

of money (so-many pence per dozen pairs). I shall proceed on the assumption that the piecework system is being installed, and then later on deal with the differences between that and the premium system.

2. Tabulate all the different processes used in your factory. It will be obvious that a separate set of prices is required to cover different classes of footwear manufactured, but no attempt should be made initially to group operations that appear to be similar. Later, when detail prices are proved, price schedules may be possibly condensed.

3. Tabulate every detail operation in each process employed in the factory. In doing this take the clicking, machinery press-room, making, finishing, dressing, and packing departments one at a time. Next make a detailed list of all the operations under each process in each department. These detail operations should be the smallest practical individual units that can be clearly defined.

4. Identify every detail operation by giving each a number or symbol that cannot possibly conflict with any other figure used either on this system or for any other purpose in the factory. A straight-out numerical system is as simple as any. As new styles are issued the numbers go up, and as styles go out certain numbers become obsolete. The numbers can be kept small, however, by prefixing the operation number with a letter, the letter representing a certain pattern or process. The means is not important, but having a clear identification of every price is very important, because every employee or piece-worker will record his output and you must be able to check positively with him any point that concerns his wages or earnings.

5. Determine the net time required for all detail operations. To do this the time-study method is the proper one, by reason that the majority of the many detail operations in the shoe industry are of relatively small duration, and are essentially repetitious. In New Zealand trained time-study men most probably are not available, so the next best plan is for the factory-manager to select a man and train him as a rate-setter, or, alternatively, develop in each departmental foreman the methods of rate-setting.

The selection of a man as a rate-setter is one of the most important decisions ever made in a factory. He must be enthusiastic, studious, keen, capable of doing the work himself, and be mentally balanced to do the right thing by employees and employers and keep the respect of both. This is a high standard to expect, but it is necessary to have it. Successful working of any payment-by-results system means to the worker high wages and to the manager low costs.

Time-study work is really a stop-watch method, although not necessarily so. It requires that rate-setter (as I will now refer to this man) will study each operation separately as many times as is necessary to find out what is the minimum actual time required to perform every detail operation. He records on a simple form every study made, the "floor-to-floor" time of each operation, noting all elemental operations, irrespective of the number of pairs in the order. These elemental operations, such as "pick up shoe" and "set in machine" "adjust machine," "operate machine," "remove shoe," "replace in rack," will be recorded many times and subjected individually to a study as to necessary or unnecessary movements, accessibility of materials used, method of passing on, time spent sorting or getting, and so on, with a view to eliminating unnecessary actions and of improving any detail section of the operation.

When the minimum actual time is determined, then allowances for handling that the operator is required to do between jobs, allowance for personal comfort, &c., are added, usually in the form of a percentage. Each industry on its own peculiarities usually arrives at a figure up to 20 per cent. on this account. Finally, for doing the work at this rate the operator's piecework bonus is added to the previous figures. This, if done on a proper time-study basis, may be from 15 to 25 per cent. additional. The figure is higher as the fatigue factor comes into account. When piece rates are not time-study set, the allowances are usually less, because the rate-setter cannot have the confidence in his rates.

You will note that all rate-setting by time-study method must be done in times which need no conversion to money for premium working, but which for piecework must now be converted to money at the operator's own rate in order to give him a price on each operation.

Experience counts greatly on rate-setting work. The rate-setter becomes very expert in time. He gets to know every machine, each operator, and the materials, and when his data is complete he is finally able to set all new rates from the sample and specification with an accuracy that at first would seem impossible.

Before leaving this rate-setting question I would like to add a word of warning. This analytical method of rate-setting is a job for a serious man. It has been the means of revolutionizing manufacturing methods in all industries, and, conversely, has put those manufacturers who "know all about their costs," who "don't need new-fangled methods," into the second or last place in their industry.

To continue: It will be seen that considerable work has to be done in a factory that has heretofore not operated on piecework before any real start can be made. As the work develops, however, the totals for each pattern can be summarized, and a comparison is thus possible with other costings, so that at no stage is there a position of doubt as to actual results.

6. Get rates as determined agreed to by employees. Initially it is to be expected that the employees will not be able to assist, one way or the other, in accepting rates. Rates will appear too low, naturally, and an appeal for a fair trial and promise of a fair deal will have to be made. This at first will be difficult—it always is—by reason that there is a distinct difference in the speed of a piecework shop and a day-work shop. Time and patience will have to be expended in getting things right, in removing the causes of delays, which the operators will be bound to complain of. The only course for a manager to pursue is to be open and frank with the men, to explain how the rates are arrived at, and to appeal to them for their co-operative action. If you get it loyally, then their progress as well as that of the factory is assured. Eventually, from past experience, the men will thoroughly understand the process and method of the system and want to work no other way.