

having opinions forced on me all the time. A very good fellow—he is dead now—employed in one of the works to which I once went had done a lot of work, he thought scientifically, and he wanted me to accept the results of his work. A very short investigation convinced me that he had not gotten the basic facts and that he had mixed up a certain amount of facts with a good deal of opinion, having taken for granted that certain things were true that they had been in the habit of regarding as true. He was very much worried when I would not do it, and began to make investigations. Very shortly we proved that a lot of things he considered as facts were absolutely wrong, with the result that the poor fellow had nervous prostration. He was terribly shocked. He found that he had been going on for years, as he thought, in the right line, but had not started at the bottom. He had taken for granted a lot of things that were soon proved to be inaccurate, to say the least. Many of them were absolutely incorrect.

The result of the policy of basing actions on fact only is most far-reaching, for, it substitutes natural law for arbitrary law, and gives us democracy in place of autocracy, for natural law is not any respecter of persons while arbitrary law is the conservator of privilege. If we base everything on facts, all are brought against the same standard. Privilege is one standard for one man and another standard for another. If we follow Taylor's injunction and base everything on fact, we are all judged by the same standard, and that is the basis of democracy.

It is doubtful if Mr. Taylor himself ever appreciated the revolution which his work was destined to accomplish, for there can be no more powerful instrument for the elimination of privilege in industry than the scientific solution of the problems involved. During the past two years the whole world has been undergoing a change. Things that we thought were all right a little over two years ago are proven to be worthless and dead wrong. Thinkers all over the world are seeing things in an entirely new light. Political economists and financiers all admit that they don't know where they are, that their theories that they have been teaching and preaching for years do not fit the present conditions, that everything seems to be going directly opposite from what they anticipated, and they have no conception where things will come out. If Mr. Taylor were alive today he would see these things more clearly than any of us. I think the world lost a great deal in the fact that he died just before these things were becoming clear, for they did not clear themselves up in the minds of many people until the war had been going on a year.

We do not realize that the conditions which brought the war in Europe to a head exist in this

country. Possibly most of you will tell me that it is not so, that they do not exist. I tell you that they do. They exist here in perhaps a more dangerous form than they existed in Europe.

The most important contribution which Mr. Drury makes to the subject is when, after his discussion of Mr. Hoxie's report he says, "Yet underneath these surface arguments there exists a real clash involving fundamental principles. We are called to witness a struggle which it would be folly to try to evade, and which is bound to continue until both scientific management itself and the general character of our national life will have been profoundly affected."

A great many people sense the trouble. They know that something is wrong, but they cannot put their fingers on it.

If scientific management in its best development were what he describes it to be, I should entirely agree with him. As it is I agree with him that we are to witness a struggle which will continue until the character of our national life has been profoundly affected. He does not indicate how it is to be affected, nor does he apparently sense the causes which are driving us toward this struggle which he so vaguely indicates. Further, he says that the "system" placed too much confidence in the unselfishness and public spiritedness of management. I think I can add that no successful system can be built upon unselfishness in a world where the dominating characteristic of mankind is selfishness. Self-preservation has been called the first law of nature and any scheme that does not take this into consideration must ultimately fall. The books on political economy have been telling us for a century that the interests of the employer and the interest of the employe are the same, but there is not, as yet, any working system that proves the truth of this on a large scale. Taylor was the first man in this country who even attempted to prove it.

The War now devastating Europe has done more to develop this idea into a working system than all of the books on political economy the world ever saw. But so far the lessons have been learned only in Europe. We still look at what is taking place there as if it were on another planet, something about which we had no concern. The warring nations in their extremity have learned that that which benefits one, benefits all, and that which works to the detriment of one works to the detriment of all.

We are today suffering acutely from the high cost of living and all realize that it is not due so much to the high cost of production as to the control of the markets by the distributors for their own benefit. This is one of the first things to which attention must be given, and indications are that it will have its full share of attention within the next year or two.

The warring nations have all decreed that all the forces in the community must work for the benefit of that community. In this country industry is still conducted solely for the benefit of investors, who cause the wheels to stop when their turning no longer benefits those investors, no matter how much their turning may be needed by the community. This is a condition which will not continue, simply because those to whom it works a detriment are rapidly coming to understand the situation and will not allow it to continue. If those who call themselves scientific managers are really worthy of the name, they will sense this situation before it becomes acute and do something to relieve it. The facts that point to this condition have been hidden in the past by accounting

recognize that machinery that is not operating costs money. It costs money to own machinery. If you do not believe it, buy an automobile, and try to square up at the end of the year, or at the end of two years, you will then see how much you are out, even if you don't run it at all. That is a parallel of all kinds of machinery. It costs money to own it. We lose money on the thing we do not use during the time that we own it, and it depreciates, which causes additional loss. We have to rent space for it, which is an additional loss; we have to pay taxes on it, and insurance on it, so that all of these things together show us that our machine costs money, whether we run it or not.

Let us rent a plant which has one hundred ma-

MILL		COSTS		REPAIRS		REMARKS				
SYMBOL	DEPARTMENT OR MACH CLASS	% OF CAPACITY USED ON		TOTAL EXPENSE OF IDLENESS	DETAILS OF IDLENESS EXPENSE DUE TO				REMARKS	
		DAY	TURNOVER		LACK OF WORK	LACK OF HELP	LACK OF AND POOR MATERIAL	REPAIRS		POOR PLANNING
	GRINDING	10	10	561.58	316.25	475.28	56.37			
	DRILLING	10	10	1248.37	647.18	642.52	89.27	48.89	LACK OF SKILL DUE TO LACK OF HELP IN REPAIRING.	
	TURNING	10	10	408.71	276.18	30.80	16.78			
	SHAPING	10	10	181.08	99.17	18.22	21.20	8.34		
	PLANING	10	10	102.54	74.83	26.18				
	SCREWING	10	10	251.10	160.20	89.82	8.28	6.10	LACK OF MATERIAL DUE TO LACK OF HELP IN REPAIRING AND TO INADEQUATE STOCK.	
	GRINDING	10	10	2264.18	1201.84	632.71	266.64	215.87	POOR PLANNING DUE TO POOR INFORMATION.	
	TURNING	10	10	407.32	407.32					
	DRILLING	10	10							
	SHAPING	10	10							
	PLANING	10	10							
	SCREWING	10	10							
	TOTAL			5456.11	3721.79	3508.89	434.28	300.09	226.11	APPROVED BY

systems devised in the interests of investors. It is the function of those who are engaged in the application of science to industry to devise such a record keeping and accounting system as will make these facts plain to the man in the street. Up to now science has been applied to industry only so far as it affects the mechanical operations of the factories. The next step is to apply it to the managerial and business policies of the institutions. When this is done, the incompetent manager and incompetent financier, who have wrought so much havoc in the past will have to seek other occupations, just as the incompetent mechanic or engineer has often been obliged to seek a menial job.

I offer as my contribution to this work this chart, which I will ask to have put on the board. We all

chines in it and pay one dollar a day rent for each machine. If we use only half of those machines we should find we used only half of our rent and there would be fifty dollars worth of rent that we did not use every day. I am not discussing whether we could have used it or not. I am only saying if we rented one hundred machines and used only fifty, we should lose half our rent. It is surely a good thing to know how much rent a plant is losing on their machines due to idleness. The figure on the slide represents the idle expense in a cotton mill. The cards were being run at eighty-eight per cent of their capacity, and the rent, taxes and insurance, depreciation of the cards which were not run, amounted to six hundred and fifty-one dollars in one month. One hundred and sixteen dollars of that was due to lack of work;