

tion of the authors. It is important I think, that we avoid the presentation of papers by people who endeavor to cover too wide a range, resulting in much going over of the same ground in a superficial way and frequent disagreement in matters of detail. Every newcomer to the field of scientific management will have a wild desire to write papers on a subject he is greatly interested in but little qualified to handle, many of them on the same phase of management. The literature of the society would then become, as it has in some of our older societies, a heterogenous mass of more or less conflicting data which serves no purpose. I have in mind at present the transactions of one of the great engineering societies, and any man who wants to get any information from their transactions has a mighty big job before him. It is scattered through large volumes, one subject after another, with absolutely no relation to each other. One may find in a given volume, first, something on gas engines; the next article may be on the handling of coal in Sitka, Alaska; then perhaps one on scientific management or one on standard gear teeth. And so it goes: The result is that those become very nice volumes to place in your book-case and leave there. If you want anything that is in them you do not get it, because it is too much trouble to find it,—the data is not arranged properly. It is my feeling that any papers which are presented before this society should in the first place be in accordance with a classification of subjects, so that we may have one paper covering each subject presented by one man who is competent to write on it. Ultimately, instead of a lot of papers, many presenting conflicting viewpoints and many covering the same ground, a complete library might be had on scientific management, for which we would perhaps have one volume on classification, another on filing, another on time study, another on routing, etc.

In making the remark that every newcomer will have a wild desire to write a paper on a subject he is little qualified to handle, I do not mean to discourage the writing of papers by the younger men. In fact it is my feeling that they are the ones who should write papers. Those of us who are further advanced in the work have not the time. The younger men should have assigned to them the task of writing papers on certain specific subjects or branches of scientific management, but they should not be left to themselves to go at it haphazard or to write out their own opinions, which may or may not be right. They should be given sufficient time to go thoroughly into the subject assigned to them and should have means provided so that they could afford to visit the various plants in order to investigate and thoroughly familiarize themselves with the subjects upon which they are writing. They should also at frequent intervals during the course of preparation of a paper consult with the older men and submit what they have written to them for criticism and for advice and general direction. A man in preparing such a paper should be allowed sufficient time. It should not be a case of being called upon this month to write a paper for presentation next month. A paper so written is almost worthless. He should have the subject assigned to him a year in advance and at frequent intervals it should be the duty of some official of this society to see that he is making some progress on it. If such a course were followed I believe we would get papers that would be of the greatest value to the members. At the present time I know of young men,—newcomers to the field of scientific management,—whom I should like to see assigned to the task of writing on certain subjects, such as "Classification," "Tool Room Practice," "Routing,"—and by that I mean the whole routing scheme from

the time you have your specifications or drawing until the time you start work in the shop and begin to get results. Another important subject would be "Functional Foremen," another "The Standardization of Machine Tools," another "The Tabulation of Time Study Data." These are only a few subjects. I know young men who are perfectly competent, with proper direction, to handle them, but I do not know any of the younger men who are competent to do so without proper direction. I repeat that the society should be in a position to compensate those men for their time spent in visiting various plants, making investigations, and collecting the data upon which their papers are to be based. That is another thing for our committee on ways and means to consider. Mr. Taylor's paper on "Shop Management" is today the one classic on scientific management. There is scarcely a thing that any of us can say in this connection that Mr. Taylor has not already covered in his paper. It should, however, be expanded into at least twenty or perhaps forty volumes. A book might be written on each of the four principles as set forth by Mr. Taylor,—the development of a science, the scientific selection and training of the worker, the proper division of responsibility, and securing the proper measure of co-operation between the management and the workmen. In this connection I might say that this latter does not mean securing the workman's co-operation, however, as much as it means securing the management's co-operation with the men. In the old days under the old style of management, we heard a great deal of the desirability of the workman's co-operation, but we never heard anything of the desirability of the management co-operating with the workman. As I have suggested, a volume could be written on each one of these principles, pointing out their application to the solution of a variety of problems.

At the last meeting of the meetings committee it was proposed that the literature of scientific management should be classified under the following heads,—bibliographic, to include all existing literature in its present form and in a classified and accessible form; second, principles,—which I have already spoken of above; third, materials,—covering standards as to grade, quality, purchasing, storing, handling, etc.; fourth, equipment,—including buildings, machinery, tools, standardization and up-keep, and all that would enter into their proper use; fifth, mechanism,—such as classifications, routing, system, cost keeping, instruction cards, etc.; sixth, men,—the selection of workmen, the training and co-operation between the management and workmen, and proper division of responsibility.

Those could again be divided into a great many sub-subjects, each one of them being assigned to a certain man to prepare a paper upon. Among the subjects that have been suggested we have, falling under the heading of general or educational data for general distribution,—"What Constitutes Standard Men?" (who is a first-class man?). There has been a great deal said about a task being set for and assigned to a first-class man,—and what are we going to do with the inferior man? In the first place what is an inferior man or a poor man? A poor man is one usually who is doing something for which he is not fitted. Put him at something he can do and he is no longer a poor man. The first-class man is not the exceptional man,—he is not the wonder or the man who can do the work in almost half the time. He is a good first-class man,—not an incompetent. That could be expanded upon or treated at very great length, so that we could find out what a first-class man is and how to select him for each of a number of different classes of industries.

The "Theory of Standards" is another subject that could be treated at length. "Political Economy for the Workingman" is something that is very much needed. There is practically no effort being made on the part of anybody to acquaint the workmen with the laws of political economy. They have not the slightest conception of them and in fact the ignorance of economic laws extends far beyond the workmen. There are lots of managers,—lots of superintendents, and lots of engineers who know very little about economic laws, so it seems to me it would be a good thing for us, to educate the workman at least in the elementary economic laws so that he will not say, as I heard a man say: "If I work too fast I will work myself out of a job. There is only so much work to be done in the world." That was said to me in all good faith by a workman when I was a foreman at Midvale. I was trying to show him how he could increase his output. If we could bring out a paper on political economy for the workman which would make him see that his interest is not in the restriction of output but rather in the increase of output, it would be well.

Another subject might be "The Causes of Soldiering under the Old Type of Management." Under the old type of management the workman was not very much to blame for soldiering,—the management was very much more to blame. That generally comes as a result of the management making it impossible for the workman to work,—forcing him to loaf so that it eventually becomes a habit.

Other subjects for papers might be "Theory of Classification," "Equipment," "The Selection of Employees," "Uniform Apprentice System," "Promotion,"—providing definite laws for promotion so that when a man starts in, he realizes that if he is any good he will not remain in the position he is then filling all his life. At the Tabor Company plant we have a well-defined process or routine of promotion. In the planning department there are certain positions filled by boys,—messengers who can carry drawings and instruction cards to the shop. Those boys have before them their next job, which will be that of a recording clerk, the man who checks the sheets,—or the position of clerk in charge of the preparation of route files, operation orders, etc. They in turn have further promotions to look forward to. The men from the shop,—machinists, helpers, etc., have before them opportunities for promotion. The helper has the opportunity of becoming a machinist,—the machinist of becoming a functional foreman in the shop; the functional foreman in the shop and sometimes the men on the machines of becoming functional foremen in the planning department; and after that when we cannot promote them any more we fire them. We have fired some from jobs that paid them \$35 per week to jobs that pay them \$50, and we have lots more of them there. Now in order to have a definite line of promotion it is necessary to have for every man in the organization an under-study. That is the proper way under scientific management,—not to have men afraid to let anybody know anything about their job for fear they may be fired themselves. Instead of this every man should be working so that he will have somebody ready for his job, so when an opportunity for promotion comes along he can accept it. "Preventive repairs" is another subject that has not been treated at all in any paper I know of. Another subject is "Incentive," which would cover the matter of bonuses, etc. Another subject is "Method of Increasing Ambition." These are only a few subjects that might be brought out, which would fall under some one of the headings that the meetings committee has suggested in endeavoring to outline a policy and programme for papers.

THE PROGRESSIVE RELATION BETWEEN EFFICIENCY AND CONSENT¹

By ROBERT G. VALENTINE²

Definition of Scientific Management.

1. By scientific management I mean those principles of business conduct which are both explicit and implicit in the life and work and writings of Frederick W. Taylor.

2. I mean those principles considered in their purity as principles and considered apart from the particular and local applications of them made by Mr. Taylor.

3. I mean those principles considered as principles very gropingly stated by him and as to statement still in their youth, so to speak.

4. I mean those principles considered as one root of economic life, and to that extent thoroughly sound, but still showing clearly in their present statement that they have not been worked into thorough co-ordination with other equally vital principles of the economic and social world.

5. By scientific management I mean further the attempts to apply the principles as stated by Mr. Taylor as they are applied, for example, in the Tabor Mfg. Company of Philadelphia, the Plimpton Press of Norwood, Mass., and the Link Belt Company of Philadelphia.

And the actual methods of applying the principles at those plants I regard as only indicative of what the real application of the principles as laid down by Mr. Taylor would be. They are sufficiently indicative, however, to furnish the materials for a sketch of an ideal shop run according to the Taylor principles. They further furnish us, I believe, with the basis for the belief that the principles stated by Mr. Taylor, in so far as they are fully applied, furnish the latest word in the progress of the mechanics of industry. For simplicity in this paper, we shall deal with these principles only from the point of view of the mechanics of production.

I am not forgetful of two important facts in connection with Mr. Taylor's life:

1. That many of the impressions he conveyed in describing his ideas did his ideas themselves and his real spirit great injustice.

2. That his own conception of much that is contained in his writings, is in many cases fragmentary and apparently short-visioned.

It is, nevertheless, my belief that when the fullest allowance is made for these two facts, Mr. Taylor's contributions to the industrial world will gradually prove themselves to be among the major contributions to human progress. The human limitations of Mr. Taylor's thinking and methods of expression and the crudities of the application of his principles in practice at the present day will weigh little as compared with the revolutionary effects his conceptions will have on the progress of the world when they are thoroughly understood and freed from the short vision and from the ignorant, the merely imitative, or the shyster practitioner.

It should also be noted at this point that much which is being done under the name of scientific management and much of the criticism of scientific management is only serving to give undue importance to the work of the efficiency charlatan, to the loose social thinker, and to the attitude of the half-informed public, all of which obscures the real issue. The useful thing to do is for all persons honestly interested in the subject to simplify the problem

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² Industrial Counselor, Boston, Mass.