

ing, that industry be managed efficiently and economically; and of being prepared to participate fully in whatever steps are necessary to attain progress in this direction. Labor, I think, can best achieve this end by co-operating with science—seizing the proven elements of the new science of management, job study among them, and applying them not only to industry, but in the labor movement itself. I venture to say that there are few labor problems, just as there are few industrial problems, that will not yield to the scientific approach. Problems of organization—getting new members into the unions—problems of co-operation, problems of internal administration and routine, are all susceptible to the scientific method. You may say, "But labor problems are different." Of course they are. Every problem in certain important respects is different from every other problem. That is why it is a problem. When the scientific method—the method of observation, experiment, inference and verification—is employed, the next safe step invariably unfolds, direction is vouchsafed, and we are permitted to see a little into the future. I have always liked the symbolism that depicts science as a hand holding up a torch, shedding light on the present and throwing beams into the future. Labor problems will respond just as surely to science as have problems in other fields.

Job study, as I have mentioned, is the scientific method applied to the performance of work. Through its development workers will surely be assisted in the attainment of that for which they have long striven—fair wages, fair hours, fair conditions of work—and what is even more important, they will gain essential knowledge as to how these conditions may be preserved and progressively advanced. By participation in job study, through representative committees, workers will gain increasing opportunity to share in the creative side of production and will, I believe, be moving in the direction of a new interest and a new self-expression in their work.

Finally, let me quote two short passages which seem to encompass all that I have tried to say. In the second volume of Samuel Gompers' "Autobiography," in the chapter entitled "Problems after Armageddon," occurs the following: "I have my dreams as to what ought to exist in

<sup>2</sup>Samuel Gompers, "Autobiography," Vol. II, Chapter XLXVII, p. 523.

industry—a dream of co-ordination of all in production with unrestricted opportunity assured to all to devote mind and skill to production and distribution in the service of human needs. At one time I proposed to my colleagues on the Executive Council that we formally lay before other groups in production a proposal to co-operate in concentrating on the creative aspects of production. When my suggestion was rejected I withdrew it, not in discouragement, but with the conviction that the future would reverse the decision." The following from an earlier chapter<sup>1</sup> is also quoted. "Economic justice will come through the organization of economic agencies, the increasing adjustment of economic relationships in accord with principles evolved by experience, the formulation of definite scientific standards, and development of the principles and coordinating functions of management, based upon understanding of human welfare. Just where this sort of activity will carry us—who can say? But of this I am certain, it means progress toward a better day."

### Scientific Management and Waste Elimination

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IT is really surprising to find out how little is generally known about wages; the subject seems so simple that nearly all of us think we know all there is to know about it. But do we?

Not long ago traveling on the Pennsylvania Railroad a man sitting opposite me in the dining car called to my attention a reprint of an editorial from a Philadelphia newspaper according to which labor on the "Pennsy," as we call it, gets, as I remember the figures, something over half of the gross receipts of the road and, therefore, ought to be completely satisfied and happy. Having read the article at the suggestion of my neighbor, I of course felt obligated to comment upon it one way or the other, and the best thing I could think of at the time was to say that I was surprised that a railroad so intelligently managed and operated, in the main, should endorse and republish such an absurd argument. He said, with some

<sup>1</sup>Ibid, pp. 26 and 27.

asperity, that he could "see nothing absurd about it."

I then confessed that I happened to be fairly familiar with industrial matters and thought I could mention plenty of occupations in which the workers got a much larger share of the gross receipts—in fact, nearly all of them. He wanted to know in what kinds of industry this could happen and I mentioned the digging of drainage ditches by hand with shovels. Here practically all the gross receipts are paid to labor. Each man supplies his own shovel and the boss pays out his money for nothing else but labor. Here, supposing twenty men to be employed, labor may get ninety per cent of the gross receipts; the boss one-ninth as much. But are the ditch diggers better off with their ninety per cent of the gross receipts than the railroad men are with their fifty odd per cent? Percentages mean nothing in such matters unless we know a lot more than per cents.

Averages and percentages are very deceptive things unless we are sure we know how to interpret them in a given case. A man was once drowned in an attempt to wade across a river the average depth of which was only two feet and Louis Post used to tell us of a fishing club the members of which had an average of a million dollars each. There were fifty members, among them one of the Vanderbilts. He had fifty millions; the rest of the members had nothing to speak of but some fishing tackle and some old clothes to fish in. It is much the same with figures of wages at different periods and in the same period in different countries. We don't know what they mean unless we know a lot of things other than the mere figures of wages.

I had occasion very recently to look into the matter of wages of machinists fifty years ago and to compare them with the wages of today. As nearly as I could determine from the available data, wages of machinists and tool-makers today are about three times what they were half a century ago. Some of our labor union friends may be inclined to say that these higher wages are due to their efforts and sacrifices; others may attribute them to various and entirely different causes and all of them may be not only entirely sincere in their judgments but, in part at least, correct.

Living expenses have certainly trebled at least in the fifty year period and these have been considered, on the one hand, as the cause of the advance in wages, while on the other hand it has been contended that high living costs are the effect rather than the cause of high wages. As a matter of fact the two things have no doubt acted upon each other reciprocally.

An acquaintance of mine who happens to be an engineer built a house a few years ago. When the contractor was about to begin work on the house this engineer took a sheet of letter paper and ruled it horizontally and vertically, with a space at the left for entering the names of the various main divisions of the work such as "excavations," "foundations," "walls," "roof," "floors," "finish," etc., and a space across the top for entering various periods of time. He then asked the contractor to say how long he thought it would take to do these various things and as the times were mentioned the engineer drew horizontal lines, beginning at the date when the work was planned to begin and ending when it was thought it would be completed. He explained that his chart, showing as it did just when each division of the work should begin and when it should be completed, would make it easy from the beginning to know at all times whether or not the work was progressing as it should, and, if not, how far behind it was getting. By this means there would be no surprises, or discoveries at the end of the contract term that the work was far behind. It was thought that the contractor might not like this very well, but he did, and seemed to perceive clearly and readily that it would be a help to him.

The work went along very well until it came time to use the "trim," that is, the inside finish wood work, which had been sub-contracted to a mill some distance away. No shipments could be got from that mill and the work stood still for a long time. Finally the engineer said to the contractor, "I think I know what is the matter at the mill. They have simply taken all the contracts they could get and have promised delivery on any date the builder said he wanted the stuff. They have done this without the ghost of an idea as to whether they could make deliveries on time or not, but have simply hoped that they could pull through somehow. Now that demands for trim are coming in faster than they can be satisfied