

tical side of the scientific management movement from which we were drifting on what seemed to be a more pleasant though dangerous current. That his doing so is appreciated at its just value is evident from the large attendance at this session and the interest shown by the discussions of practical men.

HENRY H. FARQUHAR:<sup>1</sup> One thing which has interested me very much now occurs to me as a possible explanation of why we are questioning established methods.

Mr. Ralph G. Hurlin, of the Russell Sage Foundation, has worked out wholesale prices for a period of 110 years. The curve looks something like this:

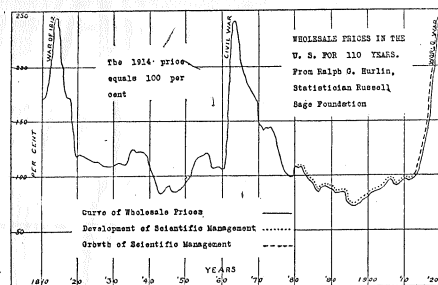


FIG. 1.

I have added to the curve of prices some chronological data concerning the origin and development of scientific management. You will observe that Mr. Taylor was engaged on his early experiments which led to the development of scientific management approximately at the end of the long period of declining prices which followed the Civil War, and that the growth of scientific management has been during a period of rising prices and corresponding business activity and profits. But today we are in a depression and are faced by a period of falling prices—something new to scientific management.

During this period of 110 years there have been fluctuations in wages paid, but the general tendency has been consistently upward. There has recently been a recession from the abnormally high wages of the World War, but I believe we must recognize that the wage level is going to be permanently higher than it has in general been in the past. Improvements in machinery and management methods have got to make up for increased wages and a higher standard of living. Scientific management offers the most available

way for accomplishing this purpose. But—and this is my point—the methods and even the principles of scientific management which have been found so satisfactory under easy business conditions must be thoroughly scrutinized if the future of scientific management is to be as significant as its past.

WILLIAM O. LICHTNER:<sup>2</sup> It certainly would be helpful to have some place to go where the experiences of many concerns could be seen and studied; yet I doubt the practicability of working out a plan which is more effective than that offered by individual industrial engineering concerns and office equipment concerns. In each large city each year the office equipment concerns have a large exhibit of all kinds of labor saving devices and will cooperate with any one indicating to them any problem where economy can be expected. In this way the production manager has at his command two avenues of help, one the industrial engineers and the other the equipment firms.

This paper in speaking of standard forms and equipment does not mean, I am sure, that the advocates of science in management have some prescribed set of forms and certain equipment which are the last word in perfection and will apply to every business. Engineers who are masters of their profession, no matter whether they started out as the followers of one school or another, and especially any of the real followers of Taylor, do not believe or advocate that the system is composed of a standard bunch of forms and equipment. Novices and quacks are the only ones who know no better than that. The thought behind this paper is that if it were possible to concentrate in some one place like the Taylor Society headquarters all the evolutions of the various plants practicing the science of management, it would be of assistance to the production manager in concentrating his organization's efforts to become effective and so reduce the number of people required to direct the work. This is the problem of the production manager, and unless he can bring this about his organization is pretty sure to deteriorate.

When the engineer finishes his contract, whether it be a year or more, he leaves the client's organization with the full knowledge of each step which has been made, and if they are left in the proper frame of mind there is no reason whatever why the production manager should not be expected to make with his organization further economies in routine, forms and equipment which will materially reduce the amount of work in the office and make the control more effective. The

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<sup>2</sup> The Thompson & Lichtner Co., Boston.

production manager and his staff are the logical ones to do this work and not remain dormant until an engineer gives time and instructions and does the thinking for them.

E. E. HUNT:<sup>3</sup> In the Managing Director's report he called attention by inference to the fact that in groups other than the production group, the work of the Society has gone forward during the past year, but that in this particular group things have been at a standstill.

I should like to suggest a reason why this may be so. When a paper like Mr. O'Connor's is before us, the "elder statesmen" of the Taylor Society, whom we all honor, tell us anecdotes about the perils they met when they tried to make changes in the Taylor System years ago, instead of confining themselves to a critical discussion of the merits and demerits of impending changes proposed by the author of the paper. I am convinced that Mr. Hathaway could tear Mr. O'Connor's paper to pieces. I only wish he had done it. I believe Mr. Barth could have torn it to pieces. I wish he had done it.

Members of the production group can hardly be counted upon to meet here year after year to hear a discussion of the Taylor System wholly in the uncritical terms of disciples worshipping a master. Change will come whether we like it or not. If those who were so fortunate as to be personal disciples of Mr. Taylor wish to guide these changes, the one best way will be for them to criticize them on their merits; patient with youth, patient with ignorance, patient with impatience. I am one of the younger members, ignorant like many of us here. I shall be altogether glad if you will discount my remarks, laying them to youth and ignorance and impatience. I make them because I think they are in the minds of more than one of your hearers.

MR. O'CONNOR (Closure): If we admit, and we do, that there is an engineering function in the installation of scientific management, we admit that superstructure must be created. Any construction work must have it. With this admission we then must admit that by its very nature a time must come for some elimination. All engineers admit it and will continue to do so. Therefore is not the main theme still unanswered—what is our Society doing to maintain present installations as scientific layouts? Every engineer acknowledges that time is sure to develop improvements and they are applicable to scientific management.

<sup>3</sup> Secretary, The President's Conference on Unemployment, Dept. of Commerce, Washington, D. C.

None of them we adopted came overnight; they were the result of evolution and came as a decided improvement. This is something the society must take into consideration, and whether they will or no, the engineers can learn something from plant managers. The Universal Winding Company is operating today along the same principles Mr. Barth laid down; more than one engineer who has visited our Planning Department maintained that it was as complete as any visited. We have something, and what we have is freely given to members of the Taylor Society, for much that we have, came as a result of sweating blood and we hope to be of service to managers in similar positions.

Mr. Barth realizes that changes are bound to come, but insists that they ought not to be made hastily. That is exactly our position; where we have adopted permanent improved appliances they have come to stay.

Mr. Scott's diagnosis of my paper is correct. My purpose is to enlarge upon the causes which are to continue, and to pass lightly upon those we expect to be eliminated; of this last the last paragraph treating of an extraordinary moving method is an excellent example.

A review of Mr. Gilbreth's discussion will show that he has the professional attitude. Nothing must be changed—with respect to methods—unless the engineers sanction it. But I am talking of an installation where the engineer has finished. The management sees or hears of an improved appliance and after full consideration—Mr. Barth's idea exactly—it is adopted. Is not that consistent with every day business practice? Engineers of scientific management are not giving a plant manager something that only the engineer can handle. No! I disagree with Mr. Gilbreth; it is not I who am monkeying with dynamite; but if it is being monkeyed with, as a member I am not permitting the Taylor Society to be the victim.

To Mr. Hathaway I would say we have not permanently neglected principles; but we have changed a few methods and done so in the proper manner—as a result of careful study and experiment.

Mr. Hunt has made the appeal that is behind my paper. We must not neglect the field of shop management; the job is not complete and will not be until the experience of plant managers is recorded and standards, such as Mr. Lichtner has proposed, adopted. Even then arrangements must be made for changes, and I hope the Society will devise means for the accumulation of the pertinent data.