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Piece-Work vs. Day Work in Machine Shops.

(Continuation.)

As stated in the first paper, men do not work for the sake of working. Labor is not in itself desirable; it is the results of labor which we desire and which constitute the sole natural incentive to labor.

This universal disposition of mankind to supply their wants with the least possible exertion, which is in itself right, and to which we are indebted for all our progress and improvements, is the prime cause of slighted piece-work. Some manufacturers leave it to their customers to discover that this tendency has resulted in poor work being done, while others have men whose especial duty it is to discover this before the work is accepted from the workman; and here lies the main secret of the success or failure of the piece-work system.

Payment by the piece is undoubtedly the most fair and just system where the work is of such a character as to admit of it, for each man is then paid in exact proportion to his ability, but it is all important that there should be some definite standard of workmanship which the finished work must conform to, and it is of equal importance that there should be some one to see that that standard is maintained and adhered to.

In the most fully organized shops where piece-work is done, there is such a person, called the inspector, who has nothing to do but to apply gauges and various tests to the work as it comes from the workmen, and reject those pieces which are not fully up to the standard. In shops not so large this duty is performed by the foreman, and, in such a case a double responsibility rests upon him which, unless carefully discharged, invariably results in injury to all concerned.

He must bear in mind that no matter what the original standard of workmanship may have been, each new piece of work, as it is accepted and paid for, becomes a real standard of that shop. If each is a little further below the original standard than the piece preceding it, one result will be an increased production of pieces and augmented earnings by the workman. This is apt to be followed by a demand for a reduction of prices. This reduction of prices being made, it is followed by a still poorer quality of workmanship, thereby increasing the production and a repeated reduction of prices, until finally a point is reached at which it is utterly impossible for the men to do anything resembling decent work for the price paid. At the same time the selling prices of the finished articles may have been so much reduced, under the pressure of competition with other manufacturers employing better means to reduce the cost of production, that it is impossible to restore things to a satisfactory basis, and whether the selling prices have declined or not, an increase of piece-work rates is a rare occurrence. Where things go on in this way the workmen, the foreman, the proprietors and their customers are very apt to become disgusted with piece-work. Yet the trouble is not with the system of piece-work—the workmen are to blame in a great many cases. They do their uttermost to produce a large quantity of work in a specified time without any regard to quality, thereby earning more per day than the proprietor is willing their earnings should be; consequently a reduction of prices follow. Some shops have adopted a limit sys-

tem in connection with piece-work. By this system workmen are not allowed to produce over a certain amount per day, thereby keeping their earnings to a standard. This system also prevents the workmen from bringing a reduction of prices upon themselves. The main cause of the failure of the piece-work system is due to the absence of an important and indispensable part of the system. It should be the duty of the foreman to see to it first that the standard of workmanship is not reduced, but that every piece accepted and paid for is fully up to the mark. Then this point being secured, if by the introduction of improved methods, or by more energetic work on the part of the men, there is increased production and earnings, both parties will know just who is entitled to the credit therefor. So far as I have observed, the system of piece-work, when managed properly, is usually satisfactory to all concerned, though there are of course some kinds of machine work to which it is not adapted, and its failure can in almost every instance be traced to persons not fully understanding what was required to make it satisfactory.—*To be Continued.*

MACHINE SHOP APPRENTICES.

To young men working as apprentices at the machinists' trade and who are dissatisfied with their shop, thinking they would be likely to get better opportunities in other shops, we would say by way of reply to several points raised by such action, that it is almost invariably bad policy for an apprentice to leave a shop in the middle of his apprenticeship. An admission that he has done so is about the poorest recommendation he can carry to a strange shop. On the contrary, the fact that he has worked out a regular term of apprenticeship is one of the very best recommendations he can have. It not only indicates that he probably knows something about the trade, but indicating as well that he has perseverance, a fixed purpose and a sense of honor. I do not believe there is a decent machine shop in this country where industry and a determination to do the best under all circumstances is not appreciated, and where, in the end, it will not be rewarded.

If these young men believe to the contrary of the shops in which they work, they are mistaken. Apprentices are taken into machine shops to make money from their work. There may be along with this a feeling that it is no more than right to do something towards keeping up the supply of skilled mechanics, and perhaps there is also a little disinterested benevolence. But the first reason given is the chief one. This being so, it is not reasonable to suppose that an apprentice will be kept on work that could as well be done by a laborer at about one dollar a day, when he is competent to do the work of a journeyman to whom twice or three times that amount must be paid. In our experience such things are not practiced.

Apprentices working in a shop where ordinary good work is done are often carried away with the idea that they would be much better off in a shop noted for an extra fine class of work, not knowing that in such shops the finest parts of such work are not given to apprentices. A young man going from a shop of the former kind to one of the finest shops in the country

would find himself doing just about the class of work he left. If his opportunities for becoming a good workman were a little better, the probabilities are that his opportunities for becoming a mechanic would be less.

There is, it is true, a difference in shops so far as facilities for learning a trade are concerned, but this is something that should be thought of before entering into an engagement. There is more to be learned in any good machine shop than a boy can learn in three or four years; and if all the surroundings are not the most desirable, the deficiencies may be largely overcome by increased diligence. One thing is reasonably certain, and that is that there is scarcely a shop in this country where some things can be learned that cannot be in others.

Our advice to every apprentice having entered into an engagement to work a certain time to learn a trade, is to **STICK TO IT** every time, take advantage of every opportunity to learn all you can, and you are **SURE TO SUCCEED.**

EXPERIENCE.

Scarcely any of the modern arts are practiced in these days without the help which is to be derived from the experience of men who have, in the past, practiced these arts.

The knowledge resulting from this experience may be imparted from one person to another, and from one generation to another, in various ways: by word of mouth or by written directions, and these written directions may be placed in book form and become a part of a common fund of knowledge on that subject, but no matter in what form it presents itself, its value should be estimated upon the grounds of its accuracy and the amount of experience from which it is derived.

The modern science of mechanics as studied by mechanics who make a habit of reading the experience of others, and as practiced by the greatest and most successful mechanics of this and other countries, is made up of the experience of mechanics who have, in the past, had their success and failure, and whose success and failure, and the causes which brought them about, have been recorded by historians. The man who should assume that he was a "born mechanic," competent to direct the movements of any mechanical department satisfactorily, by reason of his superior talent, or by reason of the knowledge gained from his own individual experience in practice, and without having availed himself of the knowledge of the art, which is to be gained by the study of the recorded experience of others, would be likely to be regarded as the possessor of much more self-praise and vanity than ability. No manufacturing concern would think of entrusting such a man with the management of its mechanical department.

The bulk of knowledge in possession of the world to-day is derived from the recorded experience of preceding generations. No man, however talented he may be, nor however wide his individual experience, can hope to possess as much practical knowledge of his business as he who, in addition to his own experience, adds the experience of others who have trod the same path. In no department of human knowledge does this truth hold good more than in the science of mechanics.

For hundreds of years men have been constructing machinery. Sometimes they have

been entirely successful and at other times have made failures. From these failures, no less than from the successes, has been built up the science of mechanics, or machine design.

However wide the experience of any mechanic may be, it can by no possibility extend over more than a small fraction of the field covered by this recorded experience. Personal experience is, of course, necessary for success in any mechanical pursuit, and he who is without it is at a great disadvantage, but on the other hand, he who knows nothing of the experience of others knows very little, and is also at a disadvantage.

Nearly all the mechanical works, and all mechanical papers published, are the direct result of experience of mechanics with the experience of others added to his knowledge. Experience is the best of teachers—without experience we are unable to accomplish much. Mechanics must necessarily have experience before they can become experts, and must add the experience of others to his own knowledge. In addition, if he despises the experience of others and boasts that his knowledge is the result of his own experience, he is boasting of the narrowness of his knowledge of his business, and makes himself ridiculous.

G. E. D.

FROM SAVANNAH, GA.

For the Journal of United Machinists and Mechanical Engineers:

Last fall, just before election, when the railroad companies all over the country were scheming and forming political clubs among their employes (and many of the latter, it is to be deplored, were so ignorant and blind to their own interests as to do all in their power to help them defeat men who were opposed to trusts and great monied corporations), I stood and listened for a few minutes to an address that was being delivered by the general manager of a large railroad system to the workmen in one of their shops in this city. He ordered the shops shut down, so that all might have a chance to hear, while he reminded them of how vastly important it was that they should co-operate with the roads in the coming elections. He told them that co-operation was something very near to him, and while in New York he had gone to considerable trouble in hunting up the history of great corporations. He spoke of what co-operation had accomplished in England and what an immense power it was assuming here in this country. He certainly left the impression on my mind, at least, that railroad companies look upon it as being their most potent agent in gaining great power, and grinding out of the people millions and millions of dollars.

Well, I am not sure that this railroad manager would think that co-operation was such a good thing for the workmen, but anyway it gives me pleasure to write that the machinists of this city seem to have partaken somewhat of the spirit of this disciple of co-operation. They seem to think that if it is such a good thing for the wealthy, why would it not be good for those who, by hard labor create this wealth? So they held a meeting a couple of weeks since and decided that they must have a Lodge of United Machinists and Mechanical Engineers here, the better to enable them to co-operate with their fellow workmen all over this broad and beautiful land of ours, and demand their just rights,

which in far too many instances have been trampled under foot. They wrote to the Lodge in Atlanta, informing them of their desire, and they lost no time in sending us a worthy brother to start us in the work. We now have about forty chartered members, and if you wish to see a lot of earnest, determined workers, just take a peep into our Lodge room some evening. It is true we are not very well versed in parliamentary usages, but we have fellows holding offices who have that grim determination about them to learn and succeed, with no such word as "can't" in their vocabulary.

I am going to write you again soon, and tell you some of the good reasons the machinists have for uniting, in this city particularly. Will try to send you the names of several subscribers next week. JEFF.

Below, we give a copy of a shop order and workman's report, which has been sent us, and which will be found very convenient in keeping time on work in shop:

Order No. 2682. February 15, 1889.
For JOHN SMITH,
Thompson, Georgia.

Sends engine to have cylinder bored, new rings put in, valve faced, crank shaft straightened, and any other work done that it may need.

WORKMAN'S REPORT.

Turned in Feb. 21, 1889.

KIND OF WORK.	DAYS.	HOURS.
Boring Cylinder, - - -	1	2
Making New Rings, - - -		9
Facing valve & straight'g rod		4
Work on Crank Shaft & Pin,		3
6 New Studs in Cylinder,		4
Setting valve & filing brasses		5
	3	7

PUT DOWN ALL MATERIAL USED.

KIND OF MATERIAL.	NO. OF LBS.
Blank for New Rings, - - -	40
Iron for Studs, - - - - -	4
Gum Packing sent with Engine,	12
Babbet Metal to Babbet Bearings,	16

Name of Workman, BILL JONES.

Workman Failing to Fill Out the Above will Forfeit his Time on Above Work.

J. W. COWHIG,
Practical Machinist and Draftsman,
ATLANTA, GEORGIA.

Roster of Lodges.

- Atlanta, No. 1, W. L. Dawley, 298 E. Fair St., Atlanta, Ga.
- Unity, No. 2, John Hoffman, Florence, S. C.
- Augusta, No. 3, Wm. Pendleton, 1118 Green St., Augusta, Georgia.
- Mobile, No. 4, Dennis Cashen, L. & N. R. R. Shops, Mobile, Alabama.
- Hanover, No. 5, C. M. Kelly, 719 Dock Street, Wilmington, N. C.
- Lone Star, No. 6, James Nellins, 9th & Mechanic St., Galveston, Tex.
- Fidelity, No. 7, E. Alexander, 300 18th Street, Birmingham, Alabama.
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- Marshal, No. 9, George Tamset, Jr., Box 42, Marshal, Tex.
- Richmond, No. 10, Joe P. Figg, 509 North 21st St., Richmond, Virginia.
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- Waverley, No. 19, Louis E. Beehler, Nickerson, Kan.
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- Savannah, No. 23, G. E. C. Auger, 163 S. Broad St., Savannah, Ga.
- Topeka, No. 24, J. R. Moon, 316 E. 1st Ave., Topeka, Kansas.
- Denison, No. 25, John H. Bevan, 400 E. Nelson St., Denison, Tex.

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