

PLANNING SHEET FOR ESTABLISHING PROPER NUMBER OF EMPLOYES BY CLASSES FOR WEEKLY PRODUCTION SCHEDULES (SCHEDULE No. 2)

Operators per 100 = Number of operators required to turn out 100 garments in a 44 hour week  
 Quantity scheduled = Number of garments (in hundreds) scheduled for the week  
 Total operators = Quantity scheduled multiplied by "Operators per 100"

STYLE OF GARMENT	QUANTITY SCHEDULED (in hundreds)	OPERATIONS											
		Seaming		Facing		Sleeve making		Finishing		Button-holing		Towels & Aprons	
		Oper. per 100 coats	Total oper.	Oper. per 100 coats	Total oper.	Oper. per 100 coats	Total oper.	Oper. per 100 coats	Total oper.	Oper. per 100 coats	Total oper.	Oper. per 100 coats	Total oper.
<i>Coats</i>													
No. 1 Coat.....	18.00	0.101	1.82	0.292	5.25	0.264	4.75	0.226	4.05	0.056	1.01		
No. 3 Coat.....		0.109		0.196		0.264		0.226		0.051			
No. 4 Coat.....		0.111		0.196		0.264		0.226		0.051			
No. 6 Coat.....		0.123		0.236		0.264		0.226		0.063			
No. 8 Coat.....	27.00	0.113	3.05	0.244	6.59	0.264	7.13	0.226	6.10	0.037	1.00		
No. 9 Coat.....	27.00	0.119	3.22	0.237	6.40	0.264	7.13	0.226	6.10	0.051	1.38		
No. 11 Coat.....		0.111		0.193		0.264		0.226		0.051			
No. 12 Coat.....	30.00	0.150	4.50	0.376	11.28								
<i>Aprons</i>													
No. 1 Apron.....											0.058		
No. 3 Apron.....	12.00										0.057	0.68	
No. 5 Apron.....	18.00										0.078	1.41	
No. 6 Apron.....	20.00										0.072	1.44	
No. 6L Apron.....											0.072		
No. 11 Apron.....											0.078		
Bungalow Apron.....	36.00										0.458	16.50	
Towels.....	90.00										0.010	0.90	
Total Operators Required			12.59		29.52		19.01		16.25		3.29		20.93

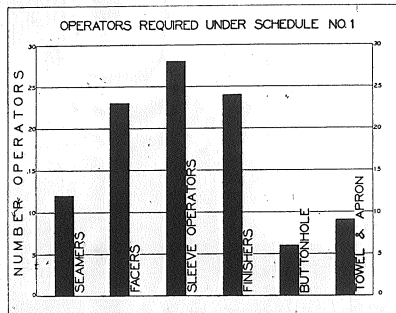


Figure 3

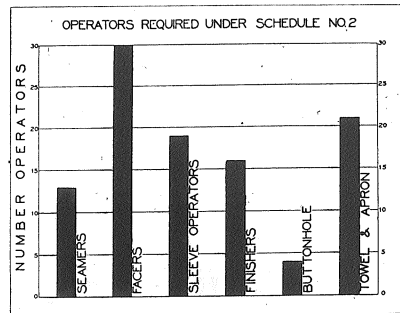


Figure 4

adjusting the schedules, however, it was found that this lost time could be practically eliminated.

In practice, then, it is possible quickly to figure in advance from the standard times how long is required for each item of a schedule, and this can be done by the unit time method whether the styles are new or old. Then either the schedule can

be adjusted to fit the operatives, or, if this is impossible, as it frequently is in shoe shops because of hand-to-mouth buying, the number of operatives required for each daily or weekly schedule can be figured in advance so that the foreman will know how to provide the necessary force to turn out the scheduled work.

### Cost Reduction Through Scheduling

Such scheduling as this has a remarkable effect in reducing costs in a department. If work is on a piece work basis, the employer frequently fails to recognize the fact that loss of operating time is costing him anything. As a matter of fact, since it is the weekly envelope that counts rather than the price per piece, even higher incentives are necessary with poor scheduling in order that the workers may earn fair wages. Frequently, in fact, through proper scheduling, workers may receive appreciably larger earnings even with lower piece rates. Another factor of saving is in keeping to a minimum the number of indirect day workers. It was found in practice, for example, that the introduction of scheduling of this kind in the stitching room of a shoe shop reduced costs ten per cent, while the same piece rates were maintained and the earnings of the operatives were unaffected. In one case, this reduction in cost was effected by eliminating peaks of production which formerly had been taken care of by keeping an excess of day workers.

Furthermore, by such co-ordination of schedule, waste time is naturally eliminated, a freer flow of work through the shop secured, time in process shortened, and goods are produced and delivered on schedule time.

### Ineffectiveness of "Approximate Times"

Frequently the remark is made that this scheduling by times is all very well but that approximate or estimated times will serve the purpose, especially when they are figured backwards from the ordinary piece rates, and even though these have the common large inaccuracies. Experience shows that this is not the case. In order properly to balance the work it is just as necessary to work out time standards accurately as it is to secure well balanced incentives. For example, practically all piece rates based on past records or comparisons contain many items which are inaccurate by more than fifty per cent. These inaccuracies throw out the entire program of the schedule.

In many instances scheduling by exact times is as much superior to scheduling by approximate times as the latter is superior to haphazard scheduling. In other words, the results are not obtainable by half measures.

### Quality

Quality is improved by time standardization and work carried on under incentives is of a higher grade than ordinary day work, provided the incentives take this factor into account by giving the workers special credit for satisfactory quality. In certain industries, such as the continuous processes of pulp and paper mills, incentives may be based entirely on quality and maintenance of standards, with no time element entering in directly.

### Importance of Time Study in Fixing Sales Prices

Time study enables the accounting department to translate the normal cost per hour into a standard and accurate unit cost of product, and the sales department to sell the product on a fairly stable and unchanging manufacturing cost. The sales department also can feel fairly well assured that manufacturing costs on this accurate basis are to be adhered to by the manufacturing department. Time standards insure uniform labor costs and are the means of accurately comparing different types of product. The importance of this factor is being recognized by only a comparatively few business organizations. Even at the present time selling departments are often unable to use cost figures supplied by the costing department on account of the radical fluctuation in actual costs, due to increased or decreased actual expense and increased or decreased plant activity.

### Rules for Time Study\*

Earlier in the paper the fundamental and essential principles of time study are presented. Its practical uses as a tool of management are also outlined. It remains, however, to enumerate briefly certain important details of the process of time study, the use of the stop watch, the taking of the observations, and the development of the standard times.

1. *Organization.* Time study is a function distinct from plant operation. In a small plant one man only may report to the manager; in a large plant a "Methods Department" should be established to handle time study, rate setting and the

\*See William O. Lichtner, "Time Study and Job Analysis," The Ronald Press, New York, 1921. Not only is time study practice covered in full detail, but numerous illustrations are given, showing the results of "time study" and the way to train the time study operative.