could not be thrown out by anybody. And this I think is true of anything deeply rooted in human experience. We can learn and retain new ideas more readily than we can discard or forget old ones, and the greater the utility of an invention or system, the harder it is to drop it. In other words, inertia is a fundamental law of nature, and it applies, I believe, with the same force and effect to mental as to physical phenomena. It is only a strong personality with a message to deliver and endowed with the courage of conviction; who can swerve the minds of men from their beaten paths and lead them into new pastures.

In the last two years we have been through a fire, a moving, and an unprecedented boom followed by unprecedented depression and we still have our system intact. Our organization, to be sure, has been reduced to skeleton form, but we have a nucleus ready for expansion when the time comes and we have been able to avoid a shutdown by transferring our planning men into the shop to work with a small force on short time and keep a small but steady volume of work going through.

Our men rather enjoy the transfer from office to shop, and although clerks seldom gain that experience, our assistant secretary has been glad to embrace the opportunity. I think all draftsmen would be benefited by such service and that pattern making is the experience they most urgently need, but our draftsmen have not yet been available for shop work on account of the drawings to be completed.

When there is comparatively nothing to do, as at present, the problem of maintaining an organization and with it an elaborate system of production is very trying indeed, but we figure that eventually it would cost more to shut down and rebuild our organization. What is best to do under the circumstances depends of course upon how long the depression is going to last, but we think we are doing our part for the return of good times by keeping our doors open and our wheels turning.

As to the changes in forms and methods proposed by Mr. O'Conner, no one realized more clearly than Taylor the cost of a change of any kind, whether good or bad, as an interruption to progress; and during the introduction of his system he would not tolerate any change, however alluring it might be. The main consideration with him was to get the ball rolling and get results, after which improvements could be considered if desired. But the whole thing is such a closely woven fabric and so nicely balanced in its various parts that I would not consider any innovations without refer-

ence to the men who use the forms or methods, to be amended, in their daily tasks, and I beg to present what follows as the opinion of our Mr. Carter upon whom the maintenance of our system in its original integrity has been placed. I regard the system as a labor-saving device to be kept in working order and modified only where all the reactions thereto have been thrashed out and found on the whole to be advantageous.

I do not think, as suggested in the first paragraph, that the engineer who makes an installation should ever quit the job. He should have an understudy, or assistant, to stay with the business and continue his work; and so should every individual not easily replaced. We keep in touch with Mr. Hathaway as our installation engineer and his assistant, Mr. Carter, reports as follows:

Paragraph 2—This is sound logic. We must not mistake form for principle. Any data that is of value is worth recording. It is by the accumulation of such data that a science is developed. The mere collection of data as a matter of history is absolutely useless, but if it creates an influence on future conditions, it becomes indispensable. As for minimizing our classification; No! The greater the degree to which it is carried, the easier it is to determine individual costs, which, obviously, should govern future production. As to the interpretation of symbols, it is comparatively the easiest of any method of classification.

Paragraph 3—The Taylor Society was organized for this very purpose.

Paragraph 6—Short cuts are the most tempting and at the same time most disastrous expedients that a manager can resort to. While he may accomplish the desired result, he does so at a tremendous cost of both money and effort. There is nothing done in the planning department that was not originally done in the shops, but the planning department has assumed certain responsibilities for which it is better fitted than the manufacturing department. In the cycle of planning, certain definite functions must be performed. If short cuts are resorted to, the extra effort must be made up somewhere and it usually is in the manufacturing department. The very fact that there is an excuse for a short cut is a frank admission that some one fell down in the beginning, as was illustrated by the Irishman who missed his train, and upon being asked why he did not run faster, replied: "Sure, I ran fast enough, but I didn't start soon enough."

Paragraphs 8-9—Route Files, if properly put together, should not fall apart even upon being dropped to the floor. As to changes of methods, they should all be looked upon with suspicion unless it has been proven beyond a doubt that they surpass that which they replace. The great danger is that they may be improved "out of existence" and the underlying principle lost forever.

Paragraph 11—There is some doubt that this method of moving would work in all plants. Moreover, the minute you begin to decentralize you lose immediate control of production.

Paragraph 12—The fact that planning department records must show the exact location of materials at all times, and also that job analysis which is the basis for cost keeping and provides for the automatic movement of materials, is sufficient cause for the central control of more men instead of being subordinate to shop foremen.

The above observations are offered in the hope that they may be helpful to production managers cut adrift from their installation engineer, but with the feeling