

#### IV. INVESTIGATION AND RESEARCH, THE BASIS OF STANDARDIZATION

How is standardization accomplished in the office? In precisely the same way as in any other institution. First, a study of the routine is made; then a study of the operation and possibly a study of documents and records. Finally, work methods are motion-studied, a definite task set, and usually a wage incentive applied.

##### 1. INVESTIGATION IN THE FACTORY OFFICE

Analysis showed that 5,490 minutes (54.9 minutes per order) were used on operations directly connected with the order routine, and 10,710 minutes on other operations only indirectly related to the handling of orders. Still further analysis showed that the total actual time required to perform all operations directly connected with the orders was only 30.25 minutes. The actual net time required was found by taking time studies of a quantity of each operation, ignoring all interruptions or delays of an organizational character. This investigation showed, without question, that on the direct operations 24.65 minutes of time were being wasted or lost, and furthermore, exactly where it was being lost. It disclosed the following things:

A. There was not an even flow of the work;

Caused by:

- Irregular division of operations
- Work being passed on in uneven quantities.
- Two "necks" holding up work.

B. There were daily periods of idleness of short duration which passed unnoticed by the management.

As a direct result of the preliminary analysis of the order routine alone, three clerks out of a total of ten were saved, without in any way changing the methods.

Analysis of the operations showed that some were absorbing much more time than seemed necessary. For example, every order had to pass through the credit department and be passed upon by the credit manager, in spite of the obvious fact that many were from responsible firms with old established credit ratings. Operating upon the exception principle, the credit limits of those whose credit was known by experience to be satisfactory was marked upon the customer's card. This plan not only put the order through the routine more rapidly, but allowed more time for the credit department to do its work properly on the cases which required its attention.

This analysis showed also that orders were passing through the routine in uneven quantities. This great source of delay and lost time was immediately eliminated by so arranging the desks that orders passed from one clerk to another one at a time, instead of in batches, effecting practically continuous production.

Considering all changes made in the routine handling of orders, there was a total saving of eight clerks out of thirty-six, a saving of twenty-two per cent.

A form used to analyze an operation is shown herewith (See Figure 8).

ANALYSIS OF OPERATION SHEET			
Client: _____		Name of Operation: _____	
Read by: _____		Date of Observation: 10-3-24	
Approved by: _____		Person making: McC.	
1. Describe operation. 1. Count orders for departmental periodic report. 2. Batch and get orders together to be handled, Future post. 3. Separate mail orders. 4. Irregular shipments from branches hold and get cards. If cards are attached to orders stock shipments are sent to Mr. Hathaway.			
2. How often done? Daily S.W. N. B.W. M. P. C. A.			
3. These done under bags, number of persons doing _____			
4. Source of order. Forwarding op. Invention Op. following Kardex			
5. Purpose of operation To arrange work in groups of similar types of orders.			
6. Is purpose justifiable? No. 7. Is it accomplished? No.			
8. Can it be accomplished otherwise? Yes-Incl. on orders flowing through in Mail Bag.			
9. Are other records available to serve same purpose? Record for dept. report should be kept by individual operator.			
10. Can any portion of op. be eliminated and still accomplish purpose? Describe Entire operation can be eliminated.			
11. Does any part of this op. duplicate work on any other? Yes			
12. Can op. be combined with another to advantage? Record for dept. report should be kept by individual operator.			
13. What is unit of work? Mass of orders and correspondence			
14. What is total time per day devoted to this work? 15 mt. - 30 ml			
15. What is not time required present method? (Time for one a number done)			
16. Describe equipment used			
17. Can equipment be changed to better op? No.			
18. Is flow of work continuous or interrupted? Regular - not continuous			
a. If interrupted can this be prevented? No.			
19. Are workers well adapted to work? No.			
20. Are workers interested? Yes 21. Are they expert? No.			
22. Do all workers use same method? Only one			
23. What incentives are used to encourage production or quality? No.			
24. Are there unnecessary motions of following sorts?			
Walking _____	lifting _____	Sorting _____	Talking _____
Standing _____	Handling _____	Rubber Stamping _____	Noise _____
Sloping _____	Reaching _____	Writing _____	Use of Eyes _____
Twisting _____	Handling _____	Filing _____	Repairing _____
Note: If insufficient space on this sheet use additional blank sheets - numbering sheets and questions.			

Fig. 8. Form for Analysis of Operation.

This shows a standardized method of analyzing an operation. The operation itself is unimportant. Every operation under consideration is analyzed in this minute fashion. A study of this sort inevitably leads to an improvement in the method.

Another sheet used to analyze a form, document or record is shown herewith to illustrate a still further standardized method of analysis (See Figure 9):

A survey was made of the reports which were being issued by the Statistical Department, with the result that several reports were discontinued and a number were changed to meet changed conditions. The

THE LEFFINGWELL-REAM METHOD OF ANALYSIS OF FORMS, DOCUMENTS OR RECORDS.		ANALYSIS OF EFFICIENCY OF FORM.	
Copyright, 1916, By The Leffingwell-ream Co., New York-Chicago		The information:	
Client _____	City _____ No. _____	From where does information come which is entered on form? _____	
Study made by _____	Name of Form _____	In what manner does original information come? _____	
Read by _____	No. or Symbol _____	Is there a cheaper or more handy method of getting the information? Describe. _____	
Approved by _____	Date of study _____ Study No. _____	Is information always complete? _____	
Note—In order to make your findings clear to the reader, attach to this analysis a copy of the form in question with sample entries, preferably made by a clerk now at the work. If more than one copy is made of forms, make a full set with sample entries that are subsequently made on copies. Show all the work done—the various entries made.			
DESCRIPTION OF FORM.			
General style or type:			
Unbound sheets _____	Size _____	Kind of Paper _____	
Loose leaves bound _____	Size _____	Kind of Paper _____	
Cards _____	Size _____	Kind of Paper _____	
Weight of paper: Light _____	Medium _____	Heavy _____	
Color of Paper? _____	Ruled lines? _____		
Color of Ink? _____	Printed lines? _____		
Do colors have significance? _____	What? _____		
How far apart are lines? _____	Horizontally? _____	Vertically? _____	
Spaced for typewriter? _____	Punched? _____	Perforated? _____	
How made? Check:			
Printed? _____	Mimeographed? _____	Blue Printed? _____	
Lithographed? _____	Duplicated? _____	Lithoprinted? _____	
Multigraphed? _____			
How used? Check:			
Typewritten? _____	Accounting Machine? _____		
Handwritten? _____	Billing Machine? _____		
Pen? _____	or Pencil? _____		
If any other machine but typewriter is used name it. _____			
How preserved after making? Check:			
Kept flat _____	Post Binder _____		
Bound with staples _____	Filed on shelves _____		
Bound with fasteners _____	Filed in cabinet or desk _____		
Bound with clips _____	Filed in card cabinet _____		
Ring binder _____	Filed in tub desk _____		
Tap binder _____	Filed in viable file _____		
Number of copies made? _____ How Made? Check:			
Pencil _____	Carbon duplication _____		
Pen _____	Duplicator _____		
Typewriter _____	Blue printing _____		
Billing machine (kind) _____	Photostating _____		
Accounting machine (kind) _____			
Study for possible savings:			
Can ENERGY or TIME be saved by:			
Making more than one copy at a time? _____			
Eliminating entries? _____			
Abbreviating notes? _____			
Eliminating writing by use of check marks? _____			
Eliminating writing by use of symbols? _____			
Eliminating lines? _____			
Spacing for typewriter? _____			
Horizontally? _____ Vertically? _____			
Changing sequence? _____			
Allowing more space? _____			
Reducing size to save space and energy? _____			
Using thinner card or paper for same purpose? _____			
Changing method of making? _____			
Rearranging information? _____			
Using rubber stamps? _____			
Putting sorting or filing data in right place? _____			
Having carbon inserted? _____ Carbonizing? _____			
Can MATERIAL be saved by:			
Reducing size of form? _____			
Cheapening quality of paper? _____			
Can SPACE be saved by:			
Reducing size of form? _____			
Reducing thickness of paper? _____			
Manner of binding? _____			
Manner of filing? _____			
Method of handling being changed? _____			
Describe savings checked above: _____			

Fig. 9. Pages 1 and 3 of a Form for Analysis of Forms, Documents and Records.

form of the Cloth Control Report was changed, so that the keeping of the records on which this report is based were reduced from thirty-five or forty hours a week, to six or seven. This resulted in the elimination of one clerk. Copies of orders from which the Statistical Department punched tabulating machine cards were formerly filed for an indefinite period. It was decided to throw these away immediately after the cards were punched. This resulted in a considerable saving of time. A twenty per cent reduction in the clerical work in this department was possible as the result of the preliminary survey. No attempt at standardization has been made to date. Detail operation analysis will undoubtedly yield a number of changes which will result in elimination of a considerable number of people. The method of making these analyses follows very closely the method used by Taylor engineers in factory work.

##### 2. INVESTIGATION IN THE DEPARTMENT STORE

In the department store the same methods of analysis and research are used as in the factory office.

An example of the great amount of research necessary in order to properly standardize, is illustrated in a test recently made of four standard bookkeeping machines. The customary way to decide upon a piece of office equipment is to ask other firms now using the equipment how they like it. The result is a multitude of opinions, some favorable, some otherwise; and the management is at last compelled to make a decision based usually upon very poor judgment because of lack of experience. The arguments of salesmen as to the merits of their machines furnish no better basis for decision, for as a rule salesmen are neither modest nor careful in their statements. In the store used for illustration, the department managers had practically