

Mr. Redfield: Tell us about it.

Mr. Barth: Yes, sir; I will be delighted to. I was making a personal experiment one day on a lathe, when I found working on the lathe right by me a young man who was turning up a number of axles, small axles of increasing diameter in the middle, and with long journals turned down on both ends. Finding that this man either knew so little about his job, or was so careless or indifferent, that he turned down the journals to a complete finish before he roughed down the middle. I turned to him in a most kindly, fatherly way, and suggested that it would be a far better scheme for him at least to rough down the middle portion of the shaft before he destroyed its original stiffness by turning down the ends. Without my expecting that any living being would take any offense at what I said, the fellow turned on me, and said that he did not propose to have anybody tell him how to do his job, because he knew his business.

I answered, "Young man, I did not mean any offense; I only meant to call attention to the fact that there is every evidence now that you either do not know your job, or else you do not carry out your knowledge," or words to that effect. He answered that he was not going to stand for anybody interfering with his way of doing things. By that time I imagine I got a little hot under the collar, and told him that he was making an ass of himself, a thing, however, which I told him, that I had often done myself, and frequently do even now, although I do it less often as I grow older.

Mr. Redfield: Now, you say—is that all there is?

Mr. Barth: No, sir; there is more to the story. It is a fine story. I said to him, "You will soon realize that you are not doing the right thing, and I sympathize with you." He answered that he was going to quit. I said, "Won't you reconsider this thing? I will not let a soul know what has happened, if you will go right back to work." He said, "I probably was a little hasty, but I prefer to leave." "All right," I said, "all right; but let me tell you one of the principles under which we work is this: Do not imagine, for a moment, that you can quit in this department and get a job in any of the other departments in this establishment, as has heretofore been the custom. You cannot do that. You will never, so long as you live—if our system is carried out—get a job in any other department of these works. But any time that you

will come back and admit that you did not act right and go back to your job, not a hard word will be said to you."

I got that story a little twisted. That was what I told his foreman to tell him.

Mr. Chairman: It may be corrected in the manner stated.

Mr. Barth: I told his foreman to see if he could not persuade the young man to go back to work. But he left and hung around the city for just one week, believing he could find a way to get into another department, in which the foreman was his personal friend; he had, in fact, already promised him a job before this incident took place.

Finding himself positively shut out, he went to a neighboring town, where he remained for about two months, after which, one day, very much to my satisfaction, I found the young man back in the same shop; and so far as I know he is there today. That is one of our principles. When a man admits he is wrong, we forgive him. We never persecute a man. We all make mistakes, and particularly as I have so often made mistakes myself by being too hasty, my sympathies with younger men doing likewise are very strong. I only feel sorry for them when they behave that way with me.

Mr. Redfield: You say this was the only case you ever had trouble with?

Mr. Barth: Any real difficulty. I would like to tell you about some other experiences.

Mr. Redfield: I wish you would. Make it as brief as you can.

Mr. Barth: The trouble is you cannot always make a long story short. I am not an adept at this kind of thing.

To show you how an ordinary mechanic, as a rule, absolutely does not understand his work—I say as a rule—I will give you further instances from the same shop, and show how we instruct the man in the kindest manner in the world and make him understand that we are his best friends and want to help him and show him. We avoid making him feel that we look down upon his lack of knowledge, knowledge he thought he had in full possession.

I found, in the same shop, a man milling a key seat in a shaft, which, from the particular manner in which the chips came off, my experience told me that it was a very soft shaft, and that, without

knowing anything about the work in any other way, it would be possible to make a great increase in the rate of cutting that key seat. I spoke to this man about it, and he said, "I have already broken one tooth in my cutter, so that if I speed up I am apt to break more." I said, "You do not mean to tell me you are running with a broken tooth?" He said, "Yes." I said, "You ought to know better; you ought to go back to the tool room and get another cutter without a broken tooth."

In the meantime I procured my slide rule for milling work and by means of this determined a suitable feed and speed for the cutter he brought from the tool room and then picked out the nearest to these that his machine had. I also sent for the foreman and other witnesses to see what I was doing to instruct the man.

The cutter just obtained was perfectly new, and its teeth were far longer and far more liable to break in case of overwork than the old cutter; but still in a mere fraction of the time previously taken I cut the key seat the full length, to the great astonishment of everybody concerned.

When we came to investigate about the cutter with the broken tooth we found two men in the tool room willing to swear that that particular milling cutter had had a broken tooth for the last two years, while the man at the machine had told me that he had broken it by attempting to do faster work than I found him doing. That is the kind of information we get in the shop, not because the men want to lie, but because there is a slipshod way of talking about matters and doing things. I mean in the ordinary average shop, while Yale & Towne's was supposed to be a well-run shop; and Mr. Towne was for years among the leaders of systems in this country.

Did I remove from that man his initiative? Did I not merely show him what really could be done, that is, instruct him? And did I not catch him using a broken cutter when he could have had a new one for the asking?

One man watching the whole performance noticed what I did not, namely, that the man, after the cut was finished, stopped the machine and ran the cutter backward over the chips in the seat cut, thereby running the risk of breaking its teeth by a fool move while it was not working. This probably had been the manner in which the tooth had

been broken before, and it shows the impossibility of trusting the judgment of the average good mechanic. They often break things by fool handling, and not in doing work.

Still another interesting case happened in this shop during the preparatory period of establishing a planning department and improving the shop equipment and thus before we really had begun to systematically take hold of the shop work.

In this case I showed a first-class machinist how he could run his tool on a lathe 80 times faster than I found him running it. The incident, together with some others of a similar nature, were recently related by me in an article entitled "Betterment of Machine-Tool Operations by Scientific Metal Cutting," which appeared in this month's issue of the Engineering Magazine. I shall later ask to have this article made part of this testimony.

Mr. Redfield: Were you present, Mr. Barth, and did you hear a description of a machine shop attached to a large New England mill in which it was believed by the foreman and by the owner that the shop was a very efficient one, in which it was pointed out to that owner that on a certain shaper this was running one-eighth of its standard capacity?

Mr. Barth: I do not remember that.

Mr. Redfield: Do you remember that statement being made at Dartmouth College?

Mr. Barth: That particular thing probably escaped me. Lots of things escape me because I am somewhat hard of hearing. However, I can bear that by showing you how I recently had a chance to increase a man's production an infinite number of times. It is not more than six weeks since I was called in to investigate the shops of the Fairbanks Scale Co.

Mr. Redfield: At St. Johnsbury, Vt.?

Mr. Barth: Yes, sir. Going through the shop, I saw all kinds of wrong things, from my point of view. I thus found a man sitting this way (indicating) at a planer, looking at his work and apparently watching the cut. When I came up to him he looked at me, then again looked at his work; and he and I looked at the work together, but without either of us saying a word. And if that man did not feel like the very devil in my presence, and with his foreman behind me, taking a chance as to whether I understood the work or not; for he was only pretending to work, having absolutely