

Let me give you one illustration. Let us take one of the staple businesses, the cotton industry. About 1840 the power loom succeeded the old hand loom in the cotton industry. It was invented many years before, somewhere about 1780 or 1790, but it came in very slowly. About 1840 the weavers of Manchester, England, saw that the power loom was coming, and they knew it would turn out three times the yardage of cloth in a day that the hand loom turned out. And what did they do, these five thousand weavers of Manchester, England, who saw starvation staring them in the face? They broke into the establishments into which those machines were being introduced, they smashed them, they did everything possible to stop the introduction of the power loom. And the same result followed that follows every attempt to interfere with the introduction of any labor-saving device, if it is really a labor-saving device. Instead of stopping the introduction of the power loom, their opposition apparently accelerated it, just as opposition to scientific management all over the country, bitter labor opposition to-day, is accelerating the introduction of it instead of retarding it. History repeats itself in that respect. The power loom came right straight along.

And let us see the result in Manchester. Just what follows in every industry when any labor-saving device is introduced. Less than a century has gone by since 1840. The population of England in that time has not more than doubled. Each man in the cotton industry in Manchester, England, now turns out, at a restricted estimate ten yards of cloth for every yard of cloth that was turned out in 1840. In 1840 there were 5,000 weavers in Manchester. Now there are 265,000. Has that thrown men out of work? Has the introduction of labor-saving machinery, which has multiplied the output per man by ten-fold, thrown men out of work?

What is the real meaning of this? All that you have to do is to bring wealth into this world and the world uses it. That is the real meaning. The meaning is that wherein 1840 cotton goods were a luxury to be worn only by rich people when they were hardly ever seen on the street, now every man, woman and child all over the world wears cotton goods as a daily necessity.

Nineteen-twentieths of the real wealth of this world is used by the poor people, and not the rich, so that the workman who sets out as a steady principle to restrict output is merely robbing his own kind. That group of manufacturers which adopts as a permanent principle restriction of output, in order to hold up prices, is robbing the world. The one great thing that marks the improvement of this world is measured by the enormous increase in output of the individuals in

this world. There is fully twenty times the output per man now that there was three hundred years ago. That marks the increase in the real wealth of the world; that marks the increase of the happiness of the world, that gives us the opportunity for shorter hours, for better education, for amusement, for art, for music, for everything that is worth while in this world—goes right straight back to this increase in the output of the individual. The workmen of today live better than the king did three hundred years ago. From what does the progress the world has made come? Simply from the increase in the output of the individual all over the world.

THE DEVELOPMENT OF SOLDIERING

The second reason why the workmen of this country and of Europe deliberately restrict output is a very simple one. They, for this reason, are even less to blame than they are for the other. If, for example, you are manufacturing a pen, let us assume for simplicity that a pen can be made by a single man. Let us say that the workman is turning out ten pens per day, and that he is receiving \$2.50 a day for his wages. He has a progressive foreman who is up to date, and that foreman goes to the workman and suggests, "Here, John, you are getting \$2.50 a day, and you are turning out ten pens. I would suggest that I pay you 25 cents for making that pen." The man takes the job, and through the help of his foreman, through his own ingenuity, through his increased work, through his interest in his business, through the help of his friends, at the end of the year he finds himself turning out twenty pens instead of ten. He is happy, he is making \$5, instead of \$2.50 a day. His foreman is happy because, with the same room, with the same men he had before, he has doubled the output of his department, and the manufacturer himself is sometimes happy, but not often. Then someone on the board of directors asks to see the payroll, and he finds that we are paying \$5 a day where other similar mechanics are only getting \$2.50, and in no uncertain terms he announces that we must stop ruining the labor market. We cannot pay \$5 a day when the standard rate of wages is \$2.50; how can we hope to compete with surrounding towns? What is the result? Mr. Foreman is sent for, and he is told that he has got to stop ruining the labor market of Cleveland. And the foreman goes back to his workman in sadness, in depression, and tells his workman, "I am sorry, John, but I have got to cut the price down for that pen; I cannot let you earn \$5 a day; the board of directors has got on to it, and it is ruining the labor market; you ought to be willing to have the price reduced. You cannot earn more than \$3 or \$2.75 a day, and I will have to cut your wages so that

you will only get \$3 a day." John, of necessity accepts the cut, but he sees to it that he never makes enough pens to get another cut.

CHARACTERISTICS OF THE UNION WORKMAN

There seem to be two divergent opinions about the workmen of this country. One is that a lot of the trade unions' workmen, particularly in this country, have become brutal, have become dominating, careless of any interests but their own, and are a pretty poor lot. And the other opinion which those same trade unionists hold of themselves is that they are pretty close to little gods. Whichever view you may hold of the workmen of this country, and my personal view of them is that they are a pretty fine lot of fellows, they are just about the same as you and I. But whether you hold the bad opinion or the good opinion, it makes no difference. Whatever the workmen of this country are or whatever they are not, they are not fools. And all that is necessary is for a workingman to have but one object lesson, like that I have told you, and he soldiers for the rest of his life.

There are a few exceptional employers who treat their workmen differently, but I am talking about the rule of the country. Soldiering is the absolute rule with all workmen who know their business. I am not saying it is for their interest to soldier. You cannot blame them for it. You cannot expect them to be large enough minded men to look at the proper view of the matter. Nor is the man who cuts the wages necessarily to blame. It is simply a misfortune in industry.

THE DEVELOPMENT OF SCIENTIFIC MANAGEMENT

There has been, until comparatively recently, no scheme promulgated by which the evils of rate cutting could be properly avoided, so soldiering has been the rule.

Now the first step that was taken toward the development of those methods, of those principles, which rightly or wrongly have come to be known under the name of scientific management, the first step that was taken was taken in an earnest endeavor to remedy the evils of soldiering; an earnest endeavor to make it unnecessary for workmen to be hypocritical in this way, to deceive themselves, to deceive their employers, to live day in and day out a life of deceit, forced upon them by conditions—the very first step that was taken toward the development was to overcome that evil. I want to emphasize that, because I wish to emphasize the one great fact relating to scientific management, the greatest factor, namely, that scientific management is no new set of theories that has been tried on by any one at every step. Scientific management at every step has been an evolution, not a theory. In all cases the practice has preceded the theory, not

succeeded it. In every case one measure after another has been tried out, until the proper remedy has been found. That series of proper eliminations, that evolution, is what is called scientific management. Every element of it has had to fight its way against the elements that preceded it, and prove itself better or it would not be there to-morrow.

All the men that I know of who are in any way connected with scientific management are ready to abandon any scheme, any theory in favor of anything else that could be found that is better. There is nothing in scientific management that is fixed. There is no one man, or group of men, who has invented scientific management.

What I want to emphasize is that all of the elements of scientific management are an evolution, not an invention. Scientific management is in use in an immense range and variety of industries. Almost every type of industry in this country has scientific management working successfully. I think I can safely say that on the average in those establishments in which scientific management has been introduced, the average workman is turning out double the output he was before. I think that is a conservative statement.

THE WORKMEN THE CHIEF BENEFICIARIES

Three or four years ago I could have said there were about fifty thousand men working under scientific management, but now I know there are many more. Company after company is coming under it, many of which I know nothing about. Almost universally they are working successfully. This increasing of the output per individual in the trade, results, of course, in cheapening the product; it results, therefore, in larger profit usually to the owners of the business; it results also, in many cases, in a lowering of the selling price, although that has not come to the extent it will later. In the end the public gets the good. Without any question, the large good which so far has come from scientific management has come to the worker. To the workman has come, practically right off as soon as scientific management is introduced, an increase in wages amounting from 33 to 100 per cent, and yet that is not the greatest good that comes to the workmen from scientific management. The great good comes from the fact that, under scientific management, they look upon their employers as the best friends they have in the world; the suspicious watchfulness which characterizes the old type of management, the semi-antagonism, or the complete antagonism between workmen and employers is entirely superseded, and in its place comes genuine friendship between both sides. That is the greatest good that has come under scientific management. As a proof of this in the many businesses in