

of pay in normal times, before the proposed cuts were made. When this proposition, after being presented to Mr. William Sellers, was turned down, my sense of justice was so provoked that I made up my mind to leave the company as soon as my contract time, which ran from year to year, was up, if I in the meanwhile could find half a decent opportunity.

I was also sore at Mr. Sellers for his attempt to keep my name off of a very important application for a patent on improvements on Emery testing machines.

I mention this incident to again emphasize the fact that I am fully aware of the injustice only too frequently wrought upon employees by their employers when they are too weak to resist them.

The opportunity to leave came through a friend in St. Louis who got me an offer to go with an engine building concern there, at \$2,000 a year—a big come down, particularly as I had saved but little of the \$3,000 I had been getting for the past three years—but as engine building was a new field for me, it was otherwise just what I wanted.

Mr. Redfield: With what company?

Mr. Barth: With the Rankin & Fritch Foundry and Machine Co., of St. Louis, a company which, to a great extent through my personal work, was brought up from losing money at the rate of about \$25,000 per year to where they were just able to carry themselves; but still under conditions such that, when McKinley's election did not bring immediate revival in business at a time when certain bonds fell due, the stockholders got fighting and tried to freeze each other out, with the final result that the business was closed down and disposed of piecemeal.

Mr. Redfield: How long did you stay there?

Mr. Barth: Just two years.

Mr. Redfield: What did you do there?

Mr. Barth: I had charge of the drawing room, but as I soon gained the confidence of my superiors, I was able to exert a great deal of influence on all the producing departments.

Mr. Redfield: Then where did you go?

Mr. Barth: While waiting for something more suitable to turn up I accepted a temporary position to design some special machines for the water commissioner of St. Louis. I stayed with him about three months, and then accepted an offer from the International Correspondence Schools of Scranton.

I remained there about one year and a half and then accepted an offer to teach manual training and mathematics in the Ethical Culture Schools of New York. After teaching there a school year of nine months I received a second offer from Mr. Taylor to take up with some of his work.

Mr. Redfield: When did you first meet Mr. Taylor?

Mr. Barth: A few years after I came to this country, when he was a frequent visitor in the drawing room of William Sellers & Co.

Mr. Redfield: After you got away from the Ethical Culture Schools, did you go with Mr. Taylor?

Mr. Barth: Yes, sir.

Mr. Redfield: What year was that?

Mr. Barth: It will be 13 years ago next June.

Mr. Redfield: 1899. Then you went with Mr. Taylor about 13 years ago at the Bethlehem Steel Works?

Mr. Barth: Yes, sir; however, I was not engaged by Mr. Taylor, but by the Bethlehem Steel Co.

Mr. Redfield: What did you do for Mr. Taylor?

Mr. Barth: I was engaged especially to attempt to effect a more satisfactory solution for the mathematical problems connected with the art of cutting metals and its application to the every-day running of machine tools.

Mr. Redfield: You heard Mr. Taylor's statement given yesterday, as to the development of the art, did you not?

Mr. Barth: I do not think I paid a lot of attention to it because I know all about it without listening to what was said yesterday.

Mr. Redfield: When did you first take up with the Taylor system of shop management?

Mr. Barth: I observed what I came in contact with at the Bethlehem Steel Co., where I was made machine-shop engineer after finishing the special work for Mr. Taylor which I have just referred to. As such I had to do with the reconstruction and respeaking, repairs, and maintenance of all machinery and tools in their large machine shop; and the introduction of the slide rules spoken of by Mr. Taylor. I was practically also chief speed boss.

Aside from this, I paid but little attention to the general management side of the system. But I like to tell you that Mr. Taylor first started me on my special work as a laborer to help run the experimental lathe used in connection with the

development of the high speed tool steel and on which numerous experiments were also made in connection with the development of the art of cutting metals. Mr. Taylor wanted me to become thoroughly acquainted with his method of testing tools and making experiments; and inside of two months I took charge of all the experimental work for him and also set to work on the mathematical part of the work.

The problem was one for which it seemed all my previous training had especially fitted me, and inside of another three months the slide rules were developed into practically the same form in which we still use them.

Mr. Redfield: Now, Mr. Barth, have you been engaged for some time in introducing this Taylor system into factories?

Mr. Barth: Yes, sir; I have practically busied myself with nothing else ever since leaving the employ of the Bethlehem Steel Co. in the fall of 1901; that is, during the last 10 years.

Mr. Redfield: Into how many factories have you introduced it?

Mr. Barth: Well, let me begin and tell you how I got into this work. I had no intention, on leaving the Bethlehem Steel Co., when Mr. Schwab took the company over, to go into the system at all; but Mr. Taylor thought that I had shown special qualifications for undertaking the work, and so he got in touch with William Sellers & Co. and persuaded them to engage me to conduct further experiments in the line of the development of the art of cutting metals, with a view of introducing our slide-rule method of running their machines. Additional experiments were needed, because our investigations had up to that time covered only larger tools.

This work at William Sellers & Co. was gone into with a great deal of determination.

Mr. Redfield: They took up the work with a great deal of energy?

Mr. Barth: A great deal of vim, you might call it. The man most interested in the matter was their general superintendent, Mr. John Sellers Bancroft, who, unfortunately, however, left the company when we had only made a beginning, and was replaced by a man who had not the slightest conception of what we were trying to do; so that, when after 15 months of good hard work the experiments were all completed, and a great many slide rules had already been made, Mr. William

Sellers, feeling that he was now too old to push the matter through without a superintendent willing and able to do his share of the work, concluded to lay the matter aside for the time being; and as Mr. Sellers died shortly afterwards nothing has since been done there.

Then Mr. Taylor secured me a position with the Link Belt Engineering Co., of Philadelphia, to introduce the mechanical part of the Taylor system, and there to make use of the information for which Wm. Sellers & Co. had paid, which, however, had become our property as well, in accordance with Mr. Taylor's agreement with the company. Other men were at the same time selected to take up the general administrative end of the system, Mr. Taylor's only compensation for his personal services being, that I was to be permitted to be present at all his visits to the works; that is, on the company's time, and hence at their expense.

In a year's time matters took such a turn, however, that it became necessary for me to step in and look after the other part of the work also, so that after a while the whole burden of standing between Mr. Taylor, who did not visit us any too often, and the company itself, in the introduction of the system fell on me, and during the following two years I might have been considered as having served the last part of my apprenticeship under Mr. Taylor.

Mr. Redfield: This was at the Nicetown shop?

Mr. Barth: Yes, sir. I was, all told, with the Link Belt Co. nearly five years, during much of which time I also had other engagements, however.

Mr. Redfield: Now, tell us, taking that as a starting point, Mr. Barth, as briefly as you can, what conditions you found at the Link Belt Engineering Co., what you did there, and what the results were.

Mr. Barth: I can tell you the condition I found was that while the Link Belt Engineering Co. for years had been looked upon as having an exceptionally well-run shop, and they particularly prided themselves on being able to bore holes better than anybody else in the world, I found that from my point of view as gained by the experience I had at Bethlehem, their shop was very poorly run. For two years they had had high-speed steel in the works, but they neither knew how to treat nor grind it so as to get any benefit from it. They