

"The Limits of Efficiency"

In the light of the suggestion that the board of efficiency recently abolished be re-established at the national capital, an address delivered November 19, 1912, before the Cleveland, O., chamber of commerce by Hon. William C. Redfield, now secretary of commerce, will be interesting. On that occasion Mr. Redfield said:

Mr. President and Gentlemen: I realize fully in speaking to this audience the danger of sweeping statements. As the French say—"All generalizations are false, including this one." Nor have I any final solution ready to offer for all industrial problems. Rather have I come to reason together with thoughtful men, with my highest hope that something may be said that will be suggestive.

In one of our eastern states were two mills of like size and equipment, making similar goods, and located a short distance apart on the same stream. One of them did a successful business—the other was a failure. Into the latter came a new superintendent, and soon the downward progress was checked and in time prosperity began.

In another business there were, twenty-five years ago, about eight houses—among them one prominently successful. The smallest, however, of the eight, beginning with a rented wooden shed and less than a hundred thousand dollars, has grown until it is the largest of thirty or more now in this particular line, and without any additional invested capital or special advantage has accumulated property conservatively valued at over a million dollars, after marking off liberally for depreciation.

In still another industry, one concern making the cheapest class of goods, in which there is the largest competition, has so developed that in a recent financial paper it was named as one of the three or four great successes in its line.

To explain such cases we say that the management of the successful mill was more efficient than that of the others, or we speak of the mill as being run with a higher degree of efficiency. Of late this word "efficiency" has come to be much used. We all think we know what it means, but perhaps none of us have thought carefully enough to be able to define it with accuracy or completeness. Most of us would admit that what we call "efficiency" accounts for business success and that its absence is pretty sure to spell failure. If we manufacture a machine with a high degree of efficiency in its field, it is sure to sell, for men look for this particular thing eagerly. If, on the other hand, the machine is below standard in efficiency, it must be re-designed, else we can not continue long to sell it. The workman who is efficient has always a job, while he that lacks efficiency wanders from door to door in search of employment.

We shall agree, therefore, that this thing called "efficiency" is worth study; that its results are good; that we do not all get it, or that we get it in different degrees. Why do we not all have it or, if we have it, why do we not all have as much as some other concern? What are the limitations upon getting this desirable thing? In what way are we shut out or do we shut ourselves out from securing it? It can only do good to spend a brief time in a thoughtful discussion of so weighty a theme.

First of all let us see what efficiency is not. It is not strenuousness. The man who hustles may or may not be efficient; probably he is not. Hustling is not a normal element in efficiency, nor is strenuous work apt to be efficient just because it is strenuous. You work at a lathe with the casting you are finishing piled ten feet away. This means strenuous but not efficient labor. To work at that same lathe with the castings piled so near that you can get them without moving from your place is less strenuous but far more efficient labor. We are familiar with the fact that an over-loaded machine leads a strenuous life. None of us will, if we understand mechanics, say that it is an efficient life. This is true of men as well as of machines; true of us as well as of our employees. We must get rid of the idea that strenuousness and efficiency are either similar or the same. Driving is one thing; efficiency is something else.

Efficiency is not something we can go out and buy. It does not come in packages with directions for use. It is more like a plant; that is, it is something that grows; and it is like a plant in this, too, that the longer it takes to grow the stronger and more enduring it is. Here we run against a very common mistake; for John, finding that Henry is winning by his efficiency, wants

to get it himself to beat Henry, and he hires a man to teach it to him—very much as I once had to study a book which gave a course in chemistry in fourteen weeks, or as there are so-called methods of learning stenography in one month. None of the get-knowledge-quick schemes work in teaching efficiency. It is not learned that way. There are, indeed, those who would try to sell John something they call by that name, but if Henry has the genuine article and John gets his by short-time methods, Henry will smile and John will be sad. Time is as necessary for the growth of efficiency as it is for the growth of an oak tree. True, we can do some things at once, just as we can dig the ground and plant the acorn and we can nurture the plant from its birth upward, and perhaps find a Burbank who will make it grow faster. But I do not know of anyone anywhere who has efficiency in stock ready to be shipped by express and to be delivered at your shop door in full working order the next morning. Try to make a good sized shop really efficient, and if you do it in three years you have done well and will then find more to do.

Furthermore, not only is efficiency a matter of evolution but it is not always pleasant at first. It is an acquired taste. It runs counter to many things that we did before we tried it, and we have to learn that it is like some cheese—the taste is much better than the smell, and that it is really finer food than our senses would at first lead us to believe.

For efficiency destroys factory habits. It has no mercy on such as are bad and it tells us to substitute better ones for those that are good. We all run more or less in what we will call for politeness "grooves" but which the inconsiderate call "ruts," and this new idea does not tolerate such things. Then, too, it is a destroyer of complacency. How often we feel that we are doing something just in the right way only to have a competitor underbid us. When the shock has passed we discover that there was a better way than ours after all. Eternal vigilance is the price of efficiency. Every man must be his own watchdog, and his first duty will be to bark at himself. A lot of us would like efficiency if it did not interfere with our own ways. How angry was that officer to whom a friend reported that the improvement in his factory methods which he sought must begin by radical changes in his own behavior.

Therefore, too, this new intruder hurts our self-love. We don't like to admit that our horizons have been narrow, that our opinions have been prejudices, or that what we call caution may have had a measure of cowardice. It takes a strong man to be highly efficient, because he must usually win a victory over himself before he can pass the threshold of the temple of efficiency. He must learn his own ignorance and then put it away. He must abandon prejudices in mind and habits in action, must throw away unbeliefs, learn to think that little which once seemed large and that vital which was deemed unimportant. It will be clear that this ideal of efficiency is something different from merely improving a method here and there, getting a new machine, or hiring an abler superintendent. These may be done without grasping the first principles of efficiency.

A great employer in one of our eastern towns was building a large new plant in which many hundreds of saleswomen were employed. Of course, other similar plants were studied and everything that current knowledge and past experience directed was done to make the building and its equipment perfect; but in doing this, efficiency was not fully gained, for these are but the tools with which efficiency works and not the thing itself. His thought ran as to how, when he had a perfect plant, it should be put to its perfect use, and he went deeper than the surface to gain this end. He reasoned on one subject somewhat thus—"I have here many hundred saleswomen. They have suffered seriously in the past from headache. Now headache is a thing which I can not afford to have about, for common sense says that a saleswoman with a headache can not be expected to be efficient. In short headache does not pay. What can I do to get rid of it? Oculists tell me headache often comes from eye-strain, and eye-strain often comes from imperfect or ill-arranged light. Here is something for me to work out." So his lightning system was in part at least arranged with this in view; and he said that the amount of headache in his establishment was very much less than it had been, and of

course by so much his force was more efficient, and that meant more goods sold and more money made.

Let us look at our subject briefly in two phases as applied in factory and commercial management. These are:

- (1) Mechanical efficiency,
- (2) Human efficiency.

The first of these has had its wise advocates for many years, and even yet much needs to be done. The limiting factors of old, slow or weak machinery ought to be pretty well understood, yet some still cling to their ancient tools with a devotion proper in an archaeologist but dangerous in business. Repairs to venerable wrecks of buildings and apparatus are still made rather than consign them to that kindly burial which is their due. Machines are crowded into space on the theory that the more machines the more output, whereas ten machines rightly spaced will produce more than twelve so installed that the production of them all is held back, even a few minutes daily, because of crowding. It may be costly and inconvenient to put in a new engine, but the plant that is under-powered eats a hole in its own profit which appals the owner if he has executive imagination enough to see it. Unwise savings limits efficiency sadly.

To these sins may be added such as the keeping of costs in one's head, as is still quite common. The man who only knows at the end of a year whether he has made or lost money is always some months behind date, without being able to say how things have gone meanwhile, and never can tell save by the merest guess whether one or more of his different departments operate at a loss or profit. It is common to have leaks in one division made good by gains in another or vice versa—the average concealing the facts in both cases.

Not a thousand miles from Cleveland were six prosperous concerns in one industry; that is, they thought they were prosperous, for they paid dividends. It fell out that an examination was made of the six. The best was found to be running at 78 per cent efficiency and the worst at but 30 per cent, the result in each case being reckoned upon what was not only possible but fair by using the best methods with the plant each had.

I was employed once in a foundry and machine-shop where the secretary of the company did what he called "taking the time." He went to a foreman and asked him how many hours he thought a certain order took, and his foreman's opinion was put down in a notebook. When these results were brought to me I pointed out that the number of hours' labor thus stated did not conform to the total hours on the payroll. This troubled the secretary, and when I refused to accept his memoranda until they did conform to the total hours for which wages were paid, he took the difference between his total and that upon the wage-roll and distributed it as he thought best over the different orders. It is not surprising that I found a machine cost something like \$9,000 which sold at \$8,000, or that after the death of the founder, whose thorough knowledge of his trade had alone kept his business alive, it speedily died. Ignorance of exact facts about our business is a serious limitation on efficiency.

The Bible says severe things about unbelief, which I used to think were hard. My view altered when the superintendent of a mine in Pennsylvania refused for months to install and use a modern fan merely because it was so much smaller than its huge predecessor that he did not believe it would work. I have found heating apparatus intended for exhaust steam operated with live steam at many times the proper cost, only because the mill owner would not believe that exhaust steam was sufficient, and had never tried.

The manager of a large plant told me only a few days ago that his foreman was a master of the technique of his business but that he would not look at any new thing. It required the death of the chief engineer of a steamship company to permit the use in their vessels of modern apparatus which the navies and merchant marine of the world had in common service. Unbelief is an expensive thing, and sometimes in its results throws a strange light on the unbelievers. About 1828 my grandfather was carried by the crowd in the New York produce exchange out into the street and dumped there, because he had the hardihood to say a railroad would some day be built out to the Mississippi river. Those were the days of canals.

I shall purposely touch but lightly on the mechanical side of efficiency, because that part of