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## Some Thoughts on Training Apprentices.

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Amongst the many questions that give the present day superintendents and master mechanics food for earnest thought and consideration, one which holds a very prominent place, is the technical education and training of apprentices. Having taken considerable interest in this matter, I have ventured to give you some of the impressions received from my study of the subject, both from personal observation and otherwise. The first thing that strikes the student of this subject is that nearly every technical school and machine shop in the country has a different system of education. In fact, there seems to be about as many different conceptions of what a machinist or an engineer ought to know as there are teachers trying to instil that knowledge. Therefore, although not a teacher, I suppose I am in order in giving my humble opinion.

I read somewhere once that the training of a machinist could be placed under three headings. First, cutting metals with intelligence; second, putting together the work out; and third, the laying out and inventing means of doing it. Now, although the first was the only division mentioned as requiring intelligence, I presume that it will be granted that there are degrees of it wanted in the two latter. But the thing which impressed this paragraph more especially upon my mind was the peculiarly broad divisions which were made of the whole education of a machinist.

As I take it, the machinist in his simple form is one who can manipulate the various classes of machines used in the average shop, with sufficient intelligence and understanding to make him a paying investment to his employer. Now, to do this, and do it well, it is not indispensable that he should have any training either in mathematics or drawing. I call to mind just now one of the best workmen I ever knew, one who could not sign his own name, yet in every way he was a thoroughly capable machinist. What he thoroughly capable machinist. What he might have been had he had the present-day education I am curious to know. And that is the reason we who take an interest in this matter are so anxious to see some good form of technical education more generally adopted than stands at present. It has been a great pleasure to me to see how many large corporations on this continent are going so seriously into the matter of education. I must say, however, that I think that several of the conditions under which this education is given by some of these companies are rather against my ideas of what should be. To begin with, I think that compulsory

education right through is a mistake, and in many instances a waste of the company's money and the teacher's time and temper, as quite a proportion of the lads in a shop are not gifted with the ability or ambition to make satisfactory students, although they may make good workmen, and are quite content to be machinists and nothing more, which is very satisfactory in its way. As you know, "if we are all skippers, there will be nobody to row the boat ashore." But I would insist upon attendance at classes for the first year apprentice. Then if it

either mentally or physically to give his attention to the work at night, unless he is particularly anxious to improve himself. All those present of my generation remember that the way we imbibed our technical knowledge was through the medium of the evening classes, to all of which we went, not only voluntarily, but gladly paying for the same, and therefore we look with somewhat envious eyes on the opportunities which the present-day apprentice has of obtaining a first-class technical education. This is why I say that it is only the lad who is anxious to improve himself who gives his whole attention to the night class. But how much better attention he could give if he were not already bodily and mentally tired, those who have been through the mill know.

It used to be the pride and the pleasure of a mechanic to be able to handle any machine in the shop. With the coming of the specialist, however, this is not so much the case. He should have a fair knowledge of the working of all the various classes of machines, and for this reason in many shops the apprentice is first placed in the machine shop, and if he prove apt at machine work, is kept at it for a time considerably out of all proportion to the time he has to serve, and becomes a good deal of a machine himself. In my opinion, a lad should be sent first of all into the erecting shop for a few months, where, working with a journeyman or an older apprentice, he gets a general idea of where the various parts of the machine or engine go and how they are put together. Thus, when he starts his training in the machine shop, he brings more intelligence to bear on the job which he is machining.

Having arrived in the machine shop, it is of the utmost importance that his career should be closely followed and charted, so that he should, as we said before, get a general knowledge of the various classes of machines. I use the word "general" advisedly, as it is not to be expected that the average lad will become expert on any one machine in the time he can be kept

there if he is to get a fair passage through the shop, although, in these days of contract prices and standard times, he is required to give pretty close attention to the work in hand if he is to earn any bonus. Here is where the necessity for charting and following up comes in, as two reasons combine to keep the bright youth stationary in the shop. One is, if he becomes proficient in any one class of work, he finds himself at the end of each month with a good bonus, which he is loth to give up for a problematical one on another or untried machine. In the second place, the foreman who is harassed with the necessity of keeping the other departments going with finished



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is found that the lad has not the necessary mental equipment but is making fair shop progress, I would allow him to drop out of the classes and stick to his work. "You can bring a horse to water, but you cannot make him drink," and it is just as hard to make an apprentice stick to his mathematics and drawing if he has no heart in it. In the case of the lad who is not making good in the shops either, the best thing to do is to drop him, and to advise his parent or guardian to try him at something else.

Again, I think that all classes should be held in the daytime, for I consider that when a lad has done ten hours solid work in the shops during the day he is not fit