

CENTRAL LIBRARY

Birla Institute of Technology & Science

PILANI (Rajasthan)

651

Call No.

L434T

Accession No.

77043

Acc. No.....

77043 ISSUE LABEL

Not later than the latest date stamped below.

20

- I. *The functions of management (analysis)*
- II. *Using management analysis*
 - A. What work is to be done?
 - B. How much work is to be done?
 - C. What kind of work is to be done?
 - D. What resources are available for doing the work?
 - E. How long will it be needed to do the work?
- III. *Laying out the work (planning and scheduling)*
 - A. Determining how the work shall be done
 - B. Resources
 - C. Expenses
 - D. Scheduling the work
- IV. *Building the organization to do the work (personnel)*
 - A. Analyzing the requirements
 - B. Planning the organization
 - C. Standardization of personnel
 - D. Employment procedure
 - E. Training and developing office employees
 - F. Compensation of office employees
 - G. Nonfinancial incentives
 - H. Essential personnel records
 - I. Collective bargaining
- V. *Selecting and controlling the organization*
 - A. Determining who shall do the work that is to be done
 - B. Exercising supervision
 - C. Assigning the work to competent individuals
 - D. Control
- VI. *Supplying services needed by the organization*
 - A. Stationery and supplies
 - B. Mail and messenger
 - C. Telephone switchboard
 - D. Stenographic and transcribing service
 - E. Duplicating service
 - F. Filing service
 - G. Central correspondence department
 - H. Maintenance and repair of equipment
 - I. Providing good working conditions
 - J. Other services
- VII. *Improvement work in the office*
 - A. Office surveys
 - B. Analysis and study of present methods
 - C. Setting standards
 - D. Laying down a program of improvement work
 - E. Selling the organization on the proposed plans
 - F. Watching the progress of improvement work
- VIII. *Branch office work and control*
- IX. *Office building location and design*
- X. *Sources of information on office management*
 - A. Books
 - B. Magazines and periodicals
 - C. Reports
 - D. Proceedings
 - E. Management societies
 - F. Miscellaneous references

TEXTBOOK OF OFFICE MANAGEMENT

BY

WILLIAM H. LEFFINGWELL

*Late President, The Taylor Society and
National Office Management Association*

AND

ERWIN M. ROBINSON

*Professor of Management, Boston University,
Formerly General Office Manager, B. L. Oppenheimer & Company
The Liquid Carbonic Company*

INTERNATIONAL STUDENT EDITION

THIRD EDITION

McGRAW-HILL BOOK COMPANY, INC.

New York Toronto London

KŌGAKUSHA COMPANY, LTD.

Tokyo

TEXTBOOK OF OFFICE MANAGEMENT

INTERNATIONAL STUDENT EDITION

Exclusive rights by Kōgakusha Co., Ltd. for manufacture and export from Japan. This book cannot be re-exported from the country to which it is consigned by Kōgakusha Co., Ltd. or by McGraw-Hill Book Company, Inc. or any of its subsidiaries.

I

Copyright, 1932, 1943, 1950, by the McGraw-Hill Book Company, Inc. All rights reserved. This book, or parts thereof, may not be reproduced in any form without permission of the publishers.

To
**THE NATIONAL OFFICE
MANAGEMENT ASSOCIATION**

PREFACE TO THE THIRD EDITION

There is probably nothing new in office management as such. This does not mean that all office managers or all those who are responsible for the office-management function know all there is to know about office management. It does mean that there has been published or presented in one form or another—magazine articles, books, conferences, proceedings, reports, surveys, and college and university classes—practically every angle of office-management theory and practice.

The wealth of material available may be appreciated when it is realized that the bibliographies published since 1922 by the National Office Management Association alone total 314 pages of small type. Reckoning an average of 30 references to a page makes a total of 9,420 references to material that has been published on office management.

In addition to the 870-page handbook sponsored by the association in 1947, there were brought out in that year revisions of four other texts in the field. Supplementing the association's monthly magazine, the *Forum*, and its *Annual Proceedings*, all of the more than 100 local chapters schedule monthly meetings with papers presented by members and others possessing general or specific experiences in or knowledges of office-management practices. Many of these papers are printed for local distribution to chapter members. Some of the chapters also hold annual meetings and issue and publish reports of the proceedings.

It is obvious that if a student of office management should attempt to absorb all the available material on the subject he would soon find himself swamped in detail and overwhelmed by the magnitude of the task. Furthermore, because of differing viewpoints and experiences of different individuals, he would encounter puzzling contradictions with little or no guide to a wise choice of either policies or procedures. Every individual who has had experience in office management is to a certain extent limited in his viewpoint to his own experience. Not everyone is capable of taking a detached viewpoint and evaluating experiences, opinions, theories, and policies for what they may be

worth. Even the management consultants do not always agree with each other.

For the reasons stated, it is necessary, if one is not to give up in despair or make unnecessary and expensive moves, to provide some method by which the office manager, whether experienced or inexperienced, may determine for himself what should be done and how it should be done. The purpose of the present revision of Mr. Leffingwell's *Textbook of Office Management* is to provide such a guide. The material here presented has been arranged in logical, consecutive order and furnishes a sound foundation and a substantial superstructure for the orderly study and mastery of office management.

With such a foundation and superstructure the student of office management—whether he be beginner or experienced—will be able to appraise and evaluate for himself the worth of plans and ideas as they may apply to his particular problems. Indeed, in most if not all cases he will find that this book gives him all that is needed for the solution of any office-management problem as such. It may not give him all the answers—that would be too much to expect—but it will show him how to *obtain* the answers, thereby strengthening his own mastery of the subject and giving him the satisfaction of applying his own knowledge.

Since Mr. Leffingwell's principles of scientific office management were published in 1921, they have been reproduced and referred to year after year without change. This is not surprising when it is realized that Mr. Leffingwell's principles are based upon the scientific method, which is acknowledged by all scientists and researchers to be the accepted way of approaching the solution of any problem.

This revision of the Textbook, like the two previous editions, is based upon the scientific method. It is believed that, like the earlier editions, it will make many new friends in addition to continuing to please the old ones, who have been very generous and complimentary in their praise of the work. The author is grateful for this privilege.

EDWIN M. ROBINSON

WEST ROXBURY, MASS.

March, 1950

PREFACE TO THE SECOND EDITION

With the rapidly mounting volume of office work now being done, and the equally rapid increase in the number of office workers required to do it, effective office management is needed more than ever, for two reasons:

First, to be sure that the work is done quickly and well.

Second, to eliminate unnecessary work which causes delays and increases expenses without justification.

The office manager's task, then, is to get the office work done well, quickly, and at a reasonable cost. To be able to do this, he must know:

1. How to analyze the office requirements of the organization he is serving.

2. How to plan and lay out the work to be done.

3. How to select and assign competent office workers to do the work.

4. How to direct and instruct them in their duties.

5. How to control all the office operations for which he is responsible.

6. How to control and keep down the expense of all these items.

There is no room here for stumbling, for "trial-and-error" solutions. There is a pressing need for swift, sure-footed attack, for clear thinking, and for positive, intelligent action. More than ever is there a need for trained office managers who are able to apply the principles of management to the problems confronting them.

The problem of teaching office management revolves around two factors: determining the best order of presentation, and then presenting the material so that it may not be too difficult to understand, absorb, and master. Mastery of the subject is essential for the best results. Why try for anything less?

As a further aid to this mastery, nearly seven hundred questions have been prepared, covering adequately and searchingly every phase of office management, as presented in the text. In addition, some forty problems are included, thus providing the student with an opportunity to try himself and his knowledge. The illustrations have been chosen advisedly; they will bear close examination and re-examination.

To supplement his study of the text, the student should familiarize himself with the growing body of literature on office management, as represented by the reports and publications of the National Office Management Association and the American Management Association. Membership in one or both organizations will bring even more. It will bring the member into contact with office managers in active service, men and women who are in daily contact with the pressing problems of managing their offices effectively and economically.

Association membership will also provide the opportunity to ask questions; and the student member will find that office managers are just as eager to learn as he is. He will enjoy the mutual exchange of experience and theory under the stimulus of good fellowship. He will sit at the feet of nationally and internationally known authorities. Those students who had the privilege of hearing Mr. Leffingwell on his visits to Boston will never forget the experience.

As the student progresses in his mastery of the subject, he will find that not only will he come to have an increasing appreciation of what good office management involves, but, as a result of the systematic, step-by-step advance, he will eventually find himself able to approach with confidence any office organization or office-management problem and to analyze it and synthesize the answer, whether he ever heard of a similar case or not. After all, one test of thorough instruction is the confidence with which the student tackles a problem, applying the scientific method of attack. The purpose of this revision is not to change or even to restate the management principles which Mr. Leffingwell so well propounded and so ably demonstrated. Those principles have the same force and effect now as when they were first published in 1921. It is, perhaps, both singular and appropriate that the man who edited William Henry Leffingwell's first book, *Scientific Office Management*, should be the one to revise and bring up to date the last book of the man who first gave him a vision of the possibilities of properly organized and administered office work through the scientific method. The disciple is grateful for the privilege of sharing in the teachings of the master.

At this time the author wishes to acknowledge his sincere gratitude to William H. Evans, Secretary of the National Office Management Association, who read the entire text in manuscript form and offered many very valuable suggestions.

EDWIN M. ROBINSON

WEST ROXBURY, MASS.
January, 1943

PREFACE TO THE FIRST EDITION

The principles outlined in this work are the result of a long experience in "the harness" both as a clerical worker and, later, as an office manager. They were, for the most part, formulated some fifteen or twenty years ago and have been tested by a long and varied practice as consulting management engineer. This long trial has not caused any variation in their essentials, and while they are exemplified in most of my other writings on the subject, they are here presented in a more concise form, being especially adapted as a textbook for use in business schools and colleges. It may be mentioned here that, in all the years that have passed, they have never been called in question by office managers, who have found them invariably successful when put into actual practice.

This result of course might be expected, as they are, in essence, but the principles of scientific management formulated by that famous industrial scientist, Frederick Winslow Taylor, here applied to the conduct of the clerical office, and, like all scientific principles, they have naturally demonstrated their universal applicability.

Despite the current popular opinion that the office manager needs to know only a lot of systems and machines, there is an ever-growing group of executives who believe that the management of an office is quite as important a job as the management of a factory or any other industrial enterprise. Numerous instances may be cited where the managers of large offices have, by a consistent and logical use of these principles, saved upward of \$100,000 a year for their companies.

The young man entering business today need have no hesitancy in preparing himself for the position of office manager, for that position has proved a stepping stone to offices of great responsibility for many of our present leading executives.

To the student I leave the thought, originally, I believe, expressed by Aristotle, that "what we have to learn, we learn by doing." He should grasp every opportunity to visit offices and observe what goes on. He should eagerly accept a clerical position. If he is alert he

will find, even in the best managed offices, violations of some of the principles here enunciated (for no office is perfect) which, if corrected, would result in better service or more economical management or both. Let him not too hastily criticize, however, for a few diplomatic questions will show him that the correction of such violations is by no means a simple matter, but requires research, time, patience, and often a high degree of executive management. To discover a fault is easy; to correct it is often very difficult.

WILLIAM HENRY LEFFINGWELL

WESTFIELD, N. J.
December, 1931

CONTENTS

PREFACE TO THE THIRD EDITION	vii
PREFACE TO THE SECOND EDITION	ix
PREFACE TO THE FIRST EDITION	xi
I. THE RELATION OF THE OFFICE TO GENERAL BUSINESS	1
II. THE MODERN CONCEPTION OF OFFICE MANAGEMENT	26
III. ORGANIZATION, ADMINISTRATION, AND MANAGEMENT	51
IV. THE CONTROL OF OFFICE WORK	66
V. OFFICE ROUTINES AND THEIR CONSTRUCTION	81
VI. FLOW OF WORK	106
VII. FACILITATING THE PERFORMANCE OF WORK—OFFICE SERVICE—MAIL AND MESSENGER	114
VIII. CORRESPONDENCE AND TRANSCRIBING	143
IX. OFFICE RECORDS AND FILING	180
X. THE DESIGN AND CONTROL OF OFFICE FORMS	211
XI. STATIONERY AND OFFICE SUPPLIES	236
XII. OFFICE DESKS AND DESK SYSTEMS	258
XIII. OFFICE MACHINES	282
XIV. PROVIDING OFFICE SPACE	319
XV. WORKING CONDITIONS	335
XVI. OFFICE ARRANGEMENT	364
XVII. THE OFFICE WORKER AND HIS JOB	382
XVIII. THE EMPLOYMENT OF CLERICAL WORKERS	410
XIX. EMPLOYEE TESTING	429
XX. THE TRAINING OF CLERICAL EMPLOYEES	449
XXI. THE OFFICE MANUAL	467
XXII. COMPENSATION OF OFFICE EMPLOYEES	483
XXIII. SCIENTIFIC ANALYSIS	513

XXIV. THE MEASUREMENT OF OFFICE WORK	528
XXV. THE SETTING OF STANDARDS	548
XXVI. PLANNING AND SCHEDULING OFFICE WORK	573
XXVII. KEEPING OFFICE EXPENSE DOWN	592
APPENDIX. CHECK LISTS FOR OFFICE MANAGERS	607
INDEX	627

"The office has come to be recognized as a production unit whose efficiency is relatively as important as that of the manufacturing division."—HENRY BRUERE.

I

THE RELATION OF THE OFFICE TO GENERAL BUSINESS

Office *management*, as a function, is that branch of the art and science of management which is concerned with the efficient performance of office work, whenever and wherever that work is to be done. Office *work* is concerned primarily with the records of the enterprise—making records, using records, and preserving them for future reference. These records may be the history of transactions of the enterprise, represented by the accounts, by correspondence, by contracts, by orders, by inventories, by plans and schedules, by reports, and by written and printed memorandums of all kinds.

Just as bricks cannot be made without straw, neither can office records be made or preserved without adequate facilities for doing so. Office management is, therefore, responsible for providing the necessary facilities and equipment for making and preserving records.

Records may be made on paper, cards, photographic film, or punched cards and may be preserved in binders, drawers, boxes, or shelves. They may be made by hand or by machine. They may be made in a place called "the office," or they may be made anywhere else. Sometimes the term "clerical" is used synonymously with the term "office" to indicate the fact that the work is clerical work, whether it is done by a clerk in a place called "the office," by the foreman in a factory, or by a salesman on the road. The essential feature is the work itself, not who does it or where it is done. *If it is office or clerical work in one place, it is office or clerical work everywhere, regardless of where the work is done or who does it.* The ability to recognize office work as such, wherever it is done and whoever is doing it, is often the first step toward improving the performance of that work. That is, the principles applicable to

A FEW OF THE RECORDS KEPT BY OFFICES

Accounting records

- of purchases and sales
- of receipts and payments
- of changes in capital assets
- of costs of operation
- of profits and losses

Card lists of customers and prospects

- Calls made
- Letters written
- Sales literature sent out
- Orders taken
- Shipments made
- Complaints received
- Adjustments made

Lists of suppliers and vendors

- Items for sale (catalogues, price lists quotations)
- Purchases made
- Deliveries received
- Bills received and paid
- Complaints made
- Adjustments received

Lists of employees

- Information about them (application blanks and references)
- Rates of pay
- How they do their work
- Progress in the company

*Lists of materials (inventories)**Lists of equipment (condition, repairs, etc.)**Insurance records*

- Dates when policies expire
- Extent of insurance coverage

Production records

- Plans and schedules
- Orders of work

Advertising records

- Schedules of insertions
- Results obtained from advertisements

Salesmen's records

- Routes
- Expenses
- Sales
- Commissions

the performance of office work in one place are usually applicable to the performance of the same work elsewhere.

OTHER RESPONSIBILITIES OF OFFICE MANAGEMENT

Since records are made by human beings, office management also includes the function of personnel, that is, determining what abilities are needed for doing the office work effectively, providing those abilities in the form of competent individuals, and directing and supervising their efforts.

Likewise, since one of the factors contributing to effective performance is comfortable working conditions, office management also includes providing good air, adequate light, comfortable working temperatures, enough space to move around in, clean surroundings, and the absence of disturbing factors, such as noise.

One of the most important kinds of records which form the basis of office work is written communications, such as letters, telegrams, memorandums, and messages of all kinds. These papers are received at intervals during the day from the post office, the telegraph company, and from individuals in all parts of the organization. In order that prompt and adequate attention may be given to these communications, office management is responsible for seeing that they are received early, taken immediately to those individuals who are concerned, and handled promptly and adequately. This involves fetching or receiving the mail from the post office and telegrams from the telegraph company; it involves picking up the messages from wherever they originate within the organization and promptly carrying them to their indicated destinations; it likewise involves the picking up of letters intended for mailing and seeing that they are mailed in seasonable time. This means providing a competent messenger service.

Because the telephone is a very important form of communication, office management is responsible for providing satisfactory telephone service.

Nearly every organization from time to time has occasion to make copies of records or communications. Office management is responsible for providing adequate and satisfactory duplicating service.

In the performance of office work, various kinds of stationery and office supplies are used. Office management is responsible for specifying the most suitable items for the purpose, keeping an adequate supply on hand, disbursing them as needed, and guiding their use without waste.

In many concerns, particularly the larger ones, the bulk of the routine letters are dictated in what may be called a central correspondence department, staffed by competent letter writers who know how to phrase an idea or thought most expressively and effectively. Office management is responsible not only for providing this service, but for seeing that the correspondents are trained and adequately supervised. Even where the handling of correspondence is not centralized, office management still has the responsibility of trying to improve the quality of the letters that are written.

Just as there are advantages in having all correspondence handled by a group of expert letter writers, so are there distinct advantages in having all dictated material transcribed in a central stenographic and transcribing department comprised of expert stenographers and typists under adequate supervision. Such a department would handle all the stenographic work of the organization, with the possible exception of those instances where certain executives have their own secretaries. Office management is responsible for providing this service.

The same principles apply to the preservation of records, correspondence, and other papers. By having a central filing department, staffed with filing experts, papers which are to be filed may be promptly classified, indexed, sorted, and put into temporary or permanent storage places (that is, folders on shelves or in cabinets), and promptly found when desired. Office management is responsible for providing this service.

Machines and equipment get out of order, break down, and need repair. Office management is responsible not only for selecting and providing suitable, adequate, and efficient office equipment, but also for the repair, maintenance, and replacement of office machines and equipment.

The person responsible for seeing that the office work is done is exercising the function of office management, whether he is called the office manager, the chief clerk, the head of a department, or the supervisor of a section. The principles and techniques that underlie all successful *management* also apply to *office management*, with, of course, due consideration to the differences in personnel, methods, work, equipment, working conditions, and so on. If one will keep in mind at all times, therefore, that office management is management applied to one of the functions of the business, just as sales management is management principles and techniques applied to sales, credit management the principles and techniques of management applied to credits, and so on, he will find that the same principles and techniques are generally

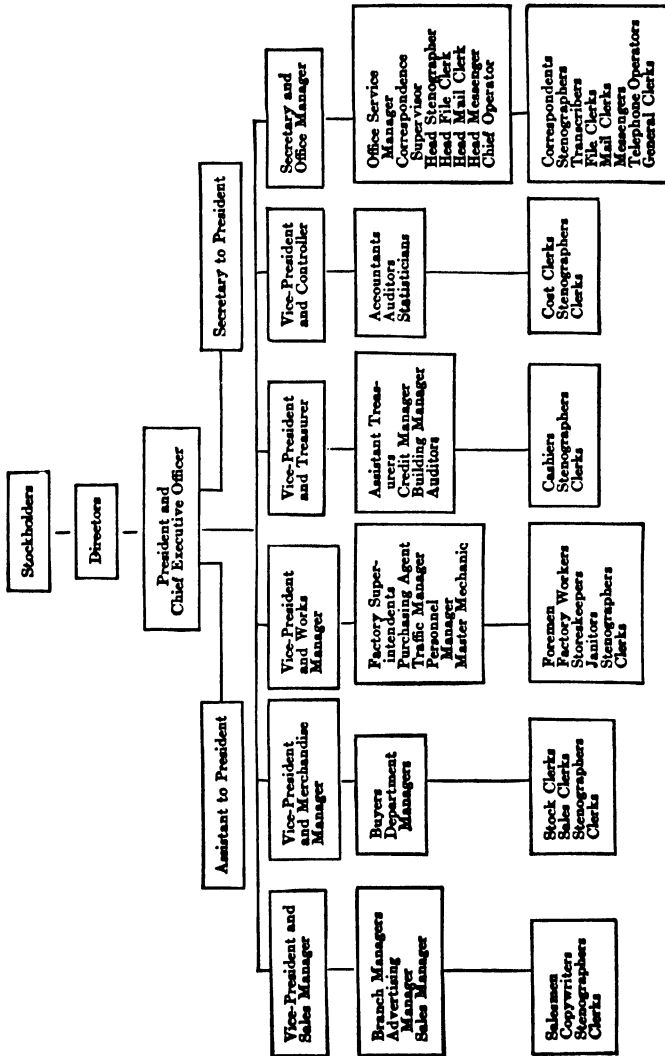


FIG. 1. The organization chart of a business. (From E. M. Robinson, *Business Organization and Practice*, p. 71, McGraw-Hill Book Company, Inc., New York, 1945.)

applicable to the performance of any kind of work. In other words, the problem is mainly one of applying management principles to a particular function of the business.

It is obvious that even when the office-management function is exercised by many different persons in an enterprise, not very many individuals in the concern can be expected to have a mastery of the science of office management. Lacking this mastery, the efficient performance of office work would seem to be largely a hit-or-miss proposition. The mere fact that office work has been performed does not mean that it has been performed satisfactorily. The fact that it has been performed to the satisfaction of certain executives in the company, or for that matter to the satisfaction of everybody in the company, does not mean that it has been performed as well as it could have been. Performance is satisfactory or not according to the degree to which such performance comes up to attainable standards, that is, with respect to the excellence of the work itself, its adequacy, the time it took to do it, the cost of doing it, and the contribution of the work to the furtherance of the objectives of the company or the department for which the work was performed. This statement applies to all office work, whether performed in a central office or within a department; office work is office work wherever it is done, and its satisfactory performance depends upon the factors just stated.

OTHER KINDS OF OFFICE WORK

Although office work is concerned primarily with records, there are collateral tasks that are also included in the term "office work." These collateral tasks include communication between individuals in the enterprise (through conferences, interviews, telephone calls, instructions, memorandums) and communication between the enterprise and outsiders (through letters, telephone calls, telegrams, orders, personal calls, and so forth). Records often form the basis of communication and always result from communication.

Computing is also office work. Prices have to be checked, costs have to be compiled, sales analyzed, payrolls reckoned, and so forth.

Statistical work, so called, is also office work, based as it is upon records, without which there could be no statistics. The statistical work of an enterprise may comprise merely a combination of figures and the compilation of facts into a summary report; or it may involve the preparation of comprehensive reports accompanied by charts and diagrams, together with an analytical interpretation and possibly recom-

mendations for action. Since statistics are useful only if they are timely, the effective organization of the statistical work is necessary, to avoid undue cost and expensive overtime, in order to present the statistics in time to be of use.

Another major office activity is planning, which may and usually does embrace scheduling. Planning is an attempt to lay out a plan of action, that is, determining *what* is to be done, *who* is to do it, and *where* it is to be done. Scheduling, in management practice, is concerned with the times at which the events planned are to take place, that is, *when*. Both are usually based upon records.¹

Office work, then, is concerned with records and statistics, with communication, with computing, with planning and scheduling. Every office task comes within the scope of one or other of these activities. But it is often difficult to recognize at once the primary function involved.

THE THREE TYPES OF OFFICE WORK

If any office work is analyzed, it will be found that it may be divided into one or more simple, yet fundamental, tasks:

1. Writing or interviewing, which includes records and communication
2. Computing
3. Classifying and filing

In other words, all writing is office work, regardless of who does it or how or where it is done. All communication is office work; so are all computing, all classifying, and all filing. Furthermore, without exception, all office work is included within one or more of these three fundamental tasks, even though the performance of the work may have been expedited through the application of various kinds of machines and devices.

A brief consideration of the three fundamental office tasks will show that clerical work permeates every activity of business and that office work is, therefore, inseparably bound up with all business activities. If all this clerical work is regarded as a mere heterogeneous mass of duties, the task of controlling them may well seem impossible; but if office work is regarded as the linking, connecting, or coordinating function in production and distribution, the possibility of its control is immediately perceptible.

¹ See Chap. XXVI for a detailed explanation of planning and scheduling in office management.

THE OFFICE AS A COORDINATING ACTIVITY OF BUSINESS

No department of a business exists unto itself alone; the work of every department precedes, follows, or is concurrent with the work of other departments. To give only one illustration of how the office helps to coordinate and facilitate the work of all departments: Customers' orders procured by the sales department are translated through office work into forms readily and more easily handled by the credit, stock, manufacturing, and shipping departments. Office work on credit records provides the basis for credit approval of customers' orders. Office work on stock records shows what is in stock, on order, received, and issued. Office work prepares production orders and other writings to guide the factory. Office work provides shipping directions for the shipping department and makes out required shipping papers. Posting by bookkeepers to customers' ledger accounts is based on the record of goods shipped. Collections are followed up by the credit department with the help of the ledgers in the bookkeeping division. And so on.

THE WORK OF THE OFFICE

The work of an office and the objectives to be accomplished may be stated as:

1. Receiving, dispatching, and shipping orders. *Objective:* The prompt and accurate handling of orders.
2. Billing. *Objective:* Prompt and accurate billing.
3. Correspondence, dictation, typing. *Objectives:* Prompt and adequate attention and replies to correspondence; prompt and judicious handling of complaints; no delay in issuing credit memorandums.
4. Filing. *Objective:* Prompt and accurate filing and finding of papers.
5. Passing credit and collecting outstanding accounts. *Objectives:* Proper handling of accounts by credit department; proper handling of accounts by bookkeeping division.
6. Handling, distributing, and dispatching mail. *Objective:* Prompt and accurate handling of the mail.
7. Duplicating and addressing work. *Objective:* Saving typewriting time.
8. Miscellaneous, such as telephone, receiving visitors, messenger service. *Objective:* To facilitate interviewing and communication.
9. Special tasks. *Objectives:* Simplification of system; elimination of unnecessary work.
10. Making records (noting down desired data). *Objective:* To provide data in a quickly accessible form for reference or use.

A well-organized office makes it possible for management to plan its operations intelligently, to put its plans into effect surely, to follow their progress currently, to determine their effectiveness promptly, to appraise the results without delay, and to coordinate all the activities of the business. Timely and reliable records afford bases for decisions; early and accurate filing preserves data until needed, and then makes it promptly available; reliable means of immediate communication facilitate and speed up the conduct of business.

To function with the minimum of expense, time, and effort, office work should be under the exclusive charge of a specialist who is giving his entire attention to the conduct of clerical activities, if only from the viewpoint of regarding them as coordinating factors in production and distribution. To place in the position of manager of works or sales a person who has not been trained in the work or has not made it his special study would obviously be an economic waste. But it is equally a waste to endeavor to have the office function directed as a side line by an individual who is not trained in it and has no special interest in it, no matter how eminently fitted he may be to perform his own individual specialty.

☞ In short, the purpose of the office is to furnish competent clerical service to all in the business who may have need of it. This is not only an economically useful service but, considering our present system of production and distribution, an economically indispensable one. ☞

IS OFFICE WORK NONPRODUCTIVE?

Is office work really nonproductive? Can a clerk making entries on a card or in a book, or a messenger carrying a piece of paper from one person to another, be considered to have actually produced anything? Can the product of their labor be clearly defined? It is not only easy to assume that it cannot, but as a matter of fact, for many years, businessmen maintained that all such workers were actually nonproducers. If this is so, there is certainly something wrong with the conditions that create these "nonproducers" in ever-increasing numbers; and if it is not so, it is equally certain that the logic that classes the clerk as a nonproducer is at fault. Let us try to clarify this question.

A clerk making entries on a card may be producing a valuable and important record, without which the business cannot continue, or he may be simply spoiling an otherwise perfectly good piece of Bristol board. A typist may be writing either an important business communication or a personal letter for one of the executives. In both cases

ONE CLERK DESCRIBES HIS WORK

My employer does a mail-order business. My job was to sit in a big room in the basement and check orders. The customers would write in for this or that; when the slips came to me I would put a red pencil mark on them if they were over five dollars, and a blue pencil mark if they were under five.

Don't ask me why. For thirty dollars a week, I just did what I was told. In a way it was a nice, restful job. After a while you got so you didn't even think about it. As long as the crayons held out, you could just sit there and let the old brain wander.

(Courtesy of This Week magazine.)

the workers are employed upon the legitimate tasks for which they were engaged and may be doing a perfectly conscientious job and honestly endeavoring to earn their salaries.

To identify the product of the office worker, we must, therefore, look beyond the particular piece of work done and consider the result that is accomplished. If there is no result there is no product, exactly as a rejected manuscript or cartoon ceases to be a product when it cannot serve as raw material for the finished product for which it was intended. In this case, the clerk is certainly a nonproducer. But if a useful result is accomplished, if the work of the clerk passes on to future stages where it is used and where it functions as the necessary raw material for another finished product, or desired result, then the clerk is as truly a producer as is the miller who converts the grain into flour, and his work is in the same sense productive. As the economists put it, any agency that contributes to production is production in the economic sense of the term.

WHAT ARE THE PRODUCTS OF OFFICE WORK?

The product of office work, then, is a certain desired—and therefore presumably useful—result. We should also understand clearly that the test of a result of office work of any kind is that it must serve to link operations in production, sales, finance, or accounting, and do so economically; that is, that the expense of the linking shall not exceed its value. It is easily possible to facilitate one or more of these primary functions of business, but at a prohibitive expense. Such work might be compared to the digging of a hole in a quicksand—the digger might labor vigorously, but, since no hole would result, there would be no

product. A cabinetmaker may make a poor table, yet he has still produced something, though it is an inferior article; and in like manner the work of a clerk may produce an inferior facilitating effect upon any of the business functions mentioned. But if he totally fails to link or connect or if it costs more to do so than it is worth, then he has failed to produce anything. His work is as useless as that of the author whose manuscript is never printed, or the cartoonist whose drawing is never published. He has failed in the production of the one thing that can be defined as his product — *the facilitation of any business function.*

To summarize:

1. The result must be desired, which means that it must have been anticipated and believed to be advantageous.
2. It must make possible, or easier, the performance of one of the primary functions of business.
3. It must do this economically; that is, at a cost which the function (measured by standards fixed by competition) can bear.

SOME ORIGINAL THINKING NECESSARY

It is becoming ever more imperative for businessmen, and especially office managers, to do some original thinking on this question of the product of office work. In many cases the organization of the ordinary business office seems to be based on the easy assumption that certain traditional records are needed, an assumption which may or may not be true, according to circumstances. There must be bookkeepers, stenographers, clerks, and file clerks, and it is taken for granted that the bookkeepers must keep books, the stenographers type letters, the clerks make entries, and the file clerks file material. But when this easy assumption is carried a little further, and it is put up to someone to decide just what kind of bookkeeping system is necessary, what stenographers shall write letters about, what kind of entries the clerks shall make, or what material shall be filed — that is something else again. The executive who is forced to make some sort of decision on these questions rarely reasons them out on the same principles that a mechanical engineer would follow to devise a machine to do a certain piece of work. In most cases, what he does is to endeavor to discover how someone else does it and then imitate the pattern, a point that is only too obvious. This is the reason for so much imitation in the office; it is much easier than original thinking. That is hard work, and most people try to evade it.

No one questions for a minute the fact that the experience of other

concerns is valuable. If other offices are using a method successfully, it may be possible to profit by their experience. Sometimes, however, the interest in what other companies are doing is carried to the point of firmly declining to be the first to try something that other concerns are *not* doing. The experience of others is not the only criterion of whether a method or a system is acceptable. If a decision is based upon an analysis of the facts and conditions as they have a bearing upon the objectives one is trying to accomplish, the chances that a decision will be the right one are greater than if one waits to see what the other fellow has done. This does not mean that one should not keep his eyes and ears wide open, as well as his mind, for the experiences of others. Of course he should. But he should not limit his acceptance of new ideas and methods by asking if others are doing this thing.

Sometimes the curiosity as to what other concerns are doing is carried to the point of trying to find out what they are doing and then putting their practices into effect in one's offices without modification. One of the most common instances in which this practice appears is that of copying other companies' forms. In one instance, two concerns in the same line of business had their accountants meet for a week and swap forms. At the end of the week each company had a set of all the forms used by the other company and immediately proceeded to add to its routine the forms that it had collected from the other company. Now there is no objection to borrowing other companies' forms and studying them to see if one's own forms can be improved. But when such study results in merely adding to one's present forms everything found, the result is bound to be an increased and unnecessary expense.

Many young office managers and other ambitious young businessmen who aspire to the management of an office make extensive collections of forms and systems. When such a collection is made for purposes of comparison and with a desire for improvement (for instance, an inventor, to avoid inventing something already invented or superseded, would search the Patent Office records for ideas similar to his own), it is a commendable practice. But these collections are seldom so used. For the most part a form that strikes the fancy is copied almost *verbatim*. There are several types of application, invoice, and purchase forms to be found in hundreds of offices, varying only in the smallest degree from each other, which are literally full of defects that can at once be detected by anyone who has given the slightest study to form design. Before any item is put on a form that is being designed, it should be subjected to the severest questioning to determine whether

it is needed, whether it is desirable or merely interesting, what its value is, how much additional work is going to be required in putting it on and taking it off, the added amount of space that that unnecessary item and other unnecessary items will take, and so on.

Again, in office after office may be found order systems and other routines containing numerous false moves and involving much useless labor, all so similar that the conclusion is forced upon the observer that they must be traditional methods handed down from one generation to the next or blindly copied from form books or other sources.

CONDENSED PICTURE OF A TYPICAL OFFICE OPERATION

Let us, for purposes of illustration, assume an established manufacturing business and endeavor to outline what the desired results would comprise. This can be little more than a sketchy picture, but enough will be given to show clearly what kind of thinking is required.

First, it will be recognized that the company, if it is to manufacture a commodity, must purchase materials of various sorts. It would therefore be logical to assume that the purchasing agent should know what those materials are, their nature, their use, and the qualities they must possess. This information should be in the form of written purchase specifications. The second requirement is that he should have a list of suppliers, some catalogues, and other data that will assist him in making wise purchases; this information should be classified and filed ready for use. The third requirement is that he must have some kind of purchase-order system. What are the essentials of such a system?

1. The system must make it possible to secure delivery of the material ordered, in accordance with the specifications, and at the time required.

2. It must record the fact that a purchase order has been issued; this information must be readily available at all times.

3. It must provide for notice to the receiving clerk that a purchase order has been issued, together with instructions as to what he is to do with the material when and as it is received.

4. The bookkeeping department must be notified that an obligation in the name of the company has been incurred.

5. The stores clerk must be notified that an order has been issued, so that he can mark his records and thus avoid issuing a duplicate request to purchase the same material.

The above are the essentials of a purchase-order system.

In addition, the purchasing agent may desire to keep some other records of a statistical nature, to assist him in making wise purchases, but it is not necessary to consider these at present.

In so far as the office work involved in these five essentials is performed effectively and economically, that work is productive. To the extent that other steps or operations, not desired or necessary, are added or permitted to enter into the routine, the work is nonproductive and of no more avail than that of the digger in the quicksand. Undesirable additions and variations are altogether too easily made, unless the routine is carefully planned and controlled.

THE OFFICE MANAGER'S PART IN DEFINING WORK

The question naturally arises here as to whether or not the office manager is supposed to be thoroughly conversant with the jobs of the managers of the production, sales, and accounting departments. The correct answer is that in a general way he should be familiar with the essential purposes, duties, and requirements of all departments of the business; in other words he should possess a broad, general knowledge of business. But most certainly he should be thoroughly familiar with the clerical requirements of all departments; if he is not, he should at once make it his special endeavor to become so.

If he realizes that he does not know and assumes that he should not be expected to know anything of production, sales, finance, or accounting, he should remember that by the same logic neither should the managers of these departments be expected to know anything of office work. This attitude may either involve an impasse or compel a measure of cooperation; and for the good of the business, cooperation is of course preferable. The office manager should at all times be ready to study the clerical requirements of any department of the business, for he will then be better qualified than anyone else to determine the best method of meeting them.

The general problem of office management, however, should not be regarded as one of such forbidding proportions as to induce awe in its survey—the office manager should not assume that it is necessary for him to have an intimate and minute knowledge of every part of the business. He should rather specialize, so that he may understand his particular job better than any other person in the organization; this is in no sense an insuperable or even particularly formidable task. If he thoroughly believes that the products of his department are as tangible and real as those of the factory and that these products must

be desired results, he will know immediately what should be done to secure such results, without imitating the work of some other office manager.

He will also find that his problem will be cleared of many complications if he will remember as an underlying principle that there are but three fundamental purposes of office work, as explained earlier in this chapter. If the office manager, instead of gazing with dismay upon a heterogeneous mass of operations, such as typing, filing, checking, making entries, and so forth, will look beyond and through them all and fix his attention upon the result he desires to accomplish and will then classify it in one or more of the three fundamental types of office work described, each of which involves a different underlying principle, the problem becomes simple. Office work, when considered as an end in itself, leads to chaos and confusion; considered as a means to an end, the problem presents itself clearly and simply to view and is at once divested of the imaginary terrors that arise from regarding it as a mass of heterogeneous and uncoordinated operations.

It will now be clearly evident that office work is not only an auxiliary for facilitating the conduct of modern business, but it is essentially a coordinating function. No longer can necessary office work be logically regarded as "nonproductive" or "overhead," using these terms in the disparaging sense that indicates a heavy and more or less useless burden, for a function without which business cannot be carried on cannot with reason be regarded as "nonproductive."

THE PRESENT TREND

The years between 1900 and 1920 constituted the heyday of the so-called "systematizer," with his card and loose-leaf systems. The conception of business by this individual was somewhat distorted. He had a new toy for sale — the loose-leaf book and the card — which apparently offered bewildering possibilities as compared with the old, inflexible bound book. It could be used at all times, in all places, and for all purposes; it was, in short, the long-sought-for panacea. For every business activity the seductive "systematizer" designed a little card system, which he applied to all companies alike. Some, still more enterprising, combined with their system work the sale of equipment and cards and loose leaves and offered to do the "systematising" for nothing, provided their merchandise was bought. There were "systems" for this, that, and the other contingency, so many in fact that it was difficult to get any work done. In the storerooms of many offices through-

out the country, we have seen hundreds of dollars worth of forms for these systems that were obsolete, because they were abandoned as soon as the spell of the brilliant system salesman wore off. During the latter part of this period, sanity managed to enter into office work and began eviction proceedings against the most obviously superfluous of the sys-



FIG. 2. Everybody in this early office was "busy," if not efficient.

tems. Card and loose-leaf ledgers survived because they were in reality a distinct advance, but most of the intricate systems that originally accompanied them were abandoned and in their place remained only the legitimate uses of these new devices.

Office machinery and equipment have undergone a somewhat similar experience. At first such machinery was sold to replace human brains, and it was vociferously claimed for each machine that it was "fool-proof." Those who took the statement too literally and placed "fools"

in charge of the machines got their experience and education together, though at an excessive price.

During the past few years the trend of office management indicates that men of greater executive ability are being placed in charge of the office, and the level of intelligence and education required for the performance of the clerical work has risen from the grammar school to the high school, many clerical positions being filled by university graduates. The office boy no longer "attends to the files in his spare time."



FIG. 3. Contrast this modern office with the one shown in Fig. 2. Notice the almost complete absence of distracting influences. (*The E. F. Hauserman Company and Burroughs Adding Machine Company.*)

The result of these changes has been such that it is not difficult to predict what the future holds forth.

Systems will be simplified and designed to accomplish their results in a direct, instead of an indirect, manner; superfluous work and details will be increasingly eliminated; short-cut methods will be put into operation, together with a better and more scientific selection of help, plus scientific training and greater use of machinery. Everything that science and common sense can offer will be used to reduce the expense of the clerical work.

SIMPLIFICATION OF SYSTEMS

A most decided change has taken place in office systems. The old executives were wont to maintain individual tickler systems and most elaborate card files in their desks. Modern executives have graduated from the clerical detail and are devoting more attention to analysis and planning and to the direction of others, the kind of work that demands trained intellectual power.

The numerical filing system, with its elaborate and complicated cross indexes on cards, was once considered the *ne plus ultra* of modern filing. Today, one rarely finds this system used for filing correspondence, it having been largely displaced by the alphabetical plan with a few improvements. Special modifications of numerical indexes are used to advantage in subject files and in very large installations of card records, but seldom for correspondence filing.

Order systems with a host of carbon copies made at one writing, and traveling to all parts of the office, were once considered wonderful, and the more copies the more wonderful the system. Office managers are now discovering that each extra copy adds uselessly to the work of the office and are carefully scrutinizing the need for extra copies. Each copy must now demonstrate its reason for being.

THE ELIMINATION OF SUPERFLUOUS WORK

For many years systematizers frightened unthinking managers by loudly proclaiming that good management required "guarding against dishonesty"; "having all the facts at your finger tips"; "verbal orders don't go"; "do it now!" and a host of other slogans to arouse dormant brains to the supposed need of purchasing their various systems. Magic words these, which seemed to thrill one with their apparent simple truth and to arouse in every office man an ambition to elaborate his work, render it more imposing, and—while he was about it—more mysterious.

Complicated and intricate checks were thus devised to prevent a dishonest clerk from committing forgery or otherwise defaulting. Honest clerks did the extra work required, but the dishonest ones always seemed able to circumvent the system, however elaborately constructed.

Systems were devised for recording every known fact that could, by any remote chance, be construed as having a bearing on the business.

There were reports on every phase of the work, which were manifolded and delivered to a large number of executives, though whether or not they could or would use the information thus given them received no particular consideration.

Letters were written by department heads to section heads about matters that could be much more effectively discussed in person; clerks wrote "memorandums" to each other on the slightest provocation, for the commandment to "put it in writing" applied to even the most trivial things and was literally obeyed.

Executives, instead of logically planning their work, attempted to do it just as it came—obeying the injunction to "do it now!"—with the result that with much effort they accomplished little.

A decided reaction against superfluous work has arisen in the office and will certainly continue. From this time onward each piece of work must "show cause," for owners are rapidly learning that superfluous clerical labor is a direct deduction from profits.

ELIMINATION OF SUPERFLUOUS DETAILS

Not only is the superfluous work being eliminated, but useful work is being examined, as it were, with a microscope, to discover whether or not it contains superfluous details. Short-cut methods are being used wherever possible.

The old-fashioned daybook entry, which was posted into the journal and from there posted into the ledger with elaborate detail, passed out years ago, as did also the elaborate ruling, with red ink, of closed accounts. At that time, it was felt by many old-time bookkeepers that the art of bookkeeping was dying. Today they would be thoroughly convinced that it was gone, for the journal also has to a large extent been eliminated by using, in its stead, a copy of the invoice or charge. The old entries were elaborate and complete; the new ones are shortened and abbreviated as much as possible.

A similar process of simplification is going on in all other branches of clerical work.

THE ESTABLISHMENT OF STANDARDS

Office managers have been increasingly adopting the methods of science in their work. Instead of permitting it to be done according to the methods—or rather lack of methods—of the individual clerks, the one best way is being found by scientific methods and standardized.

Plans of office arrangement are being devised with greater thought and care; equipment, machinery, and operating and personnel methods are being standardized. In progressive companies, standards are becoming the rule rather than the exception.

Scientific selection of employees has made great strides, and it is still likely that its momentum will be increased in the future.

THOROUGH TRAINING

The old method of securing a business training was to spend six months in a business college, directly after leaving grammar school, get a smattering of bookkeeping, shorthand, and typewriting, and then go out and get a job—if you could. Most offices had openings for “experienced” clerks only, and many and devious were the devices for getting this “experience.” Some went into small offices and worked for relatives or small businessmen, for nothing a week for a few months, and then proclaimed themselves experienced. The process then was to set a clerk down to a desk, give him a batch of letters or other papers, and tell him to go ahead on them. He made mistakes, of course, and was thoroughly disciplined for them if not discharged, and in this manner, by the old trial-and-error method—meaning that he was tried out and “fired” if he made too many errors—he accumulated his experience and acquired something that by a liberal stretching of the imagination might be called training, through a number of years.

But clerks are now being trained—some of the most progressive companies preferring the inexperienced applicant as unspoiled material which they can mold to their own requirements. Business schools have greatly improved the character of their work, the universities are training young executives in business administration, and many of the more progressive corporations are paying for extension courses for their more ambitious clerks. Office managers are learning that a thorough training of office employees is a much shorter route to more and better work than the old method of learning by making mistakes. There is, however, still room for improvement here.

A GREATER USE OF MACHINES

There is a much greater use of office machines than ever before, but no longer are they being sold on the old “foolproof” claim. Instead, the office-appliance manufacturers conduct service departments for the

special purpose of developing and training operators in the correct use of their machines. To a limited extent, secondary schools are training office-machine operators, although neither office managers nor business educators are yet satisfied with the results. One school, however, has actually developed detailed written standard-practice instructions for operating some twenty different office appliances. The results have been nothing short of startling in the small amount of time required to learn machine operation.

The increasing use of machines for repetitive tasks tends to eliminate the clerk of low intelligence sometimes assigned to such work, thus raising the standard of intelligence among the remaining clerks.

Though, as elsewhere, it may seem to some that the limit of ingenuity has been reached in office machines and appliances, there is little doubt but that as the necessity arises more and more machines will be invented, and those already in service today will be more effectively, economically, and thoroughly used.

A CONTRARY TENDENCY

Though the conditions above enumerated all tend to decrease the expense of clerical labor, there is, nevertheless, a contrary tendency which shows itself mainly in a continual increase in the size of the office, due to an increasingly extensive use of methods of analysis and preplanning in business.

Thus, the increasing use of statistics requires more and better clerks, for the statistics must be not merely gathered but correctly interpreted for the executives, and such interpretation work demands a high order of intelligence.

The growing use of sales analysis has a similar effect. The product is being studied and tested in comparison with competing products. Territories are being studied closely, and most elaborate methods devised for tracing down, examining, analyzing, and cataloguing every last possible purchaser. Sales methods are being time studied and perfected, and all this work, the success of which has been demonstrated, requires more and more clerks.

The preparation of cost and planning systems and the use of the budget are also increasing activities that require more clerical labor. The statistics clearly show that despite improvements tending to reduce the amount of clerical labor, the number and proportion of clerical workers is increasing at a prodigious rate.

WHAT THE FUTURE REQUIRES

Science in management has already, to an enormous extent, demonstrated its success. Spreading out into many departments of industry, it has clearly demonstrated its superiority over the old-time unsystematic management based largely on luck, chance, inspiration, or that nondescript, half presentiment, half guesswork, popularly known as "hunch."

Scientific management is no longer an untried theory; it is, instead, a practical reality. It is becoming increasingly evident that, if the clerical problem is to be solved, the methods of the future must be those of scientific management.

Capable executives must be selected for the position of office manager and given training in scientific methods, not a superficial education, but a thorough training in the principles and practice of scientific management, with a particular application of this science to the needs and conduct of the office.

An adequate salary must be paid to this executive, a salary sufficient to attract the most capable men and women. As has been shown, the office manager is charged with a vitally important responsibility, the management of a function without which no business can long exist and which, when badly managed, can waste, in superfluous help, poor service, and costly errors, a sum many times the salary paid. The position is being made attractive to ambitious and capable young men and women and is being endowed with that dignity it so clearly merits.

Not too often, though more often than formerly, is the office manager called in council with other executives when changes in policy or plans are discussed, even though some of these changes may require heavy increases in clerical labor. After the plans are completed, they are nevertheless turned over to him to carry out, even though he may have had nothing to say about them. The office manager is entitled to a place and voice in management councils; and if he is the right kind of executive, who knows what is due his position, he will demand and get it.

The term "office" is being broadened. In actual practice it no longer comprises the small group of clerks surrounding the accounting department, but includes all clerical workers; for clerks are in all departments and are scattered throughout the entire organization.

The title of "Office Manager" does not, in itself, indicate adequately the responsibilities of the individual charged with the management and conduct of a class of workers who constitute more than 10 per cent of all

persons gainfully occupied in the entire country. A better title, one that connotes the management of *all* clerks in *all* parts of the enterprise, is "Manager of Clerical Activities."

QUESTIONS FOR DISCUSSION

1. With what is office management concerned?
2. In what way is office work primarily concerned with the records of the enterprise?
3. What are some of the records kept by offices?
4. How may these records be made?
5. How may they be preserved?
6. Why should an enterprise need records?
7. Can you think of any enterprise in your locality which does not need records? If so, explain.
8. Can you think of any activity, other than those of a business nature, which does not need records? If so, explain.
9. Would you say that office work is found only in business enterprises?
 10. a. Is office work always done in an office? Explain your answer.
b. What is the significance of your answer to the above question?
11. Why is the term "clerical work" sometimes preferable to the term "office work"?
12. What is often the first step toward the improvement of office work?
13. Why should principles applicable to office work in one place be applicable to the same work elsewhere?
14. What tasks besides records are also included in office work?
15. Why are these called collateral tasks?
16. a. Name as many different kinds of communication as you can recall.
b. With respect to each kind, state why it is included in office work.
17. In connection with each of the various kinds of communication listed in your answer to question 16, what record or records do you think might be made or needed before, during, and after the communication?
18. Would your answers to questions 12 to 17 be different if you had substituted "clerical" for "office"? Why or why not?
19. Why should planning and scheduling be included in office work?
20. Statistical work often requires highly trained individuals called

"statisticians." What justification is there for including statistical work in office work?

21. Explain "computing" and state why it is considered to be office work?

22. Into what three simple, yet fundamental, tasks may all office work be divided?

23. Can you think of any kind of office work that would not be included in the three tasks? If so, explain.

24. "The office is a coordinating activity." Explain.

25. Should the management of the office be directed as a side line? Why or why not?

26. a. Who may exercise the function of office management?

b. Where may he exercise it?

c. What may he be called instead of "office manager"?

27. Why may only a few individuals in an enterprise be expected to have a mastery of office management?

28. When is office work "productive," and when is it "nonproductive"?

29. Name eight specific kinds of work done in an office.

30. Why is there so much imitation of others by the management of many offices?

31. What is the objection to the collection of forms and systems by a student of management? What may be the advantages?

32. What are the three requirements of a purchasing agent?

33. What are the five essentials of a purchase-order system?

34. With respect to each essential of a purchase-order system, explain why it is essential, and what the purpose of it is.

35. To what extent should an office manager be conversant with the jobs of the managers of production, sales, and advertising departments?

36. Should the office manager specialize? Why or why not?

37. What is the difference between considering office work as an end in itself, and considering it as a means to an end?

38. What is the difference between "systematizing" and "managing" an office?

39. Are systems necessary to the performance of office work? Why or why not?

40. Trace some of the developments in office work from 1900 to the present.

41. How are office systems being simplified?

42. How would you recognize "superfluous work" when you see it? What is the objection to it?

43. "Office managers are increasingly adopting the methods of science in their work." Explain this statement.

44. What are the advantages of trained employees over untrained ones?

45. What effect is the increasing use of office machinery having on the caliber of office clerks?

46. If scientific management tends to decrease the cost of office work, why are offices increasing in size?

47. What title is suggested for the person in charge of all clerks? Why?

PROBLEM

In a New York wholesale house there is a large filing department. Files are kept for 10 years before being destroyed. The equipment used is to a large extent obsolete. This office also prepares a large quantity of statistics—much more than is used. The stenographers average 10 letters a day each.

Would you say that this clerical force was producing values? If not, what must be done to make it productive?

"The office manager today approaches his problems as production problems."—WILFORD L. WHITE.

II

THE MODERN CONCEPTION OF OFFICE MANAGEMENT

In its formative years when the office was developing from one book-keeper, it was natural that the chief endeavor in this development should take the form of devising improved ways and methods of doing things. The preparation of a form, for example, was in reality nothing more than the devising of a standard way of recording information. A form, properly designed, enabled the office manager to get the desired information recorded exactly in the shape he wanted it and without the use of personal instructions. Such a form might be regarded as analogous to the "jig" used in factories, which enabled a "machine hand" to perform work which otherwise could have been done only by a skilled mechanic. A system, properly devised, enabled the office manager to provide against contingencies which would almost inevitably happen were the work not performed in a systematic manner.

IS ALL OFFICE WORK NECESSARY?

The remarkably rapid growth of the proportion of clerical labor to the so-called direct and productive labor has forced new conceptions of management upon office executives. The *necessity* of clerical work to modern business is now an accepted and unquestioned fact and no longer a subject for doubt or dispute. But there is now a distinct and growing tendency to question the *cost* of clerical work in proportion to its value. Instead of directing his attention wholly toward devising new systems and methods for performing clerical operations, the modern office manager is now carefully balancing the necessity of specified clerical tasks against the value that accrues to the company from their performance. The practical elimination of filing from the clerical labor of the mail-order houses is perhaps the classical manifestation of this tendency.

ELIMINATING UNNECESSARY REPORTS

Formerly the average office manager would have advocated reports covering every conceivable activity of the organization. Many executives made a fetish of demanding complete and exhaustive reports, caring little and probably thinking little of the clerical cost involved. Today the office manager is questioning the value of reports on some features. One institution, for example, eliminated 65 of 100 reports that were being made for various executives, thereby effecting a clerical saving of nearly 20 per cent; that is to say, nearly 20 per cent of all the clerks in that large office were working on these superfluous reports. But they were not arbitrarily eliminated. A careful analysis of the use and value of each report was made, in consequence of which many startling facts came to light. It was found that many of these reports were duplications, others were not used at all, and many which were used were not worth the cost of making.

ELIMINATE UNNECESSARY FILING

A similar condition may be found in the practice of filing. A filing system is unquestionably an effective tool for the executive, and its use in office practice is indispensable, but a casual examination of almost any filing drawer in any office will show that hundreds of letters and papers which have no value whatever are being preserved. As in the

To promote economy, efficiency, and improve service in the transaction of public business, by

1. Limiting expenditures to the lowest amount consistent with the efficient performance of essential services, activities, and functions.
2. Eliminating duplication and overlapping of services, activities, and functions.
3. Consolidating services, activities, and functions of a similar nature.
4. Abolishing services, activities, and functions not necessary to the efficient conduct of government.
5. Defining and limiting executive functions, services, and activities.

This statement from the report of the Hoover Commission on the Organization of the Executive Branch of the Federal Government is applicable to every business, public and private.

matter of furnishing reports, some firms evidently pride themselves on being able to show and locate every communication they have ever received, utterly ignoring the fundamental fact that the only reason for filing a letter is the assumption that it will be wanted for reference at a future time. The mail-order houses, when confronted with the problem of the apparent necessity of excessive space requirement, solved it by actually testing out what would happen if they abandoned the idea of filing altogether and sent the letters back to the customers. They sent them back, and—nothing happened. Similar illustrations might be multiplied indefinitely.

WORK SIMPLIFICATION

The modern conception of office management may be thus summarized by those who possess it:

There are standard ways for doing almost every clerical task, and there are standard systems designed to provide against most legitimate contingencies; these we must adopt but, before assigning any clerical task or preparing any system, we must also decide:

1. What is the value of the work to be done?
2. What is its probable cost?
3. Is it worth what it will cost?

In a word, the aim of the modern conception of office management is *work simplification*.

A PROGRAM OF WORK SIMPLIFICATION

1. Find out what work is now being done.
2. Ascertain the purpose of each kind of work.
3. Ask, "Is this work necessary? If so, why?"
4. Eliminate unnecessary work.
5. Eliminate duplications of work.
6. Improve the performance of the work left.
7. Eliminate waste motion, effort, material.
8. Modernize facilities.
9. Straighten out routines.
10. Standardize the methods to be used.
11. Put each standard method in writing.
12. Establish necessary controls.
13. Review all factors periodically.

FORCES THAT MAKE FOR SCIENTIFIC OFFICE MANAGEMENT

Although the present status of office management is much higher than it was 30 years ago, there are still office managers who make no serious pretense to the scientific management of clerical activities; to some it is not even a definite conception.

There are signs, however, of an approaching change that is unavoidable because of its economic necessity. It is easily conceivable that the clerical burden may grow to a point where the expense of conducting business largely destroys its profitable character; then is when the economic necessity of change becomes apparent. Long before then there is certain to be a general recognition of this startling situation. Economic conditions will force it.

RESULTS OF LACK OF CENTRALIZED CONTROL IN THE OFFICE

The chief difficulty is that the clerical activities have not been placed under central control in the office and that there has been, on the whole, too little perception of the need of such control. Thus in many concerns the works manager considers it his prerogative to have entire control of the works clerks; the sales manager regards the clerks in his

SOME EVILS OF UNCONTROLLED DECENTRALIZATION

1. Scattering of abilities and energies
2. Inequalities in salaries
3. Lack of coordinated planning
4. Rush work in one department—idle time in another
5. Inadequate supervision
6. Sidestepping of responsibility
7. Overlapping of duties
8. Duplication of work and equipment
9. Inconvenient arrangement and layout
10. Hindering of standardization
11. Difficulty of measuring output
12. Higher unit costs
13. Higher overhead costs
14. Hindering of specialization
15. Greater difficulty of training
16. Necessity of substitutes for vacations

department from the same point of view; the accounting department assumes the control of all other miscellaneous clerks. The clerical activities, being thus scattered in several small and more or less unconnected groups, tend to bring into existence one or more—and sometimes all—of the following conditions:

1. *Lack of Cooperation and Coordination of Effort.* There is little harmony between the various groups and much useless duplication of work. This condition is apparent after even a cursory examination.

2. *Much Idle Time.* This is a condition impossible to correct without centralization and often impossible to detect because it generally occurs in small periods of time, distributed throughout the working day.

3. *Much Wasted Effort.* Much effort is wasted because no one has studied the operations for duplication and wasted motions.

These conditions are to be expected where the office consists of small groups under indifferent management.

ATTITUDE OF SOME EXECUTIVES TOWARD OFFICE FUNCTIONS

The policy of dividing the office into small groups invariably means expensive management. Since the works superintendent is not an office man, he bears the traditional contempt of his kind for office workers, regarding them as nonproducers. He usually considers all their work extremely simple and therefore worthy of little attention; but with complete lack of logic, he is constantly worried about the inefficiency of the clerks in his department. The sales manager is not an office man either, though usually of a different mental type from the works manager. His sole interest is in making sales, and for this purpose he demands the highest grade of clerks and usually gets them, regardless of expense, though he rarely sees to it that they are profitably employed. There is usually much clerical time wasted in the sales office, while the sales manager is occupied with the original mental work which naturally demands his chief attention. The same remarks apply in general to other department chiefs. Their principal task being something else than the management of clerks and clerical functions, there is little attention paid to that branch of business management, since it simply is not recognized as such.

PROFESSIONAL STATUS OF THE SCIENTIFIC OFFICE MANAGER

There is a brilliant future for those office managers who have arrived at the recognition of the office function as an essential feature of all

enterprises and of the material importance of the work of office management. When these men set themselves to discover the range of possibilities of scientific office management and *make it their profession*, they will substantially advance the interest of their company, effect large savings, and thereby greatly add to the profits of the business, while at the same time forcing the more or less reluctant admission of the vital importance of their work from other executives.

There will be keen competition for the services of such executives, as businessmen wake up to the need of giving the office the attention it deserves and will so well repay.

FUNCTIONAL OFFICE MANAGEMENT

The production manager of a concern would not for a moment think of allowing the sales manager to manage his factory, for he feels that the latter does not and could not possibly understand the handling of workmen, a lack of understanding which he is certain would lead to trouble. The sales manager feels exactly the same way about permitting either the production manager or the office manager to handle salesmen. Yet, despite these obvious proofs of the need of specialization, each one of them believes, or at least assumes to believe, that almost anyone can handle clerks and clerical work.

Nevertheless, keeping always in mind the facilitating nature of office work, there are many cases where it is necessary for the clerks to work directly in the works office, the sales office, or the accounting department; in the last, especially, the clerks are never separated from the books. In cases of this kind, the problem of supervision becomes complicated. Naturally enough, the head of the department involved feels that he should have full control of the clerks in his department, and just as naturally he would object to dividing this control with the office manager.

Frederick W. Taylor solved this difficulty by instituting the "functional foreman," so called because he is made responsible for the correct performance of a certain function. In the case of the office manager, this would mean that he would have authority over and responsibility for the clerical function throughout the company, in all departments. The local department manager's control would extend to the determination of the work to be done by the clerks, but the office manager would decide who was to do the work, how it was to be done, and how much should be expected to be done. The office manager's position, then, is similar to that of a functional foreman.

ADVANTAGES OF CENTRALIZED OFFICE CONTROL

Endowing the office manager with authority over all clerical activities immediately attaches a certain dignity to his position and prevents small departmental jealousies which otherwise are bound to arise.

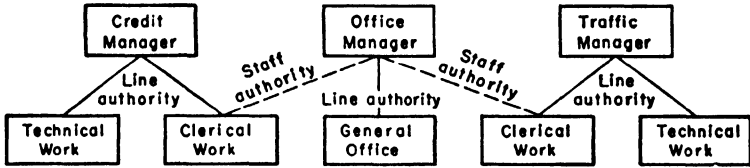
THE FUNCTIONAL OFFICE MANAGER

By "functional office manager" is meant an office manager who is responsible for the office function of the company wherever the work is performed—at the main office, at branch offices, and at factory offices. The functional office manager is responsible for determining how the office work is performed and for seeing that it is performed that way. He makes himself thoroughly familiar with the clerical work required by the operations of the company, wherever performed; he coordinates the office work of each part with that of all the other parts; he studies the best way of performing each kind of work and establishes uniform work methods; he prepares written standard practice instructions and sees that they are followed; he builds efficient routines and relates them to each other with the purpose of shortening operation times and eliminating duplication of work; he designs and redesigns forms to accomplish their purposes most effectively; he sets up specifications for each position of a clerical nature in the company and provides standard methods of selecting, training, and supervising the clerical workers; he determines fair rates of pay for each kind of office work, establishes standards of performance, sets up methods of measuring performance, and provides an incentive system for accomplishment. The only difference between the functional office manager and any other good office manager is that most office managers are limited in jurisdiction to the groups under their immediate personal supervision, while the functional office manager's jurisdiction over clerical work is unlimited—he is responsible for office and clerical work wherever it is performed in the company. The department head still retains, of course, the authority to indicate what work is to be done, as well as to determine which tasks shall have priority.

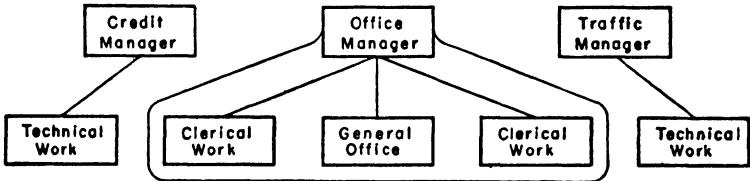
Inasmuch as he decides who is to do the work, he also is authorized to transfer clerks from one department to another and is thus enabled to anticipate idle periods in one department and reduce the load in peak periods in another one. This again enables him to absorb productively much idle time which otherwise is paid for by the company, but for which it gets no return.

There will be many positions, of course, where special training and experience are both required. and in such cases the office manager will

so arrange the work as to leave these special workers in the one position. But this condition by no means occurs so frequently as is generally supposed. Usually the positions which are assumed to require much experience are those where the clerk is supposed to anticipate the wants and desires of an executive and to understand his personal peculiarities. This may or may not be an important factor, depending entirely upon the circumstances of the case, but it is undeniable that many minor



This chart shows the line-and-staff relationships of the office manager in some concerns. The department managers exercise line authority within their departments, as does the office manager in the general office. The office manager also has staff or advisory authority over the methods of performing the clerical work in each department.



In this chart, the department managers have been relieved of the responsibility for the clerical work of their departments, making it possible for them to concentrate on the technical work, in which they are experts. They look to the office manager to provide them with competent and adequate clerical service. The situation here shown is seldom wholly realized.

executives develop personal idiosyncrasies and make demands upon clerks which are not particularly reasonable. In such cases centralized control will save much idle time and compel these minor executives to become more productive, because through it the peculiar characteristics of such persons will be disclosed and it will become necessary for them to do their own work properly.

The control of the department or section head over what work is to be done remains unquestioned. If he is to be held responsible for results, he should have authority to decide what work is necessary and what should be given precedence over other work in his department.

Properly organized under central control, the majority of clerks in

the ordinary business office will render better and more nearly adequate service. The tendency to gather the more routine or uniform office functions under centralized control has been a real contribution toward economical and efficient office operation.

CENTRAL STENOGRAPHIC SERVICE

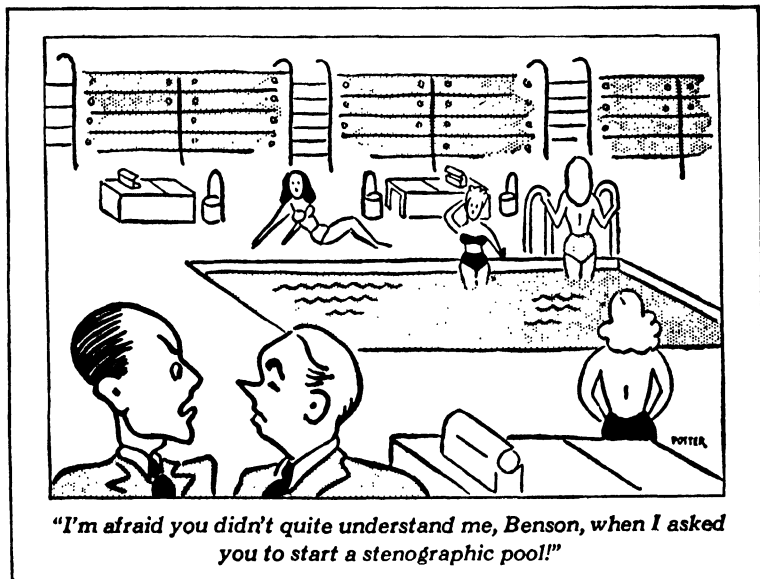
There should be one central stenographic section (sometimes called a stenographic pool), which will render stenographic and typewriting service to the entire office, instead of small groups of uncontrolled

WHAT CLERICAL ACTIVITIES MAY BE CENTRALIZED?

1. Mail—incoming, outgoing, interoffice
2. Telephone, telegraph, teletype, cable
3. Reception of callers
4. Messenger service
5. Duplicating service
6. General clerical service
7. Filing
8. Stenographic, transcribing, typing
9. Computing
10. Stationery and supplies
11. Control of forms
12. Office bulletin boards
13. Routine correspondence
14. Surplus equipment
15. Office cleaning and maintenance
16. Clerical employment and training
17. Supervision of office personnel
18. Attendance records and discipline
19. Vacation schedule and substitutions
20. Office employee services
21. First aid (office)
22. Office library
23. Equipment maintenance and repair

The fact that the nature of the above list of clerical activities lends them to centralization of control does not mean that all should necessarily be centralized. As the text states, other factors may make decentralization desirable in many cases. In any event, no step toward centralization should be taken until the principles of scientific office management explained in this chapter have been applied to the problem.

stenographers throughout the office who work only part of their time on letters and part on miscellaneous clerical tasks, and, as is often the case, sit in absolute idleness at other times. When this work is centralized, each stenographer will produce much more than would otherwise be the case; as a result, a smaller force will be required.



(Courtesy of Thos. A. Edison, Inc.)

This does not mean that there should not be a certain number of private secretaries for the most important executives, for the valuable time of these men can be saved by the many things a secretary can do for them. Section heads do not need secretaries and should not have them.

CENTRAL FILING

A central filing section can be much better managed than small groups of files scattered throughout the office. The material will be kept in better order, the work will be more economically done, and in general much better service will be given. This, of course, does not refer to the private files of the chief executive, which may contain much material that should not be in the general file.

ADVANTAGES OF PHYSICAL CENTRALIZATION

Economy: fewer employees needed, therefore, less equipment and space.

Improved quality of work: better and closer supervision and control; easier to train employees and set standards.

Increased individual efficiency of employees: resulting from specialization and concentration.

Relief of department heads from supervisory responsibility: gives them more time for technical activities.

CENTRAL COMPUTING

A central computing section will often be found to be a distinct advantage. Work on adding machines, comptometers, computing machines, and so forth, requires trained operators; the difference in output between trained operators and persons who work at the machines only sporadically, or for a short period each day, is about four to one. If there is any computing work that must be done in the other departments, it can be handled in the same manner as dictation—by sending an operator from the computing section to such departments.

OTHER CENTRALIZED SERVICES

A central clerical bureau can perform for other departments many clerical tasks that do not necessarily have to be done in the department concerned.

Stockkeeping is usually centralized even in offices that have little centralized control otherwise.

Mimeographing, multigraphing, and other duplicating work are also much better handled by a central section than in isolated groups.

When these and other activities are centralized and in operation, there will still be a number of departmental clerks remaining; even in their case the office manager will have control as to *who* shall perform the work, and *how* it shall be done, with the department head controlling *what* work is to be done.

STANDARDS CAN BE SET, CONTROL EXERCISED

Through standardizing the work, the office manager will also develop better methods of performing each clerical operation; he should, there-

fore, prescribe the methods to be used and see that the workers are trained in their performance. This will result in an equally high standard of work throughout the office, a condition not usually found in offices where standardization and training are not the rule.

Finally, the office manager through his control or planning room will actually control the production of the entire clerical staff. Standards will be set, tasks will be assigned and controlled with the same precision and definiteness as in the scientifically managed factory.

With the office thus organized and operated, its real character as a vital function of business at once becomes evident as its capacity for connecting production and sales is immensely increased. Such an office can, in addition, be economically operated, but it requires a competent executive as manager.

WHAT SIZE OFFICE SHOULD HAVE AN OFFICE MANAGER?

The same general principles of good office management apply to both large and small offices. Every office, regardless of its size, the nature of the work, or the nature of the business, needs some office management. Whether the office-management function shall be exercised by one individual who gives his entire time to it, or only part of his time, or whether the function shall be split among several individuals is usually dependent upon the volume of office work to be done, the circumstances and conditions under which it is to be done, and a recognition of the imperativeness of good office management as a desirable supporting factor of good business management.

In general, it may be said that when the possible financial and other benefits resulting from competent office management in any office approach the salary cost of an individual giving his full time to the management of clerical activities, that office should have a full-time office manager. There would seem to be no question that an office of 50 office employees could afford a full-time office manager. Whether an office of less than 50 can do so depends on the factors just mentioned.

Even where a full-time office manager is not employed, it has been contended that in any office which contains as few as 20 clerks doing a variety of work, a staff man devoting full time to the study of methods can probably be justified,¹ on the theory that a saving of at least two or three clerks could be made, thus justifying the supervisor's salary. It should be borne in mind, however, that the benefits are not limited to

¹See American Management Association, Office Management Series, No. 86, p. 28.

money saving on salaries; the increased effectiveness of the service rendered may outweigh the money saved through improved methods and adequate supervision.

It should be clearly understood that a division of duties always means a division of responsibility, with a possible consequent loss of effectiveness. If the responsibility for office management in a smaller office is delegated to an executive with routine duties not connected with the office-management function, there is always the possibility, if not the probability, that the routine duties will take precedence over those connected with the office management. It would be well in such cases for one of the company's officers to require periodical reports of progress from the executive responsible for the management of the office activities.

THE PRINCIPLES OF SCIENTIFIC OFFICE MANAGEMENT

The fundamentals of office management do not differ from the fundamentals of the management of any other cooperative human activity. The material dealt with may be different in certain external features, but the basic principles which permeate all management are the same, regardless of the nature of the activity. The violation of these principles reduces the effectiveness of business as certainly as the violation of a physical law brings its inevitable consequences.

Since few of these principles are ever thought of by the rule-of-thumb manager, the world is literally full of the most glaring examples of their violation, resulting in an interminable waste of time and energy, most of which is avoidable and hence unnecessary.

It follows, therefore, that a thorough knowledge of the science of management is far more important to the office manager than a mere knowledge of the art of management without an understanding of the scientific foundation upon which that art has been constructed.

There was a time when the ideal office manager was considered one who had a thorough experience in bookkeeping; whether or not he knew anything of actual management was regarded as unimportant, for, "after all, he only has to manage a few typists and file clerks." As well might it be said that a factory superintendent needed to know nothing about management, because he had only to deal with laborers.

IS MANAGEMENT A SCIENCE?

One may question the use of the word "science" in connection with the word "management," which is commonly called an art. Science is

coordinated and codified knowledge, gained by systematic observation, experiment, and reasoning. In this sense there is a science of management sharply to be distinguished from the art of which it is the basis, and from sciences which are auxiliary to it, such as physics, mechanics, and psychology.² Scientific office management is the science of management applied to the office, just as military science is the science of management applied to the military.

I. STATING THE PROBLEM AND DEFINING THE PURPOSE

The first principle of scientific office management is concerned with finding out clearly, definitely, and specifically what work is to be undertaken and its purpose. Unless we know what to do and why we do it, we cannot do it intelligently or satisfactorily. The office manager who asks himself, "What is my work?" "What is its purpose?" "What is the objective I am trying to attain?" and "What result is desired?" and has worked out clear, definite, complete, and correct answers to those questions has laid the cornerstone of the foundation upon which the whole structure is to be erected.

Simple and obvious as this principle is, it is—perhaps for that very reason—usually neglected. Most individuals undertake work with little more than a superficial assumption that they understand "in a general way" what they propose to do and why they do it. They assume that the object and purpose of the work are matters that call for no particular study or thought, yet it is obvious that an adequate knowledge and application of this basic principle of the objective is the logical starting point of every proposed activity. No scientific man ever sets out to solve a problem of any sort without first carefully defining that problem and its purpose. He may, and usually does, expend long periods of time and much thought in correctly formulating the problem, knowing well that, unless this work is thoroughly and accurately done, his future efforts may be completely wasted. The same reasoning applies equally to management. In both cases the truism of the old mathematicians holds good, that "a problem correctly stated is already half solved."

II. ANALYZING THE PROBLEM

Every problem is composed of various parts or elements, each of which has a bearing on the subject; this relationship must be carefully studied if the analysis of the whole is to be successful.

² See SHELDON, O., *Philosophy of Management*, p. 33, Sir Isaac Pitman & Sons, Ltd., London, 1928; and *Bulletin of Taylor Society*, Vol. VIII, No. 6, p. 210.

A CLASSIFICATION OF MANAGEMENT PROBLEMS

Management problems may be classified roughly into five major groups:

1. Problems of *policy*. Policies determine what action is to be taken under any given circumstances. Policy problems are usually considered administrative problems and include setting major objectives and formulating plans of action to attain those objectives.
2. Problems of *organization*. Organization concerns the disposition of forces, the logical grouping of activities, the assignment of duties and responsibilities to members of the groups, and the coordination of their efforts.
3. Problems of *personnel*. These involve what employees are needed, procuring them, training and developing them, directing and supervising them.
4. Problems of *facilities*. Facilities are the physical properties—buildings, equipment, and utilities. Problems of facilities include determining the facilities needed, providing them, using them, keeping them in good condition, and replacing them when necessary.
5. Problems of *method*. These involve the ways that work is to be done and the establishing and maintaining of routines and procedures necessary to perform that work.

All management problems can with a little ingenuity be placed within the limits of this classification. Some problems may fall within two or more groups. (*Adapted from James O. McKinsey, "Organization Problems under Present Conditions," in General Management Series 127, published by American Management Association.*)

Literally, "analysis" means "the separation of anything into its constituent parts or elements"; it also means "an examination of anything to distinguish its component parts, either separately or in their relation to the whole." To analyze a problem, then, means to find, through organized thought, its elements or component parts. In addition to this necessary breaking down of the subject, each factor must be given its correct relative importance—its position in the chain of reasoning. Is it a major or a minor factor? Is it a factor that stands alone; does it include other factors; or is it merely a subdivision of another factor itself?

Analysis is largely a mental process and requires an orderly, persistent, and logical use of the mind that seems difficult only because most people have not developed a faculty for analysis. It is an imperative necessity for all scientific work and is so closely connected therewith that the word "analysis" itself immediately suggests the other term, "scientific."³

³ See Chap. XXIII on Scientific Analysis.

There is no end to the analytic process. One can keep on subdividing a subject almost indefinitely if he applies sufficient thought to it. The adequate solution of a problem, however, implies also a knowledge of when to stop. Our first principle defines exactly what we want to do, neither more nor less. Such definition marks the limitations of the problem, beyond which we need not go in our analysis of it.

When the purpose has been defined, the proposed task correctly formulated and its parts analyzed, the next fundamental principle involves searching for the facts related to the problem.

III. FINDING THE FACTS OF THE CASE

If it is desired to improve the existing method of performing a task, we should first collect all the facts concerning it. If, for instance, the existing method consumes too much time we must find out why. The tools, the equipment, the material, the operators, the motions they use, the amount of effort applied—every condition under which the task is performed is a fact that has a bearing on the object we desire to accomplish, in this instance, the saving of time on an operation. No facts must be overlooked; all must be studied. Whatever desirable elements are found in the operation must be retained and, if possible, improved. Those which are undesirable must be eliminated. It is evident that this cannot be done unless we know all the facts bearing on the problem.

We can find our facts in three ways:

1. *By Information from Others.* This includes books, records, and other principal and original sources. If we get our facts from others, we must make certain that the information is reliable, for misleading information is everywhere abundant and easily procurable. We must be careful to formulate our questions so as to elicit correct replies.

The true scientist observes, analyzes, and classifies facts; then he makes inferences from those facts and verifies those inferences.

2. *By Our Own Inferences.* Our own inferences as to what are and what are not facts should also be carefully scrutinized, for they may easily be ill-founded assumptions and subject to error. To infer without investigation is a most prolific source of difficulty. Do not jump at conclusions until you are sure they are there.

3. *By Actual Test.* The method of actual test is by all odds the most conclusive and certain. It is, in fact, the method par excellence of experimental science. There is in existence a vast body of facts, proved and tested beyond doubt by experimental science; these facts are at the

disposal of all who care to seek them. They cover practically every range of human activity in the material world. It is from this vast repository of facts that all modern industrial processes have been evolved. Science has been applied to production in thousands of ways.

When all the pertinent facts regarding any problem have been collected, they must be classified and arranged in relation to each other and to other related facts. This requires the same thoughtful, orderly use of the mind as does the analysis of the problem itself.

IV. FINDING THE RIGHT METHOD

This may be stated as devising the one best method of performing the particular task which we have defined and analyzed and regarding

RESEARCH, STANDARDS, CONTROL, COOPERATION

1. *Management Research.* Research, investigation, and experiment (with their processes of analysis, measurement, comparison, etc.) constitute the only sound basis for the solution of managerial problems: for determination of purpose, policy, program, project, product, material, machine, tool, type of ability or skill, method and other factors, and the coordination of these in purposeful effort.

2. *Management Standards.* To make them useful to an enterprise, the results of research, investigation, and experiment must be made available to the cooperating group in the form of defined and published standards which serve as common goals, facilities, and methods, and which replace chance and variable factors by constants in terms of which may be made calculations and plans which may be expected to come true.

3. *Management Control.* There must be established a systematic procedure, based on the defined standards, for the execution of work; a procedure which directs the researches, establishes and maintains the standards, initiates operations and controls work in process; which facilitates each specialized effort and coordinates all specialized efforts, to the end that the common objective may be achieved with a minimum of waste of human material energies, and with a maximum of human welfare and contentment.

4. *Cooperation.* Durably effective management requires recognition of the natural laws of cooperation involving the integration of individual interests and desires with group interests and desires and of individual capacities with the requirements of group purposes; the substitution of the laws of situations for individual authority, guess, and whim; and the recognition and capitalization of human differences, motives, desires, and capacities in the promotion of a common purpose.—Harlow S. Person. (*From Scientific Management in American Industry, by permission of Harper & Brothers.*)

which we have collected and classified the necessary facts. We know

1. What we have set out to do, and what its purpose is
2. The nature and character of the elements composing our problem
3. The facts bearing upon and related to it

Elemental Conditions. Into the problem of devising a method of any sort there are at least three elemental conditions which invariably enter. They are space, time, and energy; it is impossible to conceive of any problem, business or otherwise, that does not include them. They are, so to speak, the universal environment in which all activities must function. All improvement, in fact, every phase of the progress of mankind to higher levels, has been and must always be manifested in a conservation of one or other of these elemental conditions, and often of all three. In all improved methods of performing work we can discern either an economy of space, a saving of time, or a greater development and conservation of energy. We may also find that one of these factors has been manifested in a manner hitherto unknown.

To the three elemental conditions mentioned—space, time, and energy—may, in most cases, be added a fourth, the substance acted upon—the material.

The four conditions named above can be easily remembered by recalling the initial letters of each word, which form the word “stem.” All improvements in method *stem* from a consideration of these four elemental conditions. Sometimes one and sometimes another will predominate in importance, but none should be overlooked.

Stated in condensed form, the devising of the one best method in relation to these conditions may be defined as the continuous and progressive *elimination of waste* in each, using the chart on page 44.

V. FINDING THE RIGHT PERSON

The person best fitted to perform the one best method must be found, for it would be only too evident a waste of the scientific effort already expended to commit the result to a person temperamentally, physically, mentally, or otherwise incapable of utilizing the method to the highest degree possible.

It is recognized by management that certain personal qualities are essential for the performance of the best work on any particular task. Since every person has certain qualities and aptitudes which predominate, the qualities desired must be sought and fitted to the task in hand if the best results are to be obtained.

The study of human aptitudes, the selection of the human element

CROSS-ANALYSIS SHEET				
<i>Problem to be solved</i> _____				
THINGS TO THINK ABOUT	To Save SPACE	To Save TIME	To Save ENERGY	To Save MATERIAL
1. What elements are alike?				
2. What are different?				
3. What is the unit?				
4. Are there many units?				
5. Can units be grouped?				
6. Can units be multiplied?				
7. Can position be changed?				
8. What is the limitation?				
9. Can re-use be applied?				
10. What is the exceptional?				
11. What is the general?				
12. Can factors be eliminated?				
13. Will use of symbols help?				
14. Will an outside influence help?				
15. Will motion study help?				
16. Must force be considered?				
17. Is or can there be rhythm?				
18. What is order of progression?				
19. What are the common errors?				
20. What will it cost?				
21. What will it be worth?				

The use of a cross-analysis sheet like this will help to eliminate or reduce the possibility of overlooking any important aspects of the problem under consideration. Although it is not expected that all the points listed here will necessarily apply to every problem, at least they will not be overlooked.

best fitted to perform any particular task, is therefore an essential principle of the science of management, which, from its very nature, is not and cannot wholly be confined to inanimate objects.

VI. TRAINING THE RIGHT PERSON

It must not be assumed (though it often is) that simply because we have found the person best qualified for the job, he is immediately endowed with the ability to perform it in the manner which we desire. A period of teaching and training is almost always invariably necessary, for the discovery of the person best fitted does not involve the assumption that he is already in possession of the ability or experience needed in that particular work. This would assume, in fact, that the person selected has already devised the one best method and actually worked on it in practice, an assumption which is, of course, absurd.

The person who has been scientifically selected as the best fitted for the work in hand must be carefully and thoroughly instructed in the standard method of performing it. This involves the training and teaching of each worker in the particular tasks assigned to him and is an indispensable part of the science of management

Not only do the principles here enunciated follow each other in logical order, they are also interdependent and possess many elements in common. The next principle is in itself a striking example of this fact. When the purpose has been defined, when it is known what work there is to do, and when all has been set in order for doing it, we find that the original decision regarding what to do is not a definite act that terminates with the discovery, but is an unending process. It becomes necessary *continuously to determine and decide what work is to be done*; this activity may be defined as planning, the next principle.

VII. PLANNING

It is apparent that in all work some mental process resembling planning always takes place, for it is impossible to do work without some sort of decision as to how to do it; this may be called planning—of a sort. But the essence of planning, as a principle in the science of management, is that the work be done thoroughly and accurately, which means much more than a loose and hasty decision regarding it.

The duties of the business office are so numerous and diversified that at first thought it would seem utterly impossible to get things done without scientific planning. It is reasonable to assume that no single

individual could ever keep in mind the hundreds of different tasks to be performed, unless he had some planning mechanism to assist him.

Routines as Planning Mechanisms. Even the most unscientifically managed offices have a mechanism that serves more or less effectively as a planning mechanism, although it is rarely recognized as such. That mechanism is the routine.

Division of labor is carried out to a great extent in the performance of clerical work, making it necessary for most of the work to travel through regular channels. When one operation is finished on a certain piece of work, it is passed on to the next clerk, who performs another operation on it and passes it to the next, and so on. Work on an order routine, for example, often passes through 15 or 20 or even 50 steps before it is completed. Therefore, when work is once started on a journey of this kind, the office manager can and usually does practically forget it until it reaches its final destination. Were it not for the routine, which is a well-established feature in all office work, the average unscientifically managed office would present an appearance of chaos most of the time.

Though the routine thus acts as a planning mechanism, it is not sufficient, especially for a large office where there is much work to be done. The planning of work accurately and scientifically is an essential principle of the science of management.⁴

VIII. GETTING THE WORK DONE: COOPERATION

The final principle may be summed up in the word "cooperation." Here again we are dealing with the human factor, as in the task of finding the person best fitted for certain work and teaching him to perform it. Without the cooperation of other human beings, modern industry is unthinkable; the fullest, freest, and most intelligent cooperation of others is a necessity if the highest effectiveness is to be obtained. This holds good in all management and is a universal principle which determines the measure of success of all joint human activities. Naturally it must function in the office, exactly as elsewhere.

Though cooperation as a principle is self-evident, the methods by which it is secured in fullest measure are not so evident. An organization has been concisely defined as "a collection of persons working together for a common end." It is easily possible to gather collections of persons; it is not difficult to persuade or even force them to work together; but the working for a "common end" is something that is not

⁴ See Chap. XXVI on Planning and Scheduling Office Work.

amenable to compulsion. It is wholly dependent upon the will of the "collection of persons"; and until this will is freely, fully, and intelligently given by all to the accomplishment of this common end, true cooperation has not been achieved.

To recognize that a manager possesses and exercises the ability to win cooperation is perhaps the highest tribute that can be paid him, for in a certain sense it is the culmination of the successful application of all the scientific principles preceding it. The manager who has developed this faculty to a high degree is correspondingly rewarded and, if his work is studied, it will be found that he has followed with fair accuracy the principles here outlined.

We may observe here, as a slight digression, that in the above we have said nothing concerning what is called "good treatment" or "fair treatment" of employees. The scientific method of handling both human beings and their work includes fair and humane treatment to all concerned.

QUESTIONS FOR DISCUSSION

1. Is all office work necessary? Why or why not?
2. Would you say that the use of printed forms in office work is a result of the exercise of the office-management function by someone? Explain.
3. "There is a distinct and growing tendency to question the cost of clerical work in proportion to its value." Why? Illustrate your answer with specific instances.
4. Why should mail-order houses wish to eliminate filing the correspondence of their customers?
5. Do you believe that an enterprise should keep a copy of every letter and paper that comes into its possession? And a copy of every letter that goes out? Why or why not?
6. a. What criterion do you consider would be a sensible one to use in determining whether any specific letter should be filed or destroyed?
b. Who do you think should determine that fact? Why?
7. a. What advantages are gained by eliminating a number of reports?
b. How would you know which reports to eliminate?
8. What is the outstanding feature of the modern conception of office management?
9. What is the difference, if any, between elimination and simplification?

10. What does simplification mean with respect to office work?
11. What are some of the forces that make for scientific office management?
12. What is meant by centralized control of office activities?
13. What is the difference, if any, between centralization of location and centralization of control?
14. What are the advantages of physical centralization?
15. What are some of the evils of uncontrolled decentralization?
16. What are the advantages of centralized control by the office manager?
17. What clerical activities lend themselves to centralization? Why?
18. What conditions are to be expected where the office consists of small groups under indifferent management?
19. Comment on the attitude of many executives toward office functions. How would you explain this attitude?
20. Why are there opportunities for a competent office manager?
21. What is the meaning of "functional office management"?
22. What does a "functional office manager" do?
23. "The office manager's position is similar to that of a functional foreman." How?
24. What size office should have an office manager?
25. Is management a science? Comment.
26. State the eight principles of scientific office management.
27. Which of these eight principles do you think is the most important? Why?
28. Why is it necessary to precede the consideration of all management problems with a definition of the objective and purpose of the work?
29. Why is it always important to state the problem?
30. What is meant by "analyzing a problem"?
31. How far should the analysis of a problem be carried?
32. Into what five classes may management problems be grouped?
33. Generally speaking, what "facts" would you look for in carrying out the third principle of scientific office management?
34. In what three ways can you find the facts? Evaluate each of the three ways.
35. After you have collected the facts, what should you do with them? Why?
36. What four elemental conditions enter into the devising of the one best method? Comment on each briefly.

37. What relation does the elimination of waste bear to the four elements stated in your answer to question 36?

38. a. Why is it important to "find the right person"?

b. What is meant by the "right person"?

39. The sixth principle of scientific office management is "training the right person." If a person were the right one, wouldn't he be already trained? Why or why not?

40. Why is planning necessary? Or isn't it?

41. Why is planning a continuous process?

42. If planning is important, why is it not the first principle of scientific management instead of the seventh?

43. Comment on routines as planning mechanisms.

44. Why is "cooperation" a synonym for the eighth principle of scientific office management?

PROBLEM I

The general manager of a department store called in one of his promising young men and said, "Jim, we're thinking about using modern methods in our accounts receivable department and I'm putting it up to you to find out what should be done."

Jim at once proceeded to visit all the other department stores in town and then got permission to visit a number of other stores in neighboring cities. As a result of his peregrinations he presented a report to his superior, recommending that Triumph bookkeeping machines be used.

Assuming that he picked the best machine, did Jim attack this question properly? Comment at length.

PROBLEM II

Henry Wright, now chairman of the board of the Wright Machine Tool Company, is of the old school. When he first started the company, about fifty years ago, there were only a few workmen and no clerks. As the company grew, Wright had to hire a bookkeeper and later a stenographer. As the years passed, the office force grew more rapidly than what he called "the productive workers."

Until the payroll reached 500, Henry prided himself on knowing each employee's first name, and he knew the family history of many of them.

His son Frank, who is now president of the company, wishes to put in several "new-fangled" ideas, such as a cost department, statistics, financial reports, planning department, and the like and, as a matter of fact, has put in many of them already. He calls this "keeping the office modern." The father condemns it all as nonsense and says that for years in the beginning he "kept all his records in his head" and made more money then than now. He thinks most of the records now kept are worthless.

Since the company desires to pay dividends, would it not be best to compromise and get rid of about half of the present clerks, by throwing out all records except such as are essential for the business?

If you agree, how would you determine which records should be retained?

PROBLEM III

The Kingman Manufacturing Company was founded in 1880 by the brothers Kingman, both now dead. It was originally a jobbing machine shop, but the sons of the original founders saw an opportunity to enlarge the business by manufacturing a miscellaneous line of office devices and machines. These items sold well and for a long time the company made large profits, but when the quality of the goods fell below the advertising claims, the business dropped off, compelling the company to get new lines and seek new customers. The employees are much dissatisfied with the prospects of promotion, for the most desirable positions are filled by relatives and, in the opinion of the staff, very poorly, in most cases. The company's methods are archaic, and the output per employee is low, while the rate of labor turnover is about 150 per cent. Every year the company brings out new articles, with the invariable experience that it is either oversold or else has a large inventory at the end of the year. A reorganization of the company is imminent.

What fundamental principles of management are violated by this company? What would you suggest be done?

"An organization is a fitted working plan of relationships—a machine of perfectly fitted parts built to run smoothly."—H. S. McCORMACK.

III

ORGANIZATION, ADMINISTRATION, AND MANAGEMENT

The difference between "administration" and "management" is not always clear to the student. Nor is the situation helped by the fact that each term is sometimes used to indicate a function and at other times to refer to the individual or group of individuals exercising that function.

To acquire the habit of thinking "functionally" is a real accomplishment. Such a habit simplifies many of the difficulties inherent in the analysis of management problems. Functional thinking makes it possible to separate the function itself from the individuals exercising the function or affected by its exercise. One or more functions are always involved in any situation, and the responsibility to exercise that function also exists. Unfortunately, the authority to exercise a particular function is not always definitely assigned to a certain individual, and for this reason it may not have been exercised. Or, lacking authority, some individual who might have assumed the responsibility did not do so, perhaps from discretion or from lack of courage. As a result, the function was not exercised, although it was present.

ADMINISTRATION

Consider "administration," for example. In management practice, "administration" has two significant meanings. One is the function of determining the major policies upon which the enterprise is to be conducted; the other is the individual or the group of individuals who exercise the function of administration. Except in very large concerns, the policy-making function is usually the responsibility of comparatively few individuals in the company. In a corporation, the board of directors lays down the major policies; in a partnership, the

Policies are scientifically determined directive controls, designed to state the aims and purpose of an enterprise or activity and to some extent outline the methods to be followed in achieving the aims stated. Policies must be flexible, not rigid; they must be specific and definite, not ambiguous; they must be clear and comprehensive; and they must be practical.—Coleman Maze.

partners themselves establish the policies, unless they have agreed otherwise among themselves. In an individual proprietorship the proprietor determines the policies of his enterprise.

In each of these instances, the function of administration is the same—to determine the policies upon which the enterprise is to be conducted. New conditions may require new policies or a change in old ones; but the policy-making function is still present, and that function is the same in every concern and in every undertaking of any kind, business or otherwise. Someone has to lay down the policies which guide the conduct of the business. The policy-making function is the function of administration, and the individuals who exercise the administrative function are frequently referred to as “the administration.”

Note, however, that although the policy-making function is present in every enterprise, the individual or individuals responsible for exercising that function vary with the enterprise. In the ABC Corporation, the directors happen to be Mr. Allen, Mr. Brown, and Mr. Carr. In the PQR Corporation, the directors are Mr. Peterson, Mr. Quincy, and Mr. Rowse—two different groups of individuals, but each group has the same function.

The ability to recognize a function wherever it is found is extremely helpful, since once a function is recognized, the responsibility for its exercise can be assigned to a particular individual or group of individuals. Furthermore, functional thinking makes it possible to combine like functions under a unified direction and control to assure uniformity of performance.

MANAGEMENT

Consider “management,” as a second example. In management practice, “management” also has two significant meanings. One is the function itself, the other the individual or individuals responsible for exercising the function. The function of management is to carry out the policies laid down by the administrative group. The management function includes:

1. Determining the immediate results to be accomplished
2. Planning how those results are to be accomplished
3. Building the organization to secure those results
4. Directing the organization to secure those results
5. Controlling the organization, the plans, and the results

The individuals who exercise the management function are the officers of the corporation, the members of the partnership, and the individual proprietor. These individuals, collectively in the cases of the corporation and the partnership, are also often referred to as "the management." Let it be noted, however, that "the management" may delegate part of its function of management to others. Thus it is that department heads exercise the management function, each within his own department; division heads exercise the management function, each within his own division; and section heads likewise. Wherever the management function is present (and that should mean everywhere in the business), there is or should be someone responsible for exercising that function or a specific part of it.

The significance of the preceding statement is at once obvious when contemplating the function of office management, that function being the responsibility for the organization, direction, and control of office work, wherever found. The parallel to other coordinate functions is clear: the sales manager is responsible for the organization, direction, and control of sales everywhere; the purchasing agent is responsible for the organization, direction, and control of purchasing everywhere throughout the company; the credit manager, for the organization, direction, and control of credits and collections; and the traffic manager, for the organization, direction, and control of traffic, wherever traffic is involved.

ORGANIZATION

The word "organization" is also used in two ways. "Organization" may refer to the function of organizing, or it may refer to the structure of individuals and facilities by means of which the manager has his plans carried out. Curiously enough, we may say that an organization results from the exercise of the function of organizing. Whether the resulting organization is effective depends upon two factors: first, upon the care with which the organization was set up; and second, upon the wise direction and control of the organization by a competent executive.

What is good organization?

Good organization exists when each member of the group, already

selected for his competency, is given a definite assignment and a stated time for carrying it out. The assignment is within his ability to perform. He understands what he is to do, how he is to do it, and when. He is provided with the necessary facilities for accomplishing his appointed task, including proper materials, suitable equipment, competent assistance, and adequate supervision. If to this statement of good organization were added "under good working conditions," we should have an ideal setup for accomplishing any desired results.

A competent executive may be able to secure good results with a poor organization; a good organization may produce results for a poor executive; but the combination of a good organization and a good executive is "unbeatable," other things being equal.

Organization is concerned with "who is to do what is to be done." Three questions frequently asked are, "What shall be done?" "How shall it be done?" and "Who shall do it?" The first is a question of policy; policies determine what shall be done under given circumstances. The second question is one of method; all "how" questions are questions of method. But the third question, "Who shall do it?" is a question of organization. Whenever the question is raised as to who should do this, or who should do that, or what department should take care of a particular problem, the answer is always one of organization. What is the setup? To whom has this responsibility been assigned? Often the problem arises because it has not been assigned to anyone; the responsibility of making assignments is placed squarely upon management.

FIVE IMPORTANT POINTS

The very first rule of organization is that *definite and clean-cut responsibilities should be assigned to each executive and to each employee.* In no other way can responsibility for results be fixed. In no other way can "buck-passing" be effectively forestalled. In no other way will each individual in the organization know what is expected of him. Instead of wondering whether or not he is responsible for certain things, he knows. Surely that is the least that the office manager can do; how can he expect a clerk to do a certain thing if that clerk doesn't know it is his responsibility?

Along with the assignment of responsibility is the delegation of authority. Authority is the power to command or to act. If a respon-

DUTIES, RESPONSIBILITY, POWER, AUTHORITY

Duties are the activities that the individual is required to perform.

Responsibility is the accountability for the performance of duties.

Power is the ability to get things done.

Authority is the right to require action of others.—L. Urwick.

sibility requires authority, *whatever authority is required should be delegated by the executive making the assignment.* If authority is not delegated, one of two things may happen: either the individual will do nothing, because he has not the authority; or he will assume the authority and go ahead "on his own." The often resulting unpleasantness in either case could easily have been avoided by observing this second rule of organization: responsibility shall always be accompanied by corresponding authority.

A third interesting point in connection with authority and responsibility: *authority always flows downward, while responsibility always moves upward.* An individual derives his authority from someone above him, to whom he is responsible for the proper performance of the task assigned to him.

In any case, lack of clearly defined lines of authority and responsibility is one of the most common difficulties in office organization; the authority of certain section and department heads is not clearly understood by the employees, and sometimes not by the heads themselves. As a result, there is misunderstanding and strife, for where the lines of authority are allowed to remain indefinite and questionable, confusion is practically certain to ensue.

A fourth important point is that *no one individual executive should have too many people reporting to him, or too many departments or sections under his control;* for where this condition exists the control is certain to be defective. While opinions differ as to the number of people or departments that an executive can effectively supervise and control, there is general agreement that the temptation is to have too many rather than too few. There is a limit to an executive's "span of control," as it is often called.

Fifth, it is desirable to have the work functionalized as far as possible; that is, *no individual should have too many, or too varied tasks to perform.* Specialization is no longer a mere theory, but a demonstrated, successful fact, and the office manager who does not carry it to the limit

EIGHT PRINCIPLES OF ORGANIZATION

1. *Purpose.* All organization and each part of any undertaking should be the expression of a purpose, either explicit or implied—the Principle of the Objective.

2. *Authority and Responsibility.* Formal authority and responsibility must be coterminous and coequal—the Principle of Correspondence.

3. *Responsibility of Supervision.* The responsibility of higher authority for the acts of its subordinates is absolute—the Principle of Responsibility.

4. *Scalar Principle.* There must be a clear line of formal authority running from the top to the bottom of every organization—the Scalar Principle.

5. *Span of Control.* No superior can supervise directly the work of more than five or, at the most, six subordinates whose work interlocks—the Principle of the Span of Control.

6. *Specialization of Function.* The work of every person in the organization should be confined so far as possible to the performance of a single leading function—the Principle of Specialization.

7. *Coordination of Effort.* The final object of all organization is smooth, effective coordination—the Principle of Coordination.

8. *Definition.* Every position in every organization should be clearly prescribed in writing—the Principle of Definition.

(From L. Urwick, "Scientific Principles and Organization," in the *Institute of Management Series 19*, published by the American Management Association.)

of practicability, consistent with its profitable character, will lose in the effectiveness of his office work and in quantity and quality of output.

LINE AUTHORITY AND STAFF AUTHORITY

It is desirable to distinguish between the two types of authority known as "line authority" and "staff authority." Some executives have line authority, others have only staff authority, while still others may have both.

An executive with line authority has complete command over all the factors concerned in the operation of his department or group; he is called a line executive because he has the authority to get action within the area assigned to him. If a company has a general office in charge of an office manager, the office manager has line authority within the general office. He may or may not have line authority outside the general office, as we shall see shortly.

The company may have a research department, whose responsibility

may be to develop improved methods and processes. Suppose the department has a chief and five research assistants, plus a secretary. The chief has authority to conduct investigations anywhere in the company and to make recommendations for improvements. This authority to gather information, conduct researches, and make recommendations is called "staff authority." The research chief has no authority to give orders outside of his research department; within his own department, of course, he has line authority.

An office manager may have staff authority to survey branch or departmental offices outside the general office; if he also has authority to put his recommendations into effect, he is still a staff executive. But if he has authority to say who shall do the office work in any department, he then has line authority.

Ordinarily, a department head has complete line authority within his department. He determines what work shall be done, how it shall be done, who shall do it, and when. In some companies, however, the office manager is responsible for determining the best methods of performing office work everywhere in the company. If the office manager is an expert in his field, as he should be, it is to the benefit of the company to have uniform standard methods of doing the office work. The department head may still determine what work shall be done and who shall do it. But the office manager prescribes the method of doing it. Thus the office manager is a line executive within the general office; he is a staff executive outside it; and he may be a line executive to a limited extent outside it.

Wherever an office manager has authority to get action, he is a line executive; wherever his authority is limited to conducting surveys or investigations and making recommendations, he is a staff executive. Many office managers who have line authority believe that they get better results with other department heads through "suggestions" than through orders. An executive who can get others to do as he wishes because they respect his ability and like to work with him gets heartier cooperation than one who depends upon his authority alone.

Another good example of a staff officer is the personnel manager. Within his own department he has line authority. Elsewhere he may only recommend and advise. In carrying out his employment function, for instance, he may interview, test, and select promising applicants; the final choice may be left to the department head where the clerk is to work. Then the personnel manager may take over the training and personnel follow-up.

ORGANIZATION CHART

There is a good deal of double talk about organization charts. Some executives swear by them, and others swear at them. Nevertheless, no other device has yet been found which will set forth so clearly and simply the relations which exist between the executives in any organization as to the function or *functions for which* each executive and employee is responsible, and as to the *executives to whom* each individual employee is responsible. We have just seen how important it is for everybody concerned to know what he is expected to do, to whom he is responsible for the performance of his duties, and how much authority he has, if any. A good organization chart will show these facts.

HOW AN ORGANIZATION CHART SHOWS RELATIONSHIPS

An organization chart is a plan of working relationships. It shows who is to do the work that is to be done and who is to direct and supervise the efforts of those who are to do the work.

For example, a file clerk's job is to file letters and papers and be able to find them later. If she is the only file clerk, she will do all the operations involved: sorting, classifying, cross referencing, filing in, finding. She is responsible to the office manager or chief clerk.

If there are two file clerks, the work is divided between them: each may do all the operations on one-half of the material to be filed; or each clerk may do only part of the operations, but on all the material. For example, one girl may sort, classify, and cross-reference, while the other girl does the filing in; both may do the finding.

It is conceivable that the two file clerks may be able to agree on a proper division of the work. Generally, however, someone else must make the division and assign the allotted duties to each clerk. In a small office the office manager or chief clerk may do this; in a large office with a sizable filing division, a head file clerk will have this responsibility. As the supervisor of the filing division, she determines what work is to be done and who is to do it; she assigns the work to the respective file clerks and sees that each does the work assigned to her.

The organization chart will show these relationships at a glance.

Of course, a chart may be so complicated that the relationships are not clearly shown. This may be the fault of the one who drew the chart; or it may reveal the situation actually existing within the organization. Either way, correction is called for: let the draftsman draw a series of simple charts instead of one large intricate chart; let the powers that be

simplify the organization structure, unless they purposely wish to confuse the picture for reasons of their own. The office manager can do little about the second reason—that is beyond his power; but he can do much about the first, simplifying the chart.

In a small organization, one chart can easily show the entire organization, without difficulty or complications. In a very large organization, one chart could hardly be large enough to show the necessary detail. Therefore, several charts may be used—the first chart showing all the major divisions of the organization, with a supplementary chart for each major division, then each subdivision, and so on, until all the relationships are shown. Such a series of organization charts, carefully prepared, will make clear as nothing else can the authorized or existing relationships (these are not necessarily the same).

Let us agree that few organizations are perfect. Because of that fact, we should expect to find some defects or discrepancies when a chart of the present organization is drawn up, before any changes have been made. The common defects are usually of four kinds:

1. An executive is found to be responsible for two or more functions that are incompatible with each other, such as a sales executive trying to handle credits.

2. Two executives have overlapping authority, each being equally responsible for the same function or for the same group of employees. This results in confusion all around, but it sometimes is not revealed until the preparation of an organization chart shows it up. There have been cases where two separate groups in the same company were doing the same work, independently of each other, and without knowledge that the work was being duplicated. In one company these two groups were in the same office building!

3. Some individuals do not report to anybody. They were brought into the organization and put to work, but nobody is responsible for them. This happens often enough to be embarrassing.

4. There are "holes" in the organization; that is, some important function is not being handled at all. Nobody has been assigned to it, and so nobody is doing it. Sometimes this is due to the function being entirely overlooked, a not uncommon occurrence in organizations which have "just grown."

It is obvious from what has been said that there are two real benefits to be realized from the preparation of an organization chart. One is to show the organization as it now is, with whatever defects it may have. The other is to show the organization as it should be, with the defects corrected, or after the defects have been corrected. Let's not fool our-

selves—a fanciful chart is not going to correct overnight a situation that may have been years in the making. But it does provide something to shoot at, even if the changes indicated have to be brought about gradually.

Not all administrators agree as to when and how indicated organization changes should be made. Some—the so-called “hard-boiled” type—are all for ruthless changes at once. Others, with more regard for moral obligations to present personnel, prefer to go a little more slowly. Both methods work. The first is more painful than the second, but the situation may be so desperate as to call for a major operation. Opinions differ.

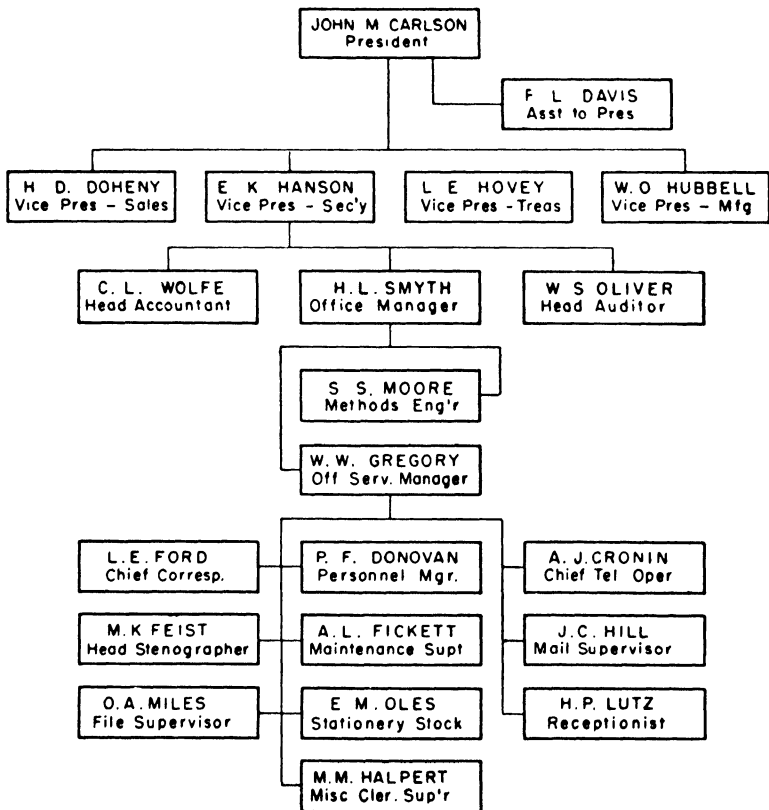


FIG. 4. Personal organization chart, showing individuals and titles. This type of chart stresses the position and its incumbent, not the function.

When the final organization chart is ready, it should be posted where everybody can see it. This serves two purposes: everyone can see where he now stands in the organization, and employees can also see what opportunities lie ahead of them, if any.

It should not be necessary to state that an organization chart should

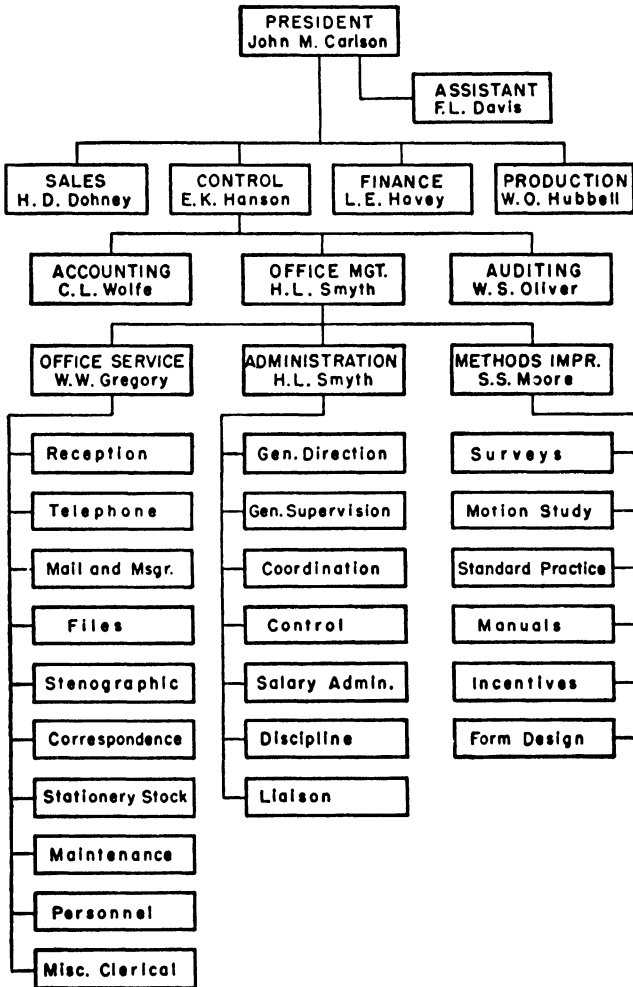


FIG. 5. Functional organization chart, showing functions and persons responsible. This type of chart stresses the function, not the position or the individual.

be kept up to date, by someone definitely assigned to that responsibility. Changes in personnel and in function should be shown on the chart as soon as they are made. Then the chart will mean something. Otherwise, it will soon be out of date, without meaning and *without influence*. In other words, if the purpose of the chart is to show the organization as it is, so that executives and employees will not overstep their functions and responsibilities, the chart should be kept in step with each change as it occurs. When an organization chart is a living picture of things as they are and as they should be, it will be respected, but not otherwise.

HOW TO PREPARE AN ORGANIZATION CHART

An organization chart may be prepared by starting with the highest authority in the company and working down. List on an 11- by 8½-inch sheet of paper the name and title of that individual and the names and titles, if any, of all individuals reporting directly to him. Taking each of these individuals in turn and following the same procedure consistently, using a separate sheet for each individual who has others reporting directly to him, will eventually bring the analyst to individuals who have no one reporting to them, but whose names appear on the sheets of the individuals to whom they report. If all the sheets are now laid out on a table or pinned on a wall so that all sheets of those on the same plane of authority are in the same horizontal line, the analyst will have the basis of an organization chart, showing who reports to whom. It is then easy to copy the names and titles on to another single sheet, placing them in the same relative positions.

Although such a chart shows the lines of authority and responsibility, it does not show the functions for which each executive is responsible, except in so far as his title may indicate it. It would help if *above* each individual's name were written the functions for which he is responsible. One result of this step might be to show that the responsibility for a certain function is divided between two or more individuals, while another individual might be shown to be responsible for two or more conflicting functions. The correction of these organization discrepancies would go a long way toward ensuring smoother operation.

It is possible to prepare a *functional* chart which will show the main functions and subfunctions into which the main functions are logically subdivided. This subdividing can be carried as far as desired, with resulting benefits. One benefit is a comparison of the functional chart with the other chart, to see to what extent functions are logically assigned, as well as if any necessary functions are being neglected. An-

other benefit of the functional chart is to facilitate the preparation of the organization write-up.

ORGANIZATION WRITE-UP

In addition to the organization chart, there should be prepared an organization write-up, detailing each item more fully than is possible on the organization chart. This write-up contains a brief statement of each person's name, department, position, and present duties. Generally, no details are given as to the present methods of performing the duties, those being described in the current practice instructions, as contrasted with the standard practice instructions, which describe fully the methods to be used, after the current methods have been analyzed, synthesized, and standardized in accordance with the scientific method.

When first prepared, the organization write-up will probably be arranged alphabetically by name of executive and employee, for quick reference. Or it can be arranged by departments or functions, if desired, with an alphabetical index. Like the organization chart, the write-up should be kept up to date; any changes should be entered as they are made.

STANDARD NOMENCLATURE

When it becomes necessary to refer to any subdivision of the office, a standard nomenclature is needed. The word "department" is frequently applied indiscriminately to subdivisions, major or minor, causing much confusion. The United States government generally uses the following:

- Primary classification—department
- Subdivision of a department—bureau
- Subdivision of a bureau—division
- Subdivision of a division—section

The following standardized nomenclature, used by the authors, should become general practice:

Department, division, section, subsection, unit.

QUESTIONS FOR DISCUSSION

1. What is meant by "thinking functionally"?
2. Why is the ability to recognize a function helpful?

3. Define or explain "administration" fully.
4. Explain what "policies" are.
5. Define or explain "management" fully.
6. What does the management function include?
7. Who exercises the management function?
8. Where should the management function be exercised?
9. What bearing has your answer to question 8 on the function of office management?
10. Show the parallel of the management function with respect to office, sales, purchasing, credit, and traffic.
11. Could the individuals included in the "administration" also be considered as "management"? Explain.
12. Define or explain "organization" fully.
13. Upon what does the effectiveness of an organization depend?
14. When does "good organization" exist?
15. What is a policy?
16. Explain the difference between these three questions:
 - a. "What shall be done?"
 - b. "How shall it be done?"
 - c. "Who shall do it?"
17. What is one of the most common difficulties in office organization?
18. What is the first rule of organization?
19. Name Urwick's eight principles of organization and comment on each briefly.
20. What is the difference between duties, responsibility, power, authority?
21. How may responsibility for results be fixed?
22. Define or explain "authority" fully.
23. What is the "scalar" principle?
24. "Authority always flows downward, while responsibility always moves upward." Explain.
25. Define "span of control."
26. How many people should report to one executive? Why?
27. "It is desirable to have the work functionalized as far as possible." Why?
28. What is an organization chart, what is its purpose, and what should it show?
29. What two conclusions might you draw from a chart that is not clear?
30. "The authorized and existing organizational relationships may not be the same." Explain.

31. What four common defects are frequently found in organization charts?
32. How is an organization chart prepared?
33. Why should an organization chart be kept up to date?
34. What is a functional chart, and why is it helpful?
35. What is the organization write-up, and what does it contain?
36. State and explain one advantage of standard nomenclature.

PROBLEM

The Kelley Manufacturing Company was established in 1864 and for many years held a place of prominence in the field—in fact, a practical monopoly. It accumulated a large surplus and its officers were engaged in many local affairs. For the past 15 years, the factory manager and the financial manager have mutually stood in an attitude of armed truce. The secretary, who worked closely with the financial manager, has had charge of the purchasing and the clerks who handle the orders, but there are clerks scattered throughout the factory over whom he has no control. The clerks in the sales department report to the sales manager. A survey of the clerical work shows that its cost is about double what it should be.

Explain how the company can put a competent office manager to work on straightening out the problem here to the best interests of the company, without offending either of the executives.

"The requirements of administrative officials can be summarized in one word: 'control.'"—H. L. WYLIE.

IV

THE CONTROL OF OFFICE WORK

"Control" is not easy to define or explain. It combines knowledge with power—the knowledge that one's plans and directions are or are not being followed, and the power to compel compliance with one's orders and instructions, that is, authority. Acts based on authority alone cannot be so intelligent or effective as when they are based on adequate, reliable, and timely information, since the possession of such information puts the office manager in position to know what to do to bring about the desired results.

The elements of control, then, are authority and knowledge, guidance and direction, constraint and restraint. To be in a position to exercise control, the office manager must know what the situation is, he must know what it should be, he must know what to do to bring the situation into line, and he must have the authority to take the appropriate action. To bring about control, the office manager must have his lines of communication established, open, and working; he must know what to do under the circumstances, and do it.

There are present, in every office-management problem, a multitude of elements and conditions, some desirable, which the office manager wishes to retain, and others of an opposite character, which he seeks to eliminate or avoid. Controlling, therefore, is the conscious directing or influencing of certain causes so that certain desired effects will result.

A person may possess the title of office manager, but unless he exercises a conscious directing influence upon the conduct of the office, unless, in plainer words, he makes things happen that should happen and pre-

<p>It is essential to control that there shall be adequate records and reports covering performance in every section of the office.</p>

vents things from happening that should not happen, he is not managing. On the other hand, perfect control in management is not possible, for perfection always remains an ideal to be striven for, but never wholly attained. The most and best that can be expected is that the balance will be very much in favor of the office manager, and not against him.

WHEN IS CONTROL PRESENT?

A manager may be said to have effective control of his office when the work he has planned to do is always done in the order, time, and manner in which he planned it should be done.

This involves knowing what work is to be done, what facilities are available for doing it, and what work is now in progress. The office manager must know the quantity of work to be done, the standard of quality required, and the time available for doing it. He must know what help and equipment are available and their respective capacities. He must know whether necessary materials are on hand or quickly procurable. He must know or determine which of the various items of work ahead and in progress are more important and will have to be given priority over other work.

These factors are present in all offices, and the successful office manager is the one who can coordinate them so that when the day is done, the work that was planned for that day is done also. But if the work has not been planned, the chances are that it will not be done, at least within the regular office hours.

A control mechanism is any device, means, or procedure which keeps the manager informed as to the activities for which he is responsible and which assures him that his plans and policies are being carried out according to schedule.

In all management work it is highly desirable—in fact imperative—if one is to control results, to have all the conditions under control. The scientific manager approaches only one factor at a time, standardizing the conditions, so that when he has all factors under control he can also control the results. Under such circumstances, in the absence of emergencies, for which allowance must be made, control of results is inevitable.

In every office there are three kinds of work:

1. The work which must be done today

2. The preparatory work which must precede the work of today
3. The work which results from the work of today

These have sometimes been described as preparatory, immediate, and cleanup. In many offices the office manager tries to do all three kinds of work the same day, regardless of the volume of work to be done. Here is where careful planning will help.

ELEMENTS OF SCIENTIFIC CONTROL

1. Planning and scheduling
2. Checking up on the success of previous plans and schedules so that future plans may be improved
3. Inspection of finished work so that the standard quality may be maintained

WHY PLANNING IS NECESSARY

A great deal of the office work that is done on any one day need not be done on that day—it may be anticipated or it may be deferred, one or the other, but not necessarily both. By looking far enough ahead, the office manager can smooth out his curve of office-work volume, so that on peak-load days only immediately necessary work need be handled, and on valley days the preparatory or cleanup work may be handled. To do this requires careful planning in addition to a day-to-day knowledge of the work that is ahead. This is not as difficult as it may seem, since all office work is the result of something else—sales orders, the sales campaign which results in sales orders, the statistical work which accompanies or follows the handling of sales orders, and so forth.

Assuming that an analysis of the office work has shown that many tasks may be omitted altogether, that they have been eliminated, and that the best way to do the remaining necessary work has been determined and reduced to writing, the next factor to consider is the office force. The office force is either competent or incompetent to do the work to be done. If it is incompetent, it is the fault of the manager, who is responsible always. It is also assumed that the equipment of the office has been standardized, that it is suited to the work to be done, and that it is in the best working condition.

When the office manager has standardized the work, the office force,

Scheduling the work—especially routine, intermittent, and special work—is the standard mechanism for controlling output.

its compensation, the working conditions, and the facilities for doing the work, he is ready to do some effective planning. Without standardization, satisfactory planning and control are difficult if not impossible; with standardization, the office manager will know how much work each worker can do, and he will know how much work is to be done. Dividing one of these items by the other gives the time it will take to do the work. Let the manager now assign the work accordingly and see that it is done as assigned by those to whom it is assigned, and within the time set.

It should be observed that this presumes a knowledge of the amount of work each worker can do. Relatively few managers of small offices know this figure; and many managers of large offices are not as sure of it as they might be or should be.

Suppose that the manager's survey of the work to be done shows more work than his available staff can handle. If that condition is permanent, the office is understaffed, and overtime work will not correct it. If the condition is temporary, temporary expedients may be resorted to, such as a supply of temporary workers on call or a "flying squadron" made up of a group of well-trained clerks capable of doing a number of different kinds of work.

If the survey for any day shows less work than the force is capable of handling, then the manager can schedule some preparatory or cleanup work which he has been holding for just such an occasion—"fill-in work" is the term usually applied, although that description sounds too much like making work, which is not the idea at all.

IS CONTROL ENTIRELY A MATHEMATICAL PROCESS?

Thus far in our discussion of control, we have looked upon it as a more or less mechanical procedure which involves getting certain facts and applying mathematical processes to them to arrive at a mathematical result. Nothing would seem more simple.

But everyone knows it is not quite so simple as that. If all the factors involved were inanimate ones, control might be relatively easy. Since it is the human factor that makes control difficult, it will be worth our while to take a moment to contrast the control of material objects with the control of human beings.

SUMMARY REPORT OF DIVISIONAL STANDING AT 9 A.M. _____ 19						
Division	No. here	No. Absent	Work up	Work behind	No. needed	Remarks
Adjustment						
As Had						
Bookkeeping						
Correspondence						
Files						
Mail						
Order Reg'n						
Purchasing						
Stenographic						
Telephone						
Traffic						
Transcribing						
General						

Prepared by _____ Approved _____
Office Manager

THE CONTROL OF OFFICE MACHINES

Let us consider, first, the control of office machines, for example. Simple as this may appear, we shall find that considerable knowledge is required. What knowledge is required for the effective control of office machines?

1. *A knowledge of the manner in which the machine does its work is essential.* Without this knowledge, we cannot utilize the machine to its

fullest capacity. In addition, we may expect of it work which it was not designed to do, either in volume or in character.

2. *A knowledge of the capacity of a machine* is also required, so that it is neither forced beyond that capacity nor allowed to operate below it. In the first case, damage or poor work is likely to occur; in the second, there is a definite loss in production.

3. *A knowledge of the peculiar weaknesses of machines* is also necessary, so that they can be guarded against. A study of each kind of machine used in an office will generally disclose some particular characteristic which calls for special care.

4. *The general factors of deterioration, such as dirt, grease, rust, excessive heat or cold, must be guarded against.* In each type of machine, special attention may need to be given to some particular factor of deterioration.

5. *Bearings must be lubricated with the proper kind of oil, to avoid undue wear of parts.* Although it is conceivable that some machines may get an overdose of oil, other machines are neglected because the operator does not know which places to oil. The particular kind of oil to be used and the manner of its use on various types of machines should be ascertained from the makers, then carefully preserved and its availability made known.

These are but a few of the things necessary to know in order to control the proper use of the machines in an office.

THE CONTROL OF THE HUMAN ELEMENT

Now observe how the same points that apply to the control of office machines also apply to the control of the human element. What knowledge is required for the effective control of the office employees in relation to their work?

In one case 19 girls, all working on the same operation, were using 10 different methods of doing the work. The result was a variation in output, which, when measured, was found to be as from 1 to 3; that is, some of the girls were doing three times as much work as others. When a condition like that is found, it is practically conclusive evidence that the clerks with the smaller outputs are using incorrect methods, as further investigation showed in this case. Further analysis of the above situation showed that even those clerks with the highest output records were not using the best methods possible and were therefore not making the highest output possible.

1. *The manner in which the work is done* should be known. The right and wrong ways of doing clerical work should be recognized and someone should be delegated to see that the work is done in the prescribed manner. If this is not done, the clerks are left to their own devices, and the best results will not be secured.

2. *The capacity of the force* must be known. Many managers adhere to the foolish practice of working with an inadequate force, vainly hoping that some day they will catch up with the work. A knowledge of the capacity of their working force would dispel this illusion.

Nor is it wise to try to get the work out by continuous overtime, for this ultimately defeats its own purpose, and clerks become so weary that a long day does not suffice to do a short day's work. While too much work is often expected from clerks, it still more frequently happens that not enough is expected, a condition which arises from the lack of knowledge of what the force can really do. Not knowing the real capacity of an office force is a deficiency that makes scientific control of work impossible.

Here is a condition in which human beings are different from machines. The capacity of similar machines is to all intents equal, but the capacity of individuals is not. Therefore, to know the capacity of a working force it is necessary to know the capacity of the individuals comprised in it. It is not feasible to figure on a hypothetical average, for to attempt to operate a working force on that basis would mean that clerks of a large capacity would not be called upon to do their best, and those of smaller capacity would be overworked.

3. *The weaknesses of clerks* must be known and guarded against. Every hygienic measure should be taken to guard against accident, disease, and infection, for sickness in an office is a serious handicap to efficient control. Eyestrain should be avoided by the provision of proper light. The office should be kept in the best sanitary condition and should be well ventilated and neither too hot nor too cold for comfort.

4. *Disturbing factors* must be known and guarded against. A very common one is noise, not the noise of a boiler shop, but the constant sound of batteries of typewriters, adding machines, the babel of loud talking, and so forth, noises that would not be noticeable on a busy street but that may become distracting in an otherwise quiet office. Excitement of any kind is a condition that should be guarded against. The efficiency of an office, for example, can be utterly destroyed, for the time being, by such a common occurrence as the fainting of a girl. Chronic disorder or lack of systematic handling of work upsets the smooth running of an office. Overtime work, though sometimes necessary, also acts

generally as a disturbing element that is to be minimized as much as possible.

5. *Equitable treatment* of employees with respect to pay, hours, regulations, promotion, and so forth, is necessary to effective control, being analogous to the oil on the bearings of machinery, in preventing unnecessary friction. But many offices pay too little attention to it, there being much variation in salaries for similar work, much favoritism, and many irksome and unnecessary regulations.

In all the phases above enumerated, the control of the human element is comparable with, and on the whole analogous to, the control of machinery, but there are differences.

THE PSYCHOLOGICAL FACTORS IN OFFICE CONTROL

The great and fundamental difference between the control of machines and the control of human beings is comprised in those factors which are termed "psychological." In this sense every individual in an organization constitutes a separate and distinct problem. But there are many general conditions in this field, in which the reactions of the human element are sufficiently well known to enable a discerning manager to avoid the disastrous results which are almost certain to ensue when they are neglected or ignored, whether deliberately or unconsciously.

There is, for example, a natural resistance on the part of most human beings to arbitrary or autocratic rulings. Each of us, though discretion often prevents open assertion, cherishes the privilege of knowing the why of things, and we rebel—it may be secretly—against the type of manager who openly declares that he wants things done because he wants them done and no questions asked.

There is also the undoubted fact that certain types of individuals require a special method of treatment if their fullest capacity for the work for which they are best fitted is to be obtained. This does not imply partiality, favoritism, or special privileges beyond other workers. Some types of worker will respond to conditions that others will rebel against, as, for example, the preference for different kinds of work. Some persons actually prefer work that is generally regarded as monotonous in character; others have exactly opposite temperaments and prefer variety and sometimes constant change. The fitting of such temperaments to the work which they prefer—and *which for that reason they are best qualified to do*—is a task involved in the achievement of effective control.

From what has been said, it is obvious that to direct office activities

effectively, much more is required than the "ability to lead." The best intentioned leader cannot lead if the natural bent of those he regards as his prospective followers is in the opposite direction and if he is handicapped by his ignorance, contempt, or neglect of the psychological differences found in human beings.

We are now ready to summarize the conditions necessary to the scientific control of an office.

CONDITIONS ESSENTIAL TO EFFECTIVE CONTROL

1. *The office manager must know the necessary steps, and the order in which they should be taken, to accomplish with precision and economy certain definite and desired results in every activity within the sphere of his management. These necessary steps are usually much more extensive than appears on the surface. In routines where the various steps are definitely specified, this is simple; but there are many unrelated tasks in every office which are not connected with any routine.*

On certain office tasks, where pre-employment training outside the office is usual, such as typewriting, accounting, and the operation of office machinery (where instruction is given by the service department of the makers of the machines), it will be found that clerks perform their work with a fair degree of accuracy; but on almost every other office job it may be noticed that the clerks are too often left largely to their own devices.

2. *The office manager must know that the means to take the necessary steps are available.*

In ordinary practice it is usually deemed sufficient to divide the office into various sections, such as bookkeeping, auditing, statistical, cost, stenographic, filing, and so forth, the work being then assigned to each section. The capacity of each department and section is judged by the costly and unreliable trial-and-error method. If there is apparently more work to do than can be done by the group, they start working overtime until finally, when it is indubitably evident that the working force is insufficient, more clerks are added. The pride of such an office manager is the section head who gets the work done somehow, without asking for more help. If he can drive the work through, he is considered a most valuable section head. But supereffort is not an indication of scientific control. The scientifically constructed and controlled machine or organization works smoothly, with apparent ease and without any obvious strain.

The capacity of a section is limited by the capacity of the individuals

composing it, under proper working conditions. And this capacity must be known, not merely guessed at. Even where it is known, it is necessary also to know what work has previously been assigned; for if the capacity is already reached, it would be folly to give more work to the section. It follows, therefore, that an intimate knowledge of the quantity of work to be done is necessary, which requires a further analysis to determine the normal capacity of the section, the various tasks involved, the state of the work in progress, and the relative importance of the jobs already assigned.

3. *The office manager must know that the necessary steps are being taken in the prescribed order*, thus accomplishing the desired results. The ultimate success of the management of any kind of work depends upon this feature of control. No matter what means are used, the work must be done; but to get the best results, the various steps must be taken in their proper order.

Even the poorly trained office manager usually knows whether or not the work was done, but rarely does he know that it was done properly, or that its performance was not delayed by less important tasks, or that it delayed more important ones, unless he has effective control. Especially is this true of nonroutine tasks, which may seriously disrupt the routine work unless effectively controlled.

In other words, without properly planned control of work, it is appar-

TWELVE CONTROL MEASURES FOR THE OFFICE MANAGER

1. Plan and schedule the day's work in writing.
2. See that work is started on time.
3. Determine the amount of unfinished work.
4. Determine the amount of current work to be done.
5. Measure the working force by the work.
6. Check up on the daily output.
7. Insist on a full day's work.
8. Check up on your standard practice instructions.
9. Plan your daily supervision for the week.
10. Establish over-all daily inspection of maintenance.
11. Establish over-all inspection of filing and record-keeping.
12. Get acquainted with your personnel.

(From a pamphlet by W. H. Leffingwell.)

NOTE: For this pamphlet Mr. Leffingwell chose the title, "The Office Manager's Daily Dozen," since in it he explains in detail how an office manager may control the work of his office by taking up one aspect of it each day. Used by permission of Parker Marshall Company, Boston, publishers.

ent that there are great opportunities for waste, through ignorance, lack of training and discipline, to say nothing of deliberate slacking.

THE OFFICE MANAGER IS RESPONSIBLE

The details of office work are so numerous that the office manager cannot reasonably be expected to supervise personally the performance of each of them. He must assign responsibility and leave the actual performance of the work to the guidance of others. But he cannot shirk the ultimate responsibility for the correct performance of these tasks by condemning his subordinates. He can be and should be held responsible for their performance of their duties, for that, too, is within his jurisdiction and is part of his duty.

STANDARDIZATION IS ESSENTIAL TO CONTROL

There is but one way in which the office manager can control scientifically; that is by standardization. Each function must be carefully and thoughtfully studied by some qualified person, and the relative importance of each such function carefully determined. Then follows the determination of how the work shall be performed, and how long it should take a first-class worker to do it. It should be evident that all this careful and valuable work and its results should be permanently recorded. This record then becomes the standard method of procedure for all who are to perform this function. With proper teaching and training the workers soon form desirable work habits in its performance. Then, and then only, is the office manager relieved of the burden of giving constant attention to its every detail.

OFFICE WORK WHICH CAN BE PLACED UNDER CONTROL

Five distinct kinds of work can be placed definitely under control in an office; an analysis of their combined proportions will show that in the ordinary office these five constitute from two-thirds to three-quarters of all clerical work done.

1. *All daily routine work*, such as orders, invoices, and so forth, *which is dependent upon the volume of mail arriving*. Control of this work will improve the flow and greatly increase the output.

2. *Daily work*, such as taking dictation, or other work *which cannot be standardized as to time, but which can be estimated*, and when completed, checked against the estimate. The fact that the work cannot be

exactly estimated is no excuse for not attempting it, for the estimating of such work, will, as experience is gradually gained, improve in accuracy. Also, the fact that an estimated time is set will stimulate the clerks to make good the estimate. For any serious falling behind, an explanation should be required from the clerk concerned, not as an excuse but as a reason, to be taken into consideration when making further estimates.

3. *Daily work which can be measured after completion but not in advance*, such, for example, as the typing of letters. Such work should be estimated as to the quantity assigned, to be checked later against the actual measurement of the finished work. Experience will show how to estimate work of this kind. Thus, a cylinder, disk, wire, belt, or page of notes will contain an average of so many inches of typewriting. Such work will usually be assigned by the section or department head and reported but once daily.

4. *Periodical work*, such as tax reports, reports to the management, balance sheets, and so forth. These can be scheduled exactly the same as daily routine work, with assignment sheets and an assignment calendar.

5. *Special assignments arising from time to time*. These can be scheduled, followed up, and planned on a work-unit basis.¹ Previous experience will make it possible to divide a special assignment into units and to figure closely as to the time required; the record of available time units will show to what clerk or clerks the work can be assigned.

WHERE TO START

It is not ordinarily possible, in the development of scientific methods in the office, to begin planning work simultaneously in all parts of an office where it has not been done before. Standards will have to be set and statistics gathered, all of which requires some time. It is not, however, necessary to wait until standards have been set on all jobs before starting to plan. As a rule, standardization can be done in one section of the office at a time, and, as soon as standards have been set on a routine or on a particular kind of work, the planning can begin. As the standardization work proceeds, other sections or kinds of work can be gradually placed under control, until finally all the five kinds of work mentioned above can be planned and scheduled.

In the beginning of the control of any one portion of the work, it is perhaps more important to have the schedule met than to have a theo-

¹ See Chap. XXIV on The Measurement of Office Work.

retically correct schedule which cannot at first be met. The workers will hardly be able to jump their efficiency at once to the standards that have been set, nor should they be expected to do so, if those standards have been properly set. A training period of a month or six weeks should be allowed, during which time the schedule should be set at, say, 75 per cent of the standard, gradually increasing as training proceeds, until finally the work is put through at the standard rate of production. That is to say, in allotting work at the 75 per cent schedule, if there are 100 work units, the control clerk will allow 133 time units or thereabouts for performing it. It should, however, be understood by employees from the beginning that a temporary concession is being made at first.

QUESTIONS FOR DISCUSSION

1. Define or explain "control."
2. What are the elements of control?
3. What must a manager know in order to be in position to exercise control?
4. What is meant by "exercising a conscious directing influence"?
5. When may a manager be said to have effective control of his office? Comment.
6. Name three conditions for effective control.
7. What does this effective control involve?
8. What factors, present in all offices, must be coordinated by the office manager?
9. Into what three categories may office work be classed for purposes of planning?
10. Comment on "preparatory," "immediate," and "cleanup" work, with respect to planning.
11. "All office work is the result of something else." Explain.
12. What five items should be standardized before planning and control can be entirely satisfactory?
13. What five points are necessary for the control of office machines?
14. What five points are necessary for the control of the human element?
15. Comment briefly on each of the five points in your answer to question 14.
16. What is the objection to long office hours, aside from the cost aspect?
17. Name and explain some of the psychological factors that the office manager has to contend with.

18. Why is the office manager ultimately responsible for the correct performance of the office work?

19. "Standardization is essential to control." Explain.

20. "Five distinct kinds of work can be placed definitely under control in an office." Name the five kinds, and comment briefly on each.

21. Name twelve control measures for the office manager.

22. Where should scientific management of office work start?

PROBLEM I

Control by the office manager may be exercised in three directions: first and most obvious is the office manager's control over the performance of the office work. The work must be done on time; it must be done right; and it must not cost too much to get it done. With respect to getting the work done on time, the office manager can take a number of steps, the two most important of which are probably to see that work is started on time and that no obstacles delay its progress. With respect to getting the work done right, the office manager can set up standards of quality and provide for inspection of the finished work, among other things. With respect to the cost, the office manager can take steps to see that no time is wasted, no material is wasted, and that there are no other wastes. All of the above points come under the subject of control by the office manager. Take each of these points in turn, beginning with the first—starting the work on time—and explain how the office manager may control each one. Indicate what obstacles might be encountered which would lessen the control if they were not overcome, and explain how the office manager would try to overcome them.

PROBLEM II

The second direction in which the office manager may exercise control is over the people doing the work. This control is affected by selection, training, and supervision, among other things. Show how these points affect the office manager's control of the office workers and what he may do about it.

PROBLEM III

The third direction in which the office manager may exercise control is over the working conditions, including space, equipment, materials,

light, heat, ventilation, and noise. Explain what may affect the office manager's control of these points and what he may do about it.

PROBLEM IV

The office manager's responsibility may be divided into two main jobs: operation and control. One of his aims should be to try to improve continuously both operation and control. Explain how he may control this improvement, and what the purpose of such control would be.

"Office procedures are a series of clerical acts organized under supervision to accomplish the purpose of the office."—CHARLES O. LIBBEY.

V

OFFICE ROUTINES AND THEIR CONSTRUCTION

A casual visitor to an office sees people working at desks, tables, and filing cabinets. Some of the people at the desks are writing; others are telephoning. Some are talking to other people; others are examining letters and papers; still others are operating typewriters and different kinds of machines. If the visitor stays long enough, he will see more or less moving around—people taking papers to other people, going to the drinking fountain, and so forth. From time to time our casual visitor may notice a messenger stopping at certain desks to leave papers and pick up papers.

If the visitor knows nothing about office organization and management, he will simply see a lot of busy people.

If, however, the visitor is a trained and experienced office manager, he will understand what the various workers are doing and why they are doing it. He will know that each morning, and at stated times during the day, the arrival of mail brings orders, checks, bills, inquiries, and other correspondence. He will know that the orders have to be checked and approved for credit before they can be filled and shipped. He will know that the checks will have to be sorted and listed and entered before they are deposited in the bank. The bills will have to be checked and approved before they can be paid, and so on. Every piece of incoming mail has to have certain things done to it before it can be said to have been properly "handled."

This visiting office manager also knows that the prompt and adequate handling of all these items is not a hit-or-miss proposition, but the result of careful organization, planning, and control. He knows that the kind of service the company's customers receive will depend to a considerable extent upon the degree to which the office-management function has received attention and consideration. If the office is

poorly organized and arranged, delays will occur, mistakes will be made, tempers will be ruffled, and general dissatisfaction will be experienced.

It might be well to examine these things and ascertain how a competent office manager proceeds to organize the work of his office.

ORGANIZED ROUTINES

One of the most effective ways of performing office work is through organized routines. A routine may be defined as a series of steps in the performance of work, each step in the series being performed in the same order and in the same way every time. There should be a routine for each kind of office work, whenever possible, and all office work of the same kind should go through the routine established for that kind of work.

Through every office there run the threads of several routines—sales order, credit granting, collection procedure, purchase requisition, routing of shipments, cost statistics, and so forth. The competent office manager follows each thread from start to finish, tracing the steps in each routine and questioning the desirability or necessity of each step.

Let it be admitted that there are some kinds of work which do not lend themselves readily to routinization, simply because they do not occur frequently enough to warrant setting up routines to take care of them; or perhaps because they are specialized cases which come up only once and never again. Even then, however, it is possible to establish a definite procedure for handling everything; such procedures could be called routines, although their worth-whileness might be questioned.

Routines may be divided into two kinds according to their purposes. Some routines are intended to expedite the dispatch of the day's business. Such are the order and billing routines, the invoice and purchase-order routines, and so forth. Other routines are intended to facilitate the work of the people handling the first kind, by means of services rendered to them—such as the mail and messenger services, the telephone service, the filing and stenographic services, and so on. The distinction is clear and should be kept in mind at all times. In passing, it may be well to note that while the facilitating services are rendered to *all* departments, each department may have its own "business" or tech-

nical routines, which are often confined within that department. That is, the credit department has routines which do not concern any other department; so have the accounting, purchasing, traffic, and sales departments. Department routines, then, should be distinguished from

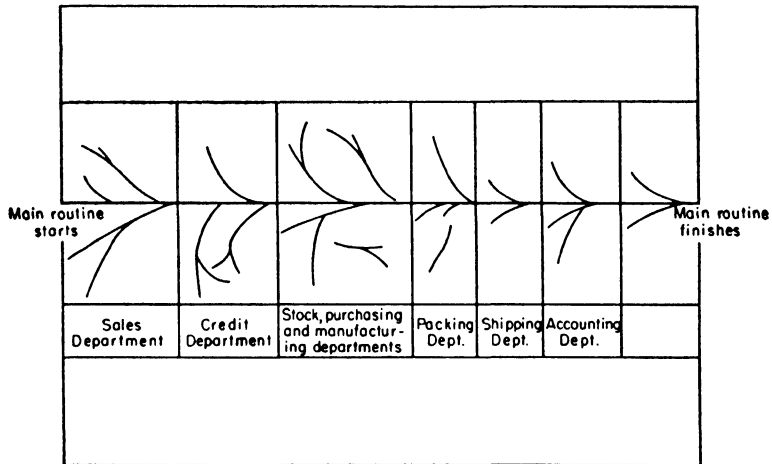


FIG. 6. This diagram shows the "threads" of several routines. The heavy black horizontal line is the dominant routine, passing through several departments. The lighter lines show department routines, some of which run to or from the main routine; others do not touch the main routine at all. Notice the "branches" of the subsidiary routines. In some ways this diagram resembles an automobile assembly line.

the routines established to render facilitating services to all departments alike and from routines which pass through two or more departments.

THE FORMATION OF ROUTINES

Since relatively few office managers ever have to design an entirely new routine for performing a particular piece of work, they have had little practice in that technique. Even in the case of newly organized offices the routines are frequently copied from those of some other business in the same or allied lines, few persons being able or willing to make the effort to cast aside customary imitative habits in this respect and construct a routine based upon their own original thinking. Rather than try to think out one, they find out in one way or

A COMMON CLERICAL OPERATION

Since most office work is performed at a desk, let us sit down beside a desk in the office of a large fraternal organization and look on while the girl sitting at that desk does her work. In front of her is a pile of papers, with possibly 50 or 60 sheets in the pile. A little to the left is a long tray, holding possibly 1,000 index cards. These cards bear the names and addresses of members of the organization. Each card is divided into 156 small rectangular spaces, divided into 3 rows of 52 each, representing the 52 weeks of a year. That is, an entry can be made on this card once a week for 3 years. This card will be used at least once a week during that time.

The top sheet in the pile bears the heading, "Cash Dues Received for Week Ending March 16." Below the heading are written in the names of those members who have paid their dues for that week, with the amount paid opposite each name. Dues are 25 cents a week, payable every week. Some members let a week or two pass without paying anything and then pay all up; others keep a week or more behind all the time.

The girl at the desk looks at the top sheet, reads the first name, turns to the tray of cards, runs her finger over the tops of the cards, looking for the card of the member whose name she has just read on the sheet. When she has found the card, she lifts it out of the tray and lays it down on the desk in front of her, face up. Then she looks at the sheet again to find out how much the member has paid and enters the amount on the card. After putting a check mark against the name on the sheet, to show that she has entered the payment, she picks up the card, finds the place in the tray where it belongs, and replaces it in the tray.

She has now completed one full cycle of the operations necessary to credit a member with his dues paid that week. What were those operations?

1. Examining the list
2. Reading the name
3. Finding the proper card
4. Examining the list
5. Ascertaining the amount paid
6. Entering the amount on the card
7. Checking the list
8. Finding where card belongs
9. Replacing the card

These operations may be called examining, reading, finding, inspecting, recording, checking, filing.

The same operations are performed in the office of a retail store which sells furniture on the instalment plan. From the collector's reports showing how much money he has collected from each customer, the clerk has to enter the amounts on the customers' account cards. Likewise, when the policy-

holder in an insurance company pays his premium, the same operations are performed at the company's office. In short, we have here a routine which is common to hundreds of different businesses, none of which may bear any external resemblance to any other business; and yet certain details of the office work, in their essential aspects, are almost identical in all the concerns.

SIMILAR ROUTINES IN OTHER OFFICES

Routines, which, as we have seen, are simply a series of connected operations performed in consecutive order, have the same purpose in every office. The equipment may vary; the sizes of the record sheets and cards may be different; the method of filing and entering may not be the same; but in their essential details the purposes are the same, the operations are the same, and the results are, too.

In one office, the list of cash-received items may be the premium notices of the policyholders, one notice to a payment; in another office it may be represented by the duplicate cash sales slips of a retail store. The cards of the fraternal organization described in the first paragraph may be replaced by a loose-leaf ledger in one office and by visible-record equipment in another. In one office the entry may be made by a rubber stamp; in another, by pen and ink; in a third, by typewriter, bookkeeping machine, or cash register. One girl may work at a table; another at a desk; a third at a filing cabinet; and so on.

In short, a hundred different concerns, in a hundred different, apparently unrelated lines of endeavor, may have the same office problem. This office problem, in the routine just considered, is how to get the amount paid credited to the proper individual, *accurately*, so that that individual will not be asked to pay the same item twice; *quickly*, so that all necessary entries may be made before the next period comes around or so that totals may be incorporated in whatever recapitulation or reports may be necessary to show the amounts collected or still outstanding; and *at minimum cost*, so that the cost of the office work will not be so great as to eat up the profit on the business done.

another how Smith and Company are doing it, making no inquiry and giving no thought to the question whether or not Smith and Company are competent to devise an effective routine; indeed it will often be found that Smith and Company borrowed from someone else. This wholesale copying of routines from one firm to another results in enormous waste, for the reason that the routine is not strengthened by this continual transplanting but rather progressively weakened. After its establishment such a routine usually grows by accretion, until in the course of a few years a dissection would show that the piece of work

had been compelled to travel a most tortuous path. Analysis will usually uncover steps which can hardly be justified.

GET A PERSPECTIVE

Every office manager has, however, the opportunity to reconstruct a routine, and most routines that have been established any considerable length of time stand in need of such reconstruction.

The routine as a whole should be studied before any detailed analysis is made of its various steps. The purpose of the routine should first be determined, and just what is supposed to be accomplished by it. Occasionally, the purpose of a routine will not be very well understood by anyone, but, in every case, the observer should endeavor to secure a definite and comprehensive knowledge of the purpose and should not be satisfied with anything less.

1. What is the office doing?
2. Who is doing it?
3. What methods are being used?
4. What facilities are being used?
5. How well is the office work being done?
 - a. What hindrances are there to effective work?
 - (1) Poor working conditions (equipment, layout, light, etc.).
 - (2) Poor training.
 - (a) Worker does not understand what he is doing.
 - (b) Worker does not know the best way to do the work.
 - (3) Delays and interruptions.
 - (a) Work comes through irregularly.
 - (b) Poor supervision.
 - (c) Poor planning.





This preliminary over-all analysis should enable the observer to get a general understanding of the routine to determine whether or not the purpose is justified, and whether the routine should be continued, altered, or abandoned. Two of the most effective ways of improving office performance are by eliminating unnecessary routines and eliminating unnecessary steps in necessary routines.

MAKE A DETAILED ANALYSIS OF EACH STEP

The next task will be to make a careful analysis of each step or operation in the routine in much the same manner as the preliminary

STANDARD SYMBOLS USED IN STUDYING OFFICE ROUTINES AND PROCEDURES

The use of symbols frequently facilitates one's grasp of a procedure or routine. The four standard symbols most widely used in office-work simplification studies are these:

- | | | |
|--------------------|---|--|
| 1. A large circle: | 
OPERATION | Actually doing the work.
(Typing a letter, filling out a form, posting an entry, etc.) |
| 2. A small circle: | 
TRANSPORTATION | Passing the work along, or sending it to another place.
(A letter or paper carried to another desk or department.) |
| 3. A triangle: | 
STORAGE | Holding the work for any reason, or filing it. (Papers lying on the desk or in a tray, held awaiting action or for instructions, etc.) |
| 4. A square: | 
INSPECTION | Checking, comparing, or reviewing the work. (Checking extensions, inspecting for errors, etc.) |

"The important point to keep in mind at all times is that the really productive steps are those with the large circles—'Operation.' They are the ones that *get things done*. The other steps are nonproductive, even when necessary. No work is being done on a file or an order while it is traveling from one place to another, while it is being held awaiting further information or for any other reason, or while it is being inspected for errors. Therefore, under the best conditions the frequency of transportation, storage, and inspection should be kept to the minimum." (*Adapted from a comment made by the Methods Division of Hardware Mutuals.*)

NOTE: Some authorities use the triangle pointing up instead of down. The ASME standard symbol for transportation is an arrow instead of a circle. See *Operation and Process Flow Charts* (ASME Standard, 1947), published by the American Society of Mechanical Engineers, New York, 1947.

study, but carried out more minutely. The purpose of this analysis is to see if there are any defects in the routine of each step. For this work it is helpful to have a set, formal method of analysis. One covering the following points will be found valuable:

1. What is the name and the purpose of this step?
2. Is this purpose justifiable?
3. Is this purpose accomplished?
4. Is this step performed in the right place in the routine?
5. Does this step record information that is recorded elsewhere?
6. Does this step duplicate work done elsewhere, in whole or in part?
7. What is the time required to perform this step?
8. Does the order of this step interfere with progress or service?

PURPOSE OF THIS STEP

The first point, "the name and purpose of this step" requires careful and thoughtful consideration. It will not do to guess at the purpose or to assume one, though assumptions are easily made. The true purpose must be ascertained, for unless the purpose is known, the rest of the analysis is useless. It is also very easy for an inexperienced observer, when he finds (as he is certain to do when making scientific analyses) so many things that are wrong, to contract the habit of assuming that a purpose does not exist. He must neither guess nor condemn without reason; he must ascertain the true purpose, and ask why this step is included in the routine.

TYPICAL PURPOSES OF ROUTINE STEPS

A few typical purposes of routine steps are:

1. *Preparation for the next step.* The opening of mail is naturally preparatory to the next step—its reading. There are many other preparatory steps, such as sorting, classifying, numbering, and so forth.

2. *Registering.* There are many sorts of registering steps.

3. *Recording or taking off information,* such as bookkeeping or accounting information, sales, production or cost information, control or timekeeping information. Defining the purpose of such a step would, of course, include the reason for recording or taking off such information.

4. *Filing,* whether temporarily or permanently, is another very common purpose.

5. *Making of records.* This involves card records of various sorts, invoices, bills of lading, and so forth.

6. *Computing of various sorts.* Here, again, there is likely to be much unnecessary work; the purpose should be carefully scrutinized.

7. *Checking to detect errors.* This purpose should be examined carefully and thoroughly, since many checking operations have no justifiable purpose.

The above, of course, do not constitute all the purposes of routine steps but are listed mainly to give an idea of what is meant by determining the purpose of the various steps in a routine.

IS THE PURPOSE JUSTIFIABLE?

Having ascertained the purpose, the next procedure is to decide whether or not the purpose is justifiable. Is it necessary? If so, why? If not, why not? The observer should study the facts carefully, and, when he has reached a decision, he should be prepared to explain his reason in detail. A purpose is not justifiable in the following cases:

1. *When No Apparent Reason Exists for Performing the Operation.* This naturally implies that the definition of a purpose *sounds* logical but will not pass the test of the second question, "Is the purpose justifiable?" To clarify this point, some analysts ask the question: "What would happen if this step were not performed?" If it cannot be shown that anything would happen, the purpose of the step is not justifiable.

2. *When the Work Is Duplicated Elsewhere.* Obviously, nothing is gained by performing a step twice. In many cases where work is duplicated elsewhere, the informant will earnestly seek to justify the duplication on various grounds. Get all the facts.

3. *When the Information or Results Can Be Obtained More Cheaply in a Different Manner.* For example, a step may involve recording or taking off certain information, and writing it in a book or on a record, for the purpose of classifying. The latter purpose may be fully justified; but if the same results can be obtained more cheaply by sorting, it would not be justifiable to copy off the information on a record.

4. *When the Step Costs More Than It Is Worth.* In many cases a purpose is justifiable up to a certain amount of expense, but not beyond. This is frequently the case with the checking operations in a routine. A detailed analysis will often uncover many of these.

5. *When the Step Does Not Advance the Routine.* It is obvious that not to advance the routine is to delay it.

6. *When the Step Delays Progress or Service.* It frequently happens that a routine will contain a step, or steps, in which certain information is taken off for purposes of sales analysis or other executive records. Find out if getting this information at this point is so imperative as

to take precedence over service to the customer. Such a purpose would be fully justifiable if the step were performed *after* the more urgent things were done, but not if it delayed them. The deciding point here is its position in the routine.

INVESTIGATE THESE POINTS IN ORDER

Next, determine whether the purpose is accomplished, for it frequently happens that a step in a routine will have a justifiable purpose which is not actually accomplished. Find out why not, if possible.

Is the step performed in the right place? This may have been discovered in considering justification of purpose, or whether or not the purpose was accomplished; even so, it should be considered again.

The next question, "Does this step record information which is recorded elsewhere?" is not, of course, applicable to every step. In all recording steps, however, it should receive attention. Ascertain where this information is used, kept, or desired, and inquire at those places. Many times it will also be necessary to follow the piece of work beyond and outside of the routine under study to its final destination.

In determining whether the step under consideration duplicates, either in whole or in part, work which is done elsewhere, the inquiry will follow much the same course as the preceding one.

Next is the determination of the amount of time required to perform the step.

Finally the observer should determine whether the order in which any step appears in the routine delays the progress of the work through it, for work can often be speeded up and operations eliminated by merely changing the order of the steps.

If the steps of a routine are thus thoroughly analyzed, many interesting facts and conditions will be disclosed and much valuable information obtained which will assist the observer in rebuilding the routine. However, before the actual work of redesigning it is started, he should describe carefully and completely in writing the whole routine as it at present exists, adding to this description any observations he may have made of its weak spots.

VISUALIZING THE ROUTINE

It is always an aid to constructive thinking to visualize the routine by constructing a picture that will enable one to grasp quickly the main factors it involves. There are various kinds of devices which may be used for this purpose; variously named, "graphic routine chart."

“work chart,” “process chart,” “flow chart,” “procedure chart,” “operation chart,” and so forth. Sometimes the word “diagram” is used instead of “chart.” The name is not important; the purpose is. The mere making of pretty pictures is neither a valid purpose nor an excuse for wasting time and money on a chart. The only valid purpose of a graphic routine chart is to bring out forcibly and visibly certain leading facts. This purpose may be either to enable us to think more clearly ourselves, or to enable others, with whom we intend to discuss the situation, to perceive clearly certain facts that we desire to impress upon them.

The leading facts in any chart should stand out clearly and should be so simple and obvious as to be easily grasped by anyone. Defects or special points should be emphasized.

A chart should also be simple to prepare. A rough pencil sketch which serves the purpose it is desired to accomplish is preferable to an elaborately prepared and beautifully drawn chart which falls short in this respect. The amount of care, skill, and time devoted to the construction of the chart should be compared with and proportioned to the size and importance of the investigation. The query, “Is it worth what it costs?” applies to the work of the investigator exactly as it does to that of the clerk on the routine.

Some of the standard forms of routine charts will now be described.

The Steps-in-squares Chart. An example of this form is Fig. 7. It is used frequently and is simple to prepare but is somewhat defective in that it does not visualize the problem very clearly and its import is not easily and readily grasped. All it shows at a

glance is the nine steps through which the work passes; and to learn what these steps are, the wording in each must be read. If this information were typed in condensed paragraphs the same purpose would be accomplished at much less cost.

The Form Chart. Sometimes a chart in which the actual forms them-

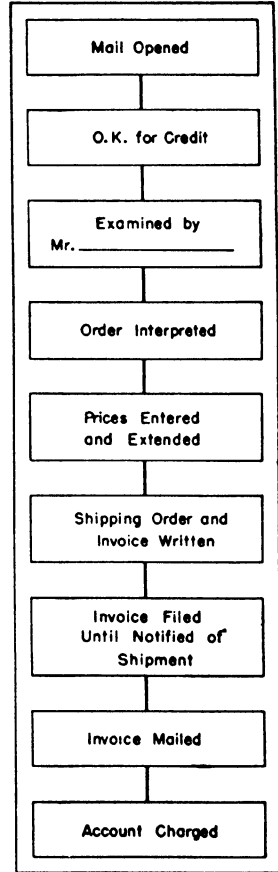


FIG. 7. Example of the step-in-squares chart.

selves are illustrated is used. This is done by pasting the forms on a large card together with the necessary descriptions, and then, by the photostatic process, reducing the whole to a standard size. This method certainly gives a complete picture of the whole routine, but the amount of detail is so great that it is not readily grasped. For purposes of

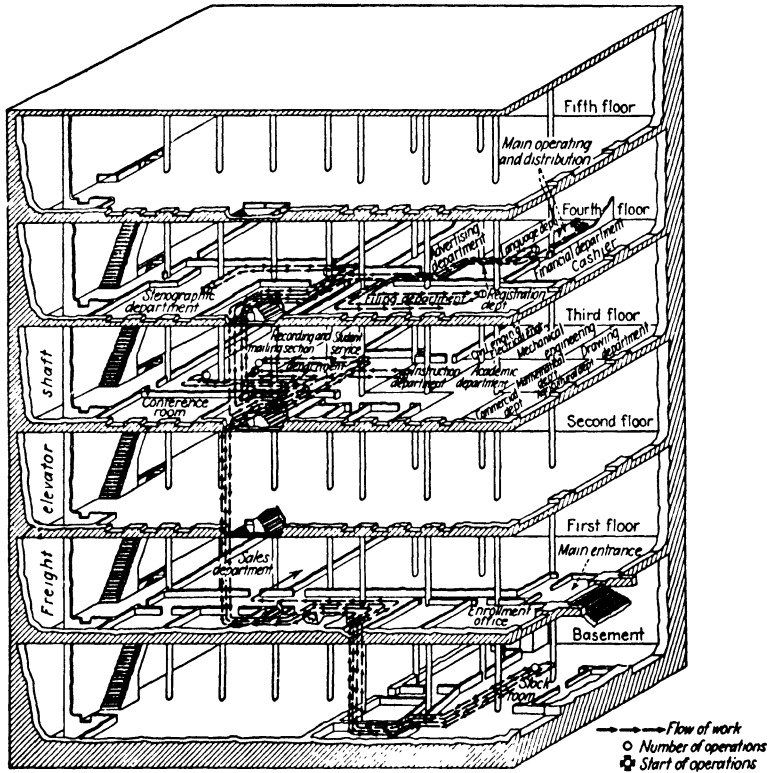


FIG. 8. An isometric flow chart.

analysis this is not a good chart, though it can be used for recording practice after a new routine has been established through the method of scientific analysis described in Chap. XXIII.

The Isometric Flow Chart. It is occasionally necessary to trace the path of a piece of work, visualizing not only the steps, but the part of the office through which it passes. This can be accomplished by constructing an isometric (a conventionalized form of perspective draw-

ing) flow chart, as illustrated in Fig. 8. This type of chart gives the impression of looking into the building itself, with the walls cut out to show the interior. The movement of work, not only from department to department, but from floor to floor, is shown by heavy dashed lines with arrows to indicate the direction of the flow. This form should not be used in ordinary analysis, for it is entirely too expensive. An isometric flow chart based upon approximately correct allocations of steps is sometimes used, but this form of chart, so used, approaches dangerously close to the "pretty-picture" class, though it is not so intricate or difficult to draw as the other.

The Cross-analysis Chart. These charts, illustrated in Fig. 9, are very generally used and serve most purposes admirably. Their import is readily comprehended, defects stand out clearly, and the whole can be shown in comparatively small compass. It is, besides, a form of chart that can be easily prepared, and, if necessary, the lettering can be done on a typewriter.

The "Neck" Chart. This form is exceedingly valuable for the specific purpose of illustrating the evenness or unevenness of time on each operation. The example shown in Fig. 10 very distinctly exhibits two necks which seriously interfere with and prevent an even flow of the work.

THE FINAL ANALYSIS

Up to this point we have made two analyses of the routine: First, the general over-all analysis for the purpose of securing a comprehensive perspective and general understanding of the routine itself; second, the analysis of each step for the purpose of discovering *defects in the routine*. Now we are ready to make a final analysis of each step for the purpose of discovering *defects in the steps*.

This analysis is of a more microscopic character and follows the method of scientific analysis described in Chap. XXIII. The necessity of the step must be considered, the method used must be critically studied, and the amount of time required carefully observed for the purpose of discovering "necks" and other interferences with the "flow." The observer will look carefully for ineffective or superfluous motions that may be eliminated. The amount of training necessary should also be considered in order to determine whether it is actually given or not. In making this study each operation should be written up in full detail, showing the present method, elaborating upon defects discovered and suggestions offered for improvement. The analyst need not be afraid

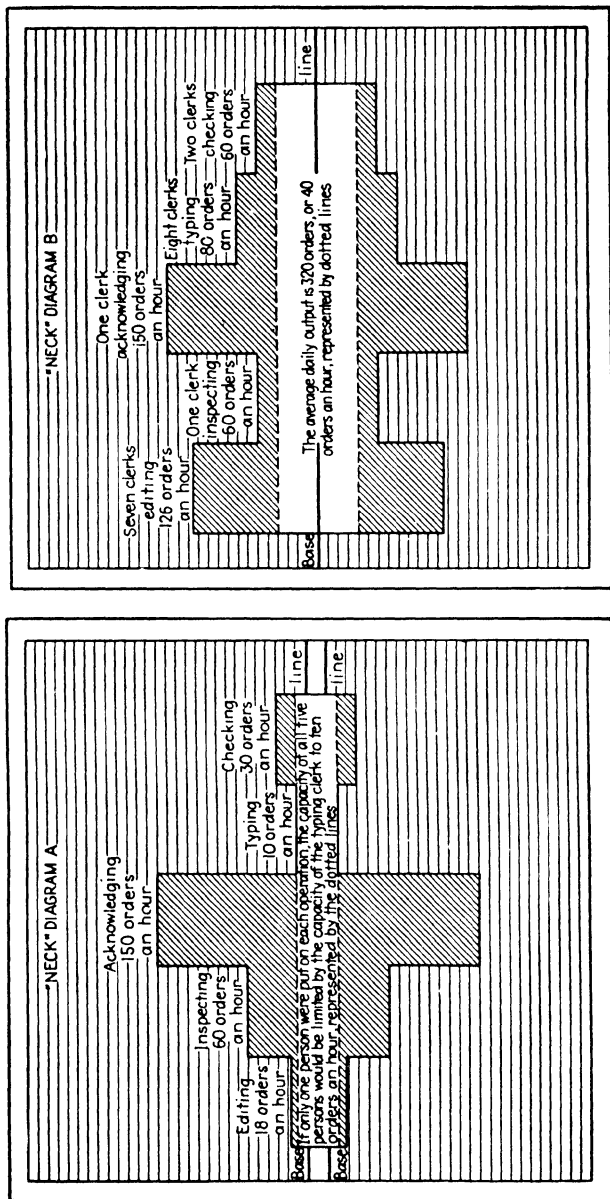


FIG. 10. These charts bring out clearly the "necks" in the routine, by comparing the number of times each operation can be done in an hour with the average number of orders going through. The number of orders that can be handled is limited to the number that can be handled at the "neck." The remedy is to put more clerks on the "neck operation" or else teach that operation to some of the clerks on other operations, so that they can help in times of need.

HOW TO ANALYZE AN OPERATION

1. *Describe the operation completely in writing.* This is the first step in analyzing every operation; you cannot describe the present method too carefully or in too much detail. Don't leave out anything; put it all in. Some little detail of apparently slight importance may tempt you to omit it from your description; put it in—it may be the deciding factor in determining what changes should be made. The more complete your description is, the more valuable it will be.

Putting these things completely in writing also helps make the problem clear, since weak points will stick out like a sore thumb. When you have all your observations in writing, not only can you check your work more easily, but others can check it also.

2. *What is the purpose of the operation?* If the operation is one of a series, it is necessary to know what happens before and after it is performed.

3. *Is this operation necessary?* Why? You can ask what would happen if it were omitted.

4. *Note the surrounding conditions.* The physical factors of light, heat, noise, ventilation, equipment, desk arrangement, and general layout of the office have an important bearing on the performance of the work. Has the good worker some advantage the others lack? Are the desk and chair suited to the work? Are they too high or too low for comfort? Is it likely that needless fatigue is produced?

5. *Note the methods used by different clerks.* If several clerks are performing the same operation, notice carefully how each person works. You will probably find several different methods of doing the work; one method is undoubtedly better than another. Try to find it.

6. *Notice work habits particularly.* Do you see any stalling? Do you think the workers are interested? Is there much talking? What seems to be the attitude of the workers toward the job?

7. *Does the work come along regularly?* Does it pile up at any point? Is it all done at about the same rate of speed? Are there any delays? If so, list them and the reasons, too, if you can find them. Is the work all of the same kind? If not, describe the irregularities and find out how often they occur over a period of time long enough to enable you to determine the average percentage of these irregularities.

8. *Study the motions carefully.* Describe as fully and as explicitly as you can just how the operation is performed. A good way to do this is to jot down each motion in the order in which it occurs. Be sure you get in every motion. This may appear a bit difficult at first, but practice will soon enable you to describe almost any motion.

9. *Time studies.* Do not take time studies unnecessarily or out of curiosity. Read Chap. XXV before attempting time studies, which should be taken

only by one adequately experienced in them. If time studies are taken, a sufficient number should be made of each motion to assure a reasonably accurate result.

10. When you think you have written everything down, *consult someone else*, preferably the head of the department or the persons doing the work. This will give you a check upon the completeness of your observation; you will often find that you have omitted a number of salient points when you consult with those who do the work.

STUDY YOUR ANALYSES

After your description is complete it is necessary to make a careful study of it, in order to ascertain fully every irregularity and its remedy, as well as every other possible chance for improvement. Do not rely upon anyone's statement as to the number of irregularities, but get the facts yourself; if they cannot be procured from past records, have the worker keep a tally of them. If an irregularity is part of the operation and cannot be prevented (or at least you cannot find any way to prevent it), then accept it as one of the factors and make allowance for the time it takes. You will find that many irregularities can be easily obviated. It seems to be a trait of human nature to put up with unnecessary encumbrances and inconveniences which can be removed, corrected, or improved with little effort. Find the remedy and put it in your notes, to be applied when the time comes.

Up to now you have been gathering facts. If you have been observant, you will have noted a number of improvements that might be made or that have been suggested. Go over these notes now, one by one, and see whether or not they are workable. Now lay out the new method, following the principles and suggestions stated in this chapter. Work it out, step by step.

of going into too much detail; everything should be included and nothing left out.

If the observer has carefully followed the foregoing instructions, he will, by this time, have a thorough knowledge of the purpose of the routine and whether or not that purpose is accomplished; he will also possess the same knowledge concerning each individual step in the routine; and finally he will have determined whether or not the methods used in these steps are the best; if they are not, he will have devised the "one best way."

It is impossible to overemphasize the importance of thoroughness in making these analyses and of resisting the temptation to jump to conclusions. The new routine may now be built by observing carefully the following principles:

PRINCIPLES UNDERLYING THE ESTABLISHMENT OF ROUTINES

The following nine principles should govern the work of establishing routines:

1. *Every step must have a justifiable purpose.* The inclusion of a registration step, for example, may or may not be justified, according to circumstances, but it should be very carefully considered. If the work is under close control, a registration may be entirely unnecessary. Checking operations, also, are peculiarly likely to be added and no attention given to their justification.

2. *Each step must advance the work.* This caution may seem unnecessary, but frequently steps are interposed which do not advance the work but rather retard it. In an order routine, for example, the order may go to a certain person for examination; this may be unnecessary, but the step has been added because Mr. X has the fixed idea that unless he personally examines each order something is bound to go wrong.

3. *The order of each step should be such that records required to be taken off will not delay the service.* Steps where records are taken off purely for sales analysis purposes, for instance, are very properly placed at the end of the routine, where they will not interfere with the progress of the order.

4. *Equality of the time required for each step should be striven for, or means provided to eliminate "necks."* It is not entirely possible to avoid inequalities of time, but it should be at once apparent that if in any routine, steps 1, 2, 3, 4, and 5 can be performed at the rate of 200, 50, 100, 75, and 30 pieces per hour, respectively, the flow of work with one person on each step will be very uneven, and eventually the work will pile up at step 5, while all preceding steps will be working away below capacity. This unevenness of flow can be corrected by putting more people on the slow operations and by combining some of the fast ones. Under ideal conditions, each operation requires about the same amount of time, or else the capacity has been equalized.

5. *Guard against duplication of work.* Many routines, constructed without sufficient care, require the doing over and over again of some one thing, such as writing the customer's name. In one routine that was studied, the name and address of the customer were written no less than 23 times.

6. *Avoid needless writing.* In many routines half the writing done

is superfluous and can be eliminated by a careful study of what is absolutely necessary in this respect and what is not.

7. *Needless effort should not be expended.* Savings amounting to 25 per cent of the effort required to fill out a form can often be made by redesigning it along the lines suggested in Chap. X.

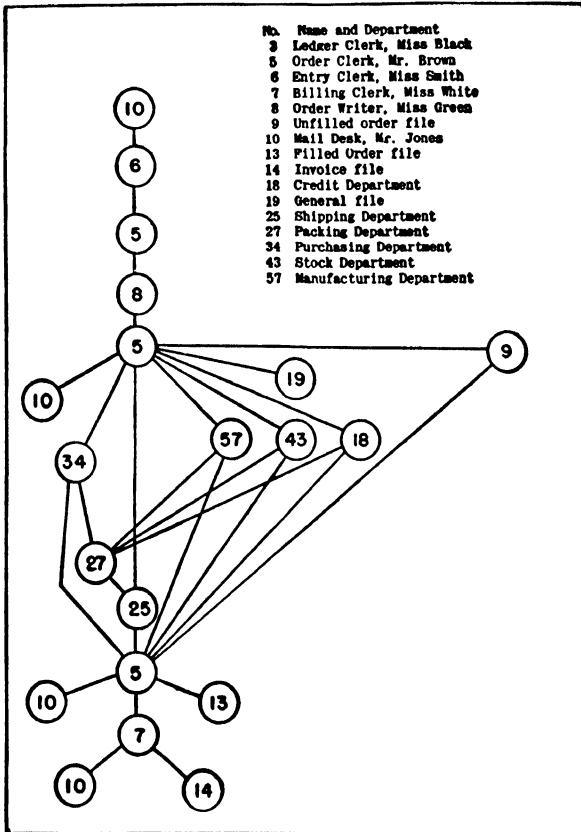


FIG. 11. Routine progress chart. The use of a chart like this brings out any loose ends in a routine.

8. *Make as few exceptions as possible to the general routine.* Their very existence tends to defeat the purpose of the routine. Exceptions can often be classified and handled in special routines by themselves, thus making it possible to proceed with the balance of the items in a

general routine manner. When an exception appears, it should be laid aside or passed to the clerk handling the special routine set up for exceptions of that kind.

9. *Avoid needless checking.* In almost every office routine there is a constant danger of making errors—in fact, there is a certain irreducible minimum of errors that must be expected and allowed for; it is naturally the aim of every office manager to make as few errors as possible and to detect those made before the work is completed, if that be possible. This desire leads to the interpolation of various checks along the route; sometimes this checking is carried to such an extreme as to cost more than the errors would cost if allowed to pass uncorrected. If the checking is done at the end of a cycle of operations, it should be sufficient for all practical purposes and should accomplish the desired result as nearly as it can be accomplished with a minimum of effort.

SYNTHETICALLY BUILDING THE NEW ROUTINE

In this work a formal method of procedure should also be adopted.

1. *Eliminate all superfluous steps or motions.* Where necessary, new methods should be devised.

2. *Determine the order of the various steps.* Consider the advisability of establishing concurrent steps, so that two or more steps may be performed simultaneously, if possible.

3. *Provide a steady and even flow of work through the routine.* This is an extremely important provision, for a very large part of the waste in office work is due to uneven flow. Of course, there are certain factors, not amenable to control, which will have to be considered and allowed for, such as the arrival of the mail, daily fluctuations of work, and so forth.

4. *Develop and prescribe correct working habits.* Correct working habits should be developed and prescribed for performing the work in the one best way. Much depends upon this, for the difference between the expert and the "dub" is very marked in every office operation, such difference being mostly comprised in the working habits.

5. *Determine scientifically the best tools and equipment for the performance of each step.* Provide them and then prescribe the method of their use.

6. *Train the clerks to perform work properly* and especially to *make decisions* upon it quickly, for most operations require that a decision be made as to which of several things should be done. These decisions

are mostly very simple and are based upon policies determined by the management, so that they do not demand profound original thought on the part of the worker. Nevertheless, they are decisions, and if the worker is slow to decide which move to make or which thing to do, the over-all time required for the operation will be greatly increased.

7. *Develop habits of speed.* Whether a clerk works slowly or speedily is largely a matter of habit; where speed is requisite, the habit of fast working must be inculcated. Do not confuse speed with haste.

8. *Develop the habit of accuracy.* Accuracy, too, is a habit and must be developed. Inaccuracy is due mainly to lack of concentration, which in turn is due to lack of interest in the work; therefore, such interest should be cultivated and the importance of accuracy emphasized.

It may be noticed that we have placed the development of accuracy last, though it is commonly assumed that it should be developed first. If too much emphasis is placed upon accuracy before the clerk has learned correct methods of working, the habit of indecision will become fixed, and it will be almost impossible and very difficult to develop the habit of speed. The correct order is (a) right working methods, (b) the habit of speed, and (c) accuracy. In this sequence the emphasis is first placed upon right working methods, so that the worker may perform them subconsciously or with little conscious thought. When this has been achieved, the habit of speed is then quickly developed, as there are no inhibitions as to motions, and when both have become habits, the insistence upon accuracy does not then interfere with or cause a slowing up of the work. See Fig. 12 on page 102.

ADDITIONAL CONSIDERATIONS

The same general method is applicable to all routines, but there are usually some predominant factors to which attention must be given. While a routine should invariably be designed with its main objective in mind, it must not be assumed that the objective will be the same for all routines.

For example, it may be imperative that a routine should be designed to give speed and service above everything else. In making a sale, for example, the management of a department store must always keep in mind the fact that the customer objects to waiting, and, in order to serve the customer promptly, all other considerations must be subordinated to speed.

In another routine, the dominating factor may be accuracy and care; speed may not be a factor at all, or a very minor one. In the prepara-

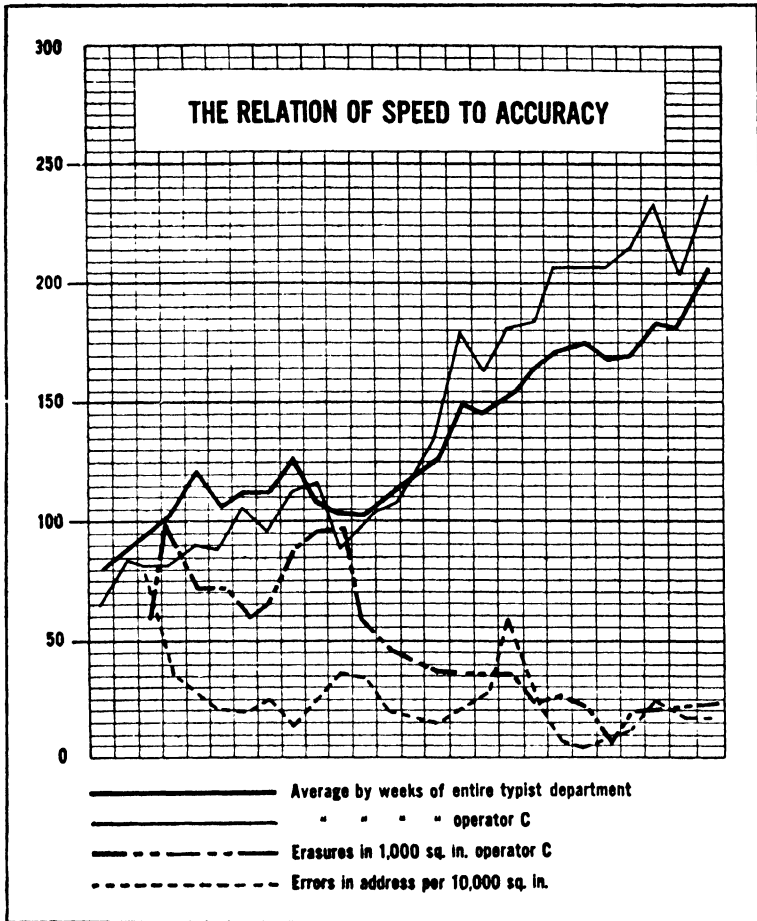


FIG. 12. This is a six months' record of the weekly output of a girl typing letters. It shows that she began below the average for the department and ended considerably above, in spite of the fact that the department itself progressed from an average of 80 square inches an hour to 200. This operator's average for the first week was 65 square inches, and for the last week, 237, an increase of nearly 270 per cent. Note particularly that during the eleventh week, when this operator made a serious effort to increase her efficiency, erasures, which are figured on a percentage basis, dropped. During that week she made 95 erasures for every 1,000 square inches, and she typed at the rate of 80 square inches an hour. During the final week she made 20 erasures for every 1,000 square inches and typed at the rate of 237 square inches an hour. Rapid work requires concentration, which results in better work.

tion of an executive report, it is of the first importance that such a report be accurate, neatly prepared, and well arranged, and though it should be completed on scheduled time, it should not be rushed.

Economy of operation is another consideration that is sometimes dominant in a routine. A mail-order house, which labors under many disadvantages in competition with local dealers, cannot afford to spend too much for clerical work; each routine must be designed with this limitation in mind.

Whatever the dominating objective may be, it should be thoroughly understood and the routine designed accordingly.

QUESTIONS FOR DISCUSSION

1. Two people visit an office. One is an office manager; the other is not. What does the first one perceive that the other does not?
2. Define or explain "routine."
3. Are there any kinds of office work which may not readily be routinized? Explain.
4. "Routines may be divided into two kinds, according to their purposes." Explain.
5. Why is it desirable to keep clear the distinction between the two classes of routines?
6. How are the routines of many offices formed? Why is this so?
7. Why is imitation of other people's methods likely to be a futile proceeding?
8. Why should a routine be studied as a whole before a detailed analysis is made of its various steps?
9. In making a detailed analysis of the steps in a routine, eight points are suggested. What are they?
10. Mention seven typical purposes of routine steps or operations, and comment briefly on each.
11. Under what six circumstances is the purpose of a step in a routine not justifiable? Comment briefly on each of these circumstances.
12. Why is it desirable to determine whether or not the purpose of a step in a routine has been accomplished?
13. "Does this step record information which is recorded elsewhere?" Comment on this question and the point to which it refers.
14. How may a routine be visualized?
15. What is the only valid purpose of a chart or graph?
16. What is the steps-in-squares chart? What are its advantages and disadvantages?

17. What is the form chart? What are its advantages and disadvantages?

18. What is the isometric flow chart, what does it show, and what are its advantages and disadvantages?

19. What is the cross-analysis chart, and what are its advantages?

20. What is the "neck" chart, what is its purpose, and what does it show?

21. What is the purpose of the final analysis of each step in the routine?

22. What two analyses precede the final analysis?

23. Describe in detail the ten steps in analyzing an operation.

24. State nine principles underlying the establishment of routines, and comment on each principle.

25. In synthetically building a new routine, a formal method of procedure should be adopted. What are the eight factors in this formal method? Comment on each briefly.

26. What striking feature usually distinguishes the expert from the "dub" in all kinds of work?

27. What is meant by the worker "making decisions" in his work?

28. How much emphasis should be placed upon accuracy in the performance of office work? Why?

29. Do you believe accuracy is a habit? Why or why not?

30. Is the dominant objective of one routine the same for all other routines? Explain.

31. Of the following possible main objectives of routines, which is the most important for a particular routine? How would you know? Explain your answer.

a. Giving speed and service.

b. Accuracy and care.

c. Economy of operation.

PROBLEM

The Jenks and Keane Pharmaceutical Company sells directly to druggists. It has been established for many years and has built up an elaborate order-handling routine, involving 21 steps, as follows:

1. Mail is opened and orders removed.
2. Orders are time stamped.
3. Orders are sent to treasurer for examination.
4. Orders are returned to bookkeepers.
5. Orders are divided among bookkeepers.

6. Bookkeepers look up customers' ledger accounts.
7. Bookkeepers mark amounts due, if any, on order.
8. Orders are sent to credit department.
9. Credit man gets customers' credit files.
10. Credit man reviews credit experience.
11. Credit man passes credit.
12. Orders are sent to order-writing clerk.
13. Clerk copies orders on house-order forms.
14. Order copies are sent to stock room for filling.
15. Order forms are returned from stock room after filling.
16. Clerk prices orders and computes extensions.
17. Clerk types invoices in duplicate.
18. Clerk checks invoices against orders.
19. Invoices are mailed to customers.
20. Duplicate invoices are sent to bookkeepers.
21. Bookkeeper posts charges to customers' accounts.

An investigation shows that the clerical-minutes-per-order ratio is 148, and that it costs approximately \$1.62 for labor to handle an order. "Hand-to-mouth" buying by its customers has brought down the average size of order to \$42.00, but this average does not show the whole picture, for further study discloses that 54 per cent of the orders have an average value of only \$12.64. Manifestly, the company cannot afford to pay \$1.62 to handle an order of that size.

Build a special routine to handle these small orders.

"In controlling output, the first and most important consideration is to handle work so that it shall flow steadily without any interruption; that is, velocities at all points should be equal and uninterrupted."—W. H. LEFFINGWELL.

VI

FLOW OF WORK

Flow of work is concerned with the way work moves along from one operation to another—the quantity or volume of work going through, the rate at which it moves along, and the smoothness of its passage. A steady, constant flow of work through a routine will result in high efficiency; but if the flow is obstructed or interrupted, there will be a much lower efficiency due to the time wasted by clerks waiting for work; for unless a clerk is supplied with sufficient work to keep him steadily employed during the entire working day, his efficiency will be low, even though, when he is working, he works at high speed.

To illustrate this condition in homely fashion let us contrast the flow of work through an office with the flow of water through a pipe, the caliber of which differs in size at one or more places throughout its length. The quantity of water delivered at the end of the pipe will not depend upon the size of the opening to the pipe, the size of the faucet through which the water flows, or the average internal diameter of the pipe itself; it will depend upon the size of the smallest caliber in the total length of the pipe. If the average inside diameter is 2 inches, but it narrows down to $\frac{1}{2}$ inch only in even one place, the amount of water that flows through the pipe in a given time will be no more than that which can be delivered by a pipe of $\frac{1}{2}$ -inch caliber all through its length. If this small opening is somewhere near the middle of the pipe, the water will dribble out at the other end slowly; if it is near the discharging end, the water will emerge with greater force, though there will be no greater volume than would pass through a pipe of $\frac{1}{2}$ -inch diameter.

An office may in some places have a great capacity for getting out work, just as a pipe of uniform, internal diameter all through its length will deliver its full capacity; but if the work does not flow steadily and

evenly, owing to some obstruction in the routine, it will not be able to deliver its full capacity at the end.

Or to state the matter more expressly in terms of work, let us assume that there are 10 consecutive operations to be performed on a particular piece of work, each requiring the same length of time, and each operation manned by a competent clerk. If sufficient work is given the first clerk in the chain to keep him busy, and he passes it on to the next, who in turn passes it to the next, and so on, all 10 clerks will be busy and will turn out their full capacity.

If, on the other hand, the first clerk gets, during the first hour, sufficient work to keep him busy for two hours; during the second hour, work sufficient to keep him busy for only half an hour; in the third hour, no work at all; and only one hour of work with each succeeding hour afterward, it is easy to calculate what the final result will be. Each clerk will be short one-half hour of work, but this shortage will pass like a wave from one clerk to the next.

In these simple illustrations the importance of flow of work is easily discernible, but when it is considered that in the office there are many streams of work flowing in many directions, some reaching the final stage quickly and others wandering here and there throughout the organization, perhaps for days, the actual problem is by no means so simple as the illustrations given would suggest, nor is it always easy to detect exactly where the obstructions lie. It is evident, however, that obstructions will interfere with the flow.

FLOW OF WORK A MANAGEMENT PROBLEM

It is evident that flow of work is a problem to be solved by the management and not by the clerks. This does not mean that the management can always control absolutely the flow of work, but it can take steps to minimize the effects of any uncontrollable factors that may be present or anticipated.

In some cases, lack of equable flow may be due to a cause that is altogether outside the control of the management; for example, when orders come in by mail, one day's receipts may be very heavy and another very light. If the office is manned to handle the heavy day, it is obviously overmanned for the light one. Again, if orders come in by telephone or by person, work may be very heavy at certain parts of the day and very light at others. Such causes are, of course, practically beyond the control of the office.

But in the majority of cases where flow is impeded, the cause is due

1. The office manager must see that
 - a. The flow of work is uninterrupted.
 - b. Each duty is performed in its proper sequence.
 - c. Work is finished according to predetermined schedule.
2. The office manager must know
 - a. Through what means and by whom each activity is to be accounted for.
 - b. The means available to accomplish the desired results.
 - c. If any department or any part of the work is getting behind, in time to take steps to correct the situation.
3. Work getting behind may be due to
 - a. A sudden and unexpected increase in volume of work.
 - b. Absence of employees assigned to that work.
 - c. Ineffective work.
 - d. Ineffective supervision.
4. The manager should know for each department
 - a. The volume of work received each day.
 - b. The quantity of work handled that day.
 - c. The amount of work left over, if any, at end of day and reasons for its being left over.

to certain internal conditions which are well within the control of the management. Some particular department, for instance, may, because it is undermanned, hold up the work of another; or the same result may be produced because one department is engaged on other work part of the day.

Another impediment which obstructs the flow is frequently contained in the routine itself. If the time required to perform a piece of work on one step is greater than is required on other steps, the work will obviously remain at that step longer, and succeeding operations will have to wait. This case is illustrated in Fig. 10 on page 95.

One of the chief causes of defective flow within the routine itself is the lack of standard methods for moving the work from one operation to another.

Consider for a moment some of the ways in which work may be so moved:

1. The clerk who has finished his part takes the work to the clerk who is to do the next operation.
2. The clerk who is to do the next operation fetches the work from the desk of the clerk who has finished his part. This is the reverse of No. 1.

THE UNIT PLAN OF FLOW

The unit plan of flow is an organized method of determining the rate at which work will flow through a routine. A unit may be any number of pieces from one up. As soon as one unit is finished on any operation, the work is passed to the next step. If the unit consists of, say, 10 pieces, work will flow from one step to another in units of 10; if the unit is 1, it will flow 1 at a time. The size of the unit will depend upon the number of steps in the routine and the length of time it is desired to have the work take. If the number of steps in a routine is 20, and the average time required for each step is 1 minute, the order can flow through all the steps in a little more than 20 minutes, if the unit is 1 piece; if it is 10 pieces, 200 minutes would be required. The unit plan of flow is undeniably superior to the haphazard process of flow found in many office routines.

3. A special messenger takes the work from one clerk to the next.
4. The work is moved through the interoffice mail service, which picks it up and delivers it at stated intervals.
5. A cable carrier transports the papers.
6. The clerk finishing his part sends the work to the next clerk by pneumatic tube.
7. A moving belt carries the work from one clerk to the next.
8. The desks are so arranged that each clerk hands the work he has just finished to the clerk who is to do the next operation.
9. In manufacturing, the method of drop delivery is often used, where the work drops down a chute. An adaptation of this idea is used in some offices.

It will be noticed that 1 and 2 are the slowest, and 8 and 9 are the quickest. Since the time and labor required to move work from one operation to the next add nothing to the value of the work, but only increase the cost, the less time and labor required, the better. In office work the time loss is especially important, since excessive transportation increases not only the cost, but also the possibility of delay and consequent loss of production through interruption to the flow.

THEORETICAL CAPACITY

The amount of labor time required on any group of operations is the sum of the labor time required on each unit, plus the necessary time

for travel from one unit to another; this is known as the theoretical capacity, but very seldom in office work is this even remotely approached, the chief reason being the loss of production through lack of flow.

In the cycle of operations in a particular routine like the handling of orders, for instance, assume that there are 10 operations each requiring 1 minute to perform. The theoretical time would be 10 minutes, plus the amount of time required for the work to pass from one operation to another through the cycle. If the necessary travel time between operations were 1 minute for all 10 operations—that is, 6 seconds for each passage—the labor time required would be 11 minutes per order. Ten persons working 8 hours a day would come to 4,800 working minutes; their theoretical capacity on the above assumption would be 436 orders daily. But even in the best organized office that would not be possible because of the difficulties in the way, as explained in the following paragraphs. In the unstandardized office, perhaps 40 per cent of its theoretical capacity is achieved, the remainder being unobtainable. This is a modest estimate based upon years of experience with many offices.

THE USUAL DIFFICULTIES ENCOUNTERED

There are many difficulties in the way of getting the ideal flow of work—the full theoretical capacity—of an office, which prevent the office manager from obtaining it from his working force. The following are but a few of the many obstructions which interfere with the daily flow of work; some of them may be inevitable and inescapable, but many of them can be entirely prevented.

1. *The Volume of Work to Be Done Is Unequal.* The times it arrives are not regular, one day's work being heavy and another light. The work arriving in the first mail is usually much heavier than in those subsequently received during the day. There are seasonal fluctuations in volume—a difficulty, which, though it can never be entirely overcome, can be foreseen and planned for and the loss of capacity thereby greatly reduced. If the volume of work is known from day to day, statistics can be prepared which in the course of time will show what may be expected in both seasonal and daily fluctuations. It is a simple matter, of course, to have a force sufficiently large to handle the peaks, but this provision means a loss of capacity in the valleys; so a decision must be made as to the best average force to be maintained, which will result in the least loss of capacity.

Office work is highly subject to peaks and valleys because most of it originates outside of the office, and its quantity is therefore not subject to the control of the office manager. At certain seasons, in almost every kind of business, the work is much heavier than at other times.

The problem of the peak should be carefully studied, and the miscellaneous work so planned that the weight of the peak does not fall with full force upon the organization. A standard method of handling peaks can be devised in each particular instance.

2. *Interruptions to Work.* Below are given four of the most frequent interruptions that occur daily in most offices. If an analysis of all such interruptions is made it will be found that many of them can be foreseen and prevented, so that only a very limited number will be unavoidable.

a. *Lack of material with which to work.* This may be caused by bad planning, bad scheduling, or a complete lack of either or both. "Lack of materials," in the sense employed for that phrase here, usually means that there is no work available. Stenographers especially are likely to lose an enormous amount of time because there are so many intervals in which they have no work to do.

Clerks on routines will have many short idle periods during the day, which, because of their brevity, pass practically unnoticed, especially in the case of those "experienced" clerks who know how to stretch 30 minutes of work over an hour, if necessary to fill a time gap. This is not to be classed as "stalling"—clerks have learned by experience that when lack of work is the fault of the management, it must not be proclaimed too loudly by visible idleness and must not be made too apparent. Hence, they are in reality concealing the fault of the management, not their own. Though it would be actually better for the management to allow the clerks to sit idle during these periods, because by that method the deficient flow of work would instantly become noticeable, the clerks know that they will be reprimanded if they are noticed doing nothing.

b. *Information required is not at once available.* This is a very common and prolific cause of delay and interruption of work. A correspondent gets ready to dictate a letter and then discovers there are certain parts of it that he cannot write until he gets further information; so he holds up the stenographer while he telephones or sends someone to get it.

OTHER CAUSES OF DELAYS

Interruptions to work:

Poor arrangement

Visitors

Chitchat

Telephone calls

Calls to see the manager

Errands outside the office

Absences

Worrying over work on hand

Substituting other work

Ineffective work: study for waste effort

Ignorance: overcome by instruction

Laziness: provide an incentive

Soldiering: standardize and keep records

c. Changes of work through change of plan. Many interruptions occur on this account.

d. Changes of work because of poor planning. This is altogether too frequent an experience.

3. Unequal Times Required for Different Operations in a Routine. These constitute a prolific cause of interference with flow. If each operation requires a different time, varying from 30 seconds to 2 minutes, for example, the clerks on those operations requiring the shortest time will be idle a large portion of the time, while those with the 2-minute operations, though continually busy, will still form "the neck of the bottle."

4. Lack of Standards. If these are lacking there will not be an equal—or even approximately equal—amount of work done by the various clerks; this in itself will interfere with the steady flow.

5. Lack of Planning. This condition can be corrected only by the installation of planning methods.

6. Lack of Scheduling. Without planning there can be no scientific scheduling, which in turn adversely affects the steady flow of work.

Chapters XXIII to XXVI are devoted to a consideration and explanation of the technique by which scientific management may succeed in eliminating or minimizing these difficulties.

QUESTIONS FOR DISCUSSION

1. Define or explain "flow of work."
2. Why is the flow of work an important consideration?
3. What are some of the causes which impede the flow of work?
4. How could you show some of these causes graphically?
5. In what nine ways may work be moved from one operation to another? Comment on them generally.
6. Explain the unit plan of flow.
7. What is the theoretical capacity of an office? Why is it seldom reached?
8. Name and comment briefly on each of the six stated difficulties in the way of getting the ideal flow of work in an office.
9. Name five causes of delay.

PROBLEM

In the office of the Carter Hosiery Company, the order and billing department handles 300 orders daily. The number of workers in this department is twice, theoretically, what it should be. Although there are idle periods, for the most part everyone seems to be exceedingly busy. It is stated that the reason for this is the large number of back orders due to the shortage of certain numbers, which necessitates much recopying of orders.

How would you analyze this situation to discover the apparent loss of time?

"The responsibility of the office service department is to provide all other departments of the company with the general service they require."—H. C. PENNICKE.

VII

FACILITATING THE PERFORMANCE OF WORK— OFFICE SERVICE—MAIL AND MESSENGER

The effectiveness of office workers is directly affected by the excellence of those services which are designed to facilitate the performance of their work. If the mail is late, the work is delayed, even disrupted, in some offices. If letters and papers cannot be found in the files, the ensuing situation is more than unfortunate; it may be tragic. If the telephone service is inadequate, so that customers calling the office from the outside get the busy signal, and those inside cannot get the line, there is not only delay, but exasperation. If certain forms or supplies suddenly run "out of stock," important matters may have to be deferred. If an executive cannot get a stenographer when he is ready to dictate his correspondence, he is more than annoyed; he is likely to be downright critical. And with reason.

DEPENDABILITY IS VITALLY IMPORTANT

It will be observed that two results may be expected from inadequate or inefficient office service. First, is the effect on the work; second, is the effect on the worker. While both are important, the second is more costly in the long run, since sooner or later even the competent worker, who may be constantly baffled in his efforts to earn his pay, will eventually cease trying and will gradually take the attitude, "Oh, well, if the company doesn't care, why should I?" When this stage is reached, there is a loss of interest and ambition, a loss of perspective, and the development of slipshod methods of work. The best-laid-out routine will creak sooner or later if it is not kept well oiled by the facilitating services.

Whether or not these facilitating services should be centralized is less

important than the fact that, whether centralized or not, they should be so well organized, directed, and controlled that everyone in the office comes to depend upon them; that dependence can come about only by rendering so excellent a service that the office force can absolutely rely upon it. For example, if an internal mail service is provided to facilitate the interchange of letters and papers between desks and between departments, the confidence of those for whom the service is provided will be won or lost by the excellence of the service; that is, the certainty, first, that the messenger will call at certain stated times; second, that his calls will be frequent enough to overcome the always present temptation of the desk worker to deliver his own papers in order to get prompt action; and third, the accuracy with which the letters and papers picked up are delivered to the proper points.

These are not matters of chance; they are features which can be established and controlled to a nicety. And because one of the simplest ways to increase the output of each office worker is to make it unnecessary for him to leave his desk in order to take papers to others, thereby interrupting and delaying his own work, the problem of office intercommunication will have our attention first.

OFFICE INTERCOMMUNICATION

In the conduct of office work, communication of thought, whether written or verbal, is indispensable, its total absence being inconceivable. Such communication is either internal, between one person and another in the office, or external, between those within the organization and persons outside of it. When, through the growth of the organization, the volume of intercommunication becomes so great as to attract attention, it is realized that "something must be done about it," but very rarely is the problem thoroughly analyzed and all available means used to save the time and energy which it consumes. In short, internal communication is rarely considered at all, until necessity compels consideration. In a very small organization, say, of 8 or 10 people, internal communication does not exist as a problem, for those in the office can easily and with little effort communicate with each other orally. With 15 or 20 people, the need for better intercommunication begins to take shape dimly, especially if they are not all in the same room. Nevertheless, since the pressure of the need is not distinctly felt, little attention is paid to it. With 100 clerks the facilitation of intercommunication is more distinctly recognized as a real problem and compels a certain amount of attention. As the organization grows larger and larger, the

problem becomes more and more pressing and important as one that insistently demands a satisfactory solution, its importance increasing in something like geometrical ratio to the growth of the business.

The reason for this is obvious. A larger volume of business requires a larger force of clerks to handle it; these people in turn require a larger amount of space and are distributed over an increased area; this wider distribution makes the necessary communication between them more difficult, so that there will be much walking back and forth between them for this purpose, unless some means is adopted to prevent it and save the time thereby expended.

Again, a larger business has the effect of making competition more keen. A small volume is easily handled and competition, being but slightly felt, is unnoticed; but, as the organization tries to absorb more and more of the market, it develops increasing resistance from competitors. To obviate this threat to maintaining volume, the firm strives to give more to its customers in the form of improved service and quicker deliveries, which involves more and more intercommunication work.

In other words, the growth of modern business has not only been responsible for the difficulties and increasing importance of intercommunication; that same growth and development have been vitally dependent upon the constant improvement of methods for intercommunication. There is no question that inadequate facilities for communication have a deterrent effect on the growth of a business.

It may be noted that there are certain rather necessary elemental practices in office organization which tend to reduce the number of communications that would otherwise be necessary, some of them—even though not devised for that purpose—acting automatically to that effect. The establishment of a routine, for example, tends to reduce the need for communication. (Imagine each transaction in a routine being put through by word-of-mouth orders or instructions!) A better layout (such as straight-line flow of work) reduces the need for communication greatly. So does standardization of methods (even though the standardization may not have been consciously designed for that purpose).

DIFFERENT FORMS OF INTERCOMMUNICATION

Let us now analyze the different forms which intercommunication takes in modern business. There are three general forms:

1. *Notices that certain things have been done.* These are records, sometimes of a formal character, which may or may not impel further

action. By punching the time clock in the morning, a clerk not only obviates the necessity of reporting personally to a superior officer but communicates to the management the fact of his arrival and the exact time he arrived. When a clerk makes up a list of the cash received and turns it over to the cashier, he is communicating thought, making a record of it, and at the same time delivering the cash to the proper person. Invoices are likewise communications—*notices that goods have been shipped and billed*. Records of all kinds serve purposes of communication. Even though these activities are rarely considered as examples or types of office intercommunication, they are essentially so in character.

2. *Orders to do certain things, requests for advice and information, notices of happenings*. These usually impel further action and involve further communication, representing probably the largest portion of office intercommunication.

3. *Reports of progress on different phases of the work*. These may or may not involve further action or communication; they also constitute a considerable portion of office intercommunication.

Communications may be either oral or written. Oral communications may pass between persons face to face (involving a certain amount of travel to the meeting place) or they may be transmitted over a distance by telephone. Written communications may be either formal or printed memorandums with little writing, or they may be special letters or memorandums either of passing importance or of some future importance, such as records and reports.

THE MAIN FACTORS OF THE PROBLEM

The three main factors of the intercommunication problem are the volume of communications, their frequency, and their length.

1. *Volume*. A small volume of intercommunication presents no particular difficulties. A medium volume usually prompts the beginning of methods for obviating the most annoying of the difficulties experienced but rarely impels the office manager to make a study and analysis of the subject. Whatever methods are adopted will partially ameliorate the condition, but many opportunities for effective correction of the evils will be overlooked. With a large volume of intercommunication, the difficulties increase, not only as to the economy of the methods used, but as to their effectiveness also. The condition is such as to justify the most careful study, but it is often left to the salesman of some particular mechanical device to suggest a solution.

2. *Frequency.* The frequency of the messages is the next factor. If in the nature of the work there are a large number of communications over a short period of time, whatever facilities exist are soon overtaxed, with resulting chain reactions that slow down the work.

3. *Length.* If the messages are long and each occupies an appreciable amount of time in transmission, the intercommunication facilities are again overtaxed, with even more serious delays.

These three—volume, frequency, and length—are the basis of each problem of intercommunication, but the methods of solution involve many other factors.

THE PROBLEM OF WRITTEN COMMUNICATION

There are two possible methods of transmitting written messages: by messengers or by mechanical devices.

The primitive form of the messenger in the business office is the old-fashioned page boy, an employee used, as a rule, for the delivery of one message at a time. He is summoned by a buzzer and instructed to deliver the message at a certain place; he makes a special trip to do so. It is somewhat remarkable that this obsolete method still survives in many places where the messenger work could be readily organized. Its waste does not seem apparent, or else the executives using it seem to think it adds to their prestige to have persons at their beck and call, to run their errands without regard to the expense. But in most up-to-date offices an organized internal mail service does this work much better, more expeditiously, and at far less cost.

THE INTERNAL-MAIL SERVICE

Internal-mail service may be called by several names, such as inter-office mail service, intraoffice mail service, interdepartmental mail service, house-mail service, and so on. Whatever it is called, the characteristic feature is the same—a messenger calls regularly at indicated departments or desks or both to deliver papers and messages from other departments or desks and to pick up papers and messages intended for others. The purpose of this arrangement is to make it unnecessary for executives and clerks to leave their desks to carry papers and messages to other desks. When an executive or a clerk is doing his own messenger work, his regular duties are interrupted by his absence from his desk. Not only is high-priced time wasted, but the work itself is de-

layed; furthermore, the interruptions take one's mind off his work and make it difficult for him to concentrate.

Unless well organized, however, the internal-mail service will help but little. If the collection and delivery intervals are as long as an hour, there will be many occasions when an executive who does not wish to wait an hour to have his message delivered by the regular service messengers will use his stenographer or a clerk for this purpose, or may even deliver his message himself. To be effective, a messenger service should make not less than three deliveries an hour throughout the office and sometimes oftener, depending on the need.

In one company, where 20-minute service was urged, the management insisted that an hourly service was quite adequate. An analysis of the travel of department managers from desk to desk showed that the time thus wasted was valued at about five times the time of the messengers required to sustain a 20-minute service.

Many offices have deliveries made from department to department only, a practice equivalent to the delivery of the United States mail from town to town only, which compels each resident to call at the post office for his own mail. If it is important to save the time of clerks going from department to department, certainly the same reasoning applies to saving them travel in their own department.

The proper organization of an internal-mail service, therefore, necessitates travel from desk to desk and requires that every desk from which papers are sent to another point in the office be constituted and recognized as a pick-up and delivery station. Organized on this basis, it often saves a considerable amount of time, even in a small office of but 15 or 20 clerks, to have one of the junior clerks, at 15- or 20-minute intervals, call from desk to desk and pick up or deliver papers, even if they are to be delivered but a few feet away. If the office manager will make the observation of clerks on their feet as described in Chap. XVI, he will discover a great amount of waste time that can be prevented by an effective messenger service. And inasmuch as in the small office it will require but a few minutes to perform such a service, the junior clerk assigned to perform it can have other duties as well.

SETTING UP AN INTERNAL-MAIL SERVICE

Each pick-up and delivery station should be provided with "in" and "out" baskets or with a vertical stand containing several compartments.

When a paper is ready to be sent forward it is placed in the container. If there are many communications for any particular station, a special compartment can be provided for that station and an envelope, already addressed, placed alongside the papers, so that the messenger when picking them up can place them in the envelope for delivery.

HOUSE MAIL SLIP	
Check to show destination	
<input type="checkbox"/> Accounting	<input type="checkbox"/> Laboratory
<input type="checkbox"/> Advertising	<input type="checkbox"/> Machinery
<input type="checkbox"/> Chicago Br.	<input type="checkbox"/> Mfg. Adm'n.
<input type="checkbox"/> Employment	<input type="checkbox"/> Misc. Dept.
<input type="checkbox"/> Engineering	<input type="checkbox"/> Order Dept.
<input type="checkbox"/> Extract Mfg.	<input type="checkbox"/> Office Service
<input type="checkbox"/> Extract Sales	<input type="checkbox"/> P. & M.
<input type="checkbox"/> Factory Acctg.	<input type="checkbox"/> Printing & Sta.
<input type="checkbox"/> Fed. Brass.	<input type="checkbox"/> Purchasing
<input type="checkbox"/> F. & S. Mfg.	<input type="checkbox"/> Research
<input type="checkbox"/> F. & S. Sales	<input type="checkbox"/> S. I. D.
<input type="checkbox"/> Gas Plant	<input type="checkbox"/> Soda Ftn.
<input type="checkbox"/> Gen'l Credit	<input type="checkbox"/> Specialty
<input type="checkbox"/> Gen'l Sales	<input type="checkbox"/> Teleg. Censor
<input type="checkbox"/> Information	<input type="checkbox"/> Traffic
MESSAGE	
To _____	Date _____ Hr. _____

From _____	Dept. _____

FIG. 13. The above slip makes clear the destination of papers collected by the internal-mail messengers. One need only pin the slip on top of the papers to be forwarded, check the department or desk for which the papers are intended, and drop the whole in the outgoing-mail basket.

If papers are confidential or need protection, special internal-mail envelopes may be provided. Sizes in common use are No. 6 $\frac{3}{4}$ and No. 10, made of cheap manila paper for "one-trip" use. The flaps of these are usually gummed for quick sealing. Regular white envelopes should never be used in house-mail service, since they are likely to get into the outgoing mail and be stamped and mailed, causing delays which

in some cases might be serious.) Some offices use one or two large sizes, such as 6 by 9 or 9 by 12, for enclosing internal mail; usually these larger envelopes are of heavier stock to withstand several trips. Since the flaps are ungummed, the envelopes may be sealed by a simple sticker; ordinarily, sealing is unnecessary, and the envelopes may be used over and over again. Four half-inch round holes punched through the envelopes reduce the likelihood of contents being overlooked.

INDICATE DESTINATION CLEARLY

An essential aid to accurate delivery is to indicate clearly the destination of papers collected by house-mail messengers. The two most commonly used methods are marking the papers themselves or attaching a forwarding slip. Papers intended for other departments should be so marked in only one place—the upper left corner of the sheet (the upper right is reserved for filing directions). Usually the name or department, penciled in that location and encircled, will suffice, making sure that any conflicting or confusing directions are canceled by drawing a line through them. Several companies number the “in” trays and furnish a directory to all employees. This makes it easy for even the newest messengers to put a numbered paper in the tray bearing that number.

Another way is to use printed or mimeographed “house-mail slips,” which are put up in pads of 50 or 100 and need only checking the destination and stapling or pinning the slip to the upper left corner of the papers to be forwarded. These slips can be personalized, if desired, by being mimeographed to show the names of individuals to whom items are constantly being sent, as shown in Fig. 14.

PLAN A DEFINITE, TIMED ROUTE

A route should be planned, and the length of time required to cover it entirely should be known. In order that the messengers may not be overfatigued, a rest period approximating 25 per cent of the time should be provided. That is, assuming a delivery every 20 minutes, and 15 minutes to cover the route, the remaining 5 minutes should be spent in rest; but the messenger should be required to remain seated at his station during this period, to ensure that he will be on hand to start the next turn when the time comes. In many offices, the messengers alternate in covering the route. To make certain that the route is completely covered in the scheduled time, every messenger should be instructed to

call at a station regularly, *whether there is anything to deliver or not*. If this rule is not enforced, stations which have a small amount of pick-up matter are likely to be neglected, the messenger concluding that it is useless to call at that station.

Even with specific instructions and due warnings, a messenger will occasionally skip an out-of-the-way station, especially if he has been

<u>TO</u>	<u>FOR</u>
Mr. Amott	Better Keep This
Mr. Boughton	
Mr. Carbery	Please handle this matter
Miss Cohn	
Mr. Cornelissen	Keep or Destroy - not necessary to return to me
Mr. Crowe	
Mr. Gillespie	
Mrs. Halpert	Please comment and return
Mr. Horner	
Mr. Joyce	What about this?
Mr. Kaufman	
Mr. Kerner	Please read and pass on to those checked
Mr. Klee	
Mr. Matthews	
Mr. Mattson	Notation and return
Mr. Meek	
Miss Mertz	Please see me about this
Mr. Miller	
Miss Pfaff	Possible material for Bulletin This may interest you
Mr. Ridenour	
Mr. Roberts	
Mr. Rohrbach	File
Miss Tomaschoff	
Mr. Tudhope	Your signature
Mr. Ulmer	Necessary Action
	Correction
	What do you think?
Date _____	From: H. N. LORD

FIG. 14. Slips like this save time three ways.

delayed and is in a hurry. To check on this, one office manager uses a card like that shown in Fig. 15. This card is placed in the "out" tray of a station which has complained of noncollections. As the messenger visits the station, he writes his initials and the time on the card, returning it to the tray. This plan also discourages department heads from making unfounded complaints that "your mail boy hasn't called here for two hours." A glance at the card in the "out" tray shows when the messenger last called.

Proper delivery bags should be provided, containing several compartments, so that the messenger can sort the mail as he collects it. Should the papers he collects be addressed to a station which he has not yet covered on the trip, he will deliver them on his arrival at that station; but if he has already passed that point, the papers will be delivered on the next trip.

MAIL COLLECTION REPORT	
Station # _____	Date _____
Messenger	Time called
<i>At the close of each day stations will send this report in a sealed house envelope to the Head Messenger.</i>	

FIG. 15. One way to prevent the skipping of stations in the collection of house mail.

Instructions should be carefully written out and thoroughly taught to the messengers. It should be understood by all concerned that messengers engaged in the internal-mail service are not to be used for special errands outside the office; if this rule is not enforced, the messenger system will speedily become disorganized and ineffective. Until the habit of making the route on scheduled times becomes fixed, the card shown in Fig. 15 should be placed at several strategic points on it, upon which the messenger will sign his name and note the time he called there on each trip. At the end of the day this card will be sent to the head messenger and be available for inspection by the office manager, who should look over it occasionally.

The messengers should be distinctly impressed with the importance of the character of their work, which is the same in essence as that of a government mail carrier, for if it is not done with speed and accuracy, the work of the entire office will be delayed. This feeling of responsibility duly impressed upon the messengers will tend to make them more careful and faithful in the discharge of their duties.

MAKE PROVISION FOR SPECIAL TRIPS

With all this, no matter how carefully organized the messenger service may be, occasions will arise when special trips must be made. The office manager must recognize these emergencies and plan to take care of them by sending a special messenger when requested. In order to prevent the abuse of this privilege by clerks and executives, the conditions surrounding the making and handling of such special trips should be studied and standardized, so that they can be reduced to the smallest number possible consistent with carrying on the work of the office.

Special calls will be most frequent shortly after the internal-mail service has been set up, before the office staff has come to rely on its regularity, frequency, and dependability. Let the head messenger keep a tally on all special calls, noting the person and department calling, the time the messenger left and returned, and what the errand was. Such a record will soon show who is asking for special messenger service that could just as well be handled through the regular house-mail service. The office manager can show this record to the offending department head and ask his cooperation, pointing out the unnecessary expense and the possible delays to the other departments using the service.

MECHANICAL AIDS TO MESSENGERS

Where a regular messenger service is in operation in an office covering considerable floor space, it is possible to expedite the service by the aid of various mechanical devices.

In one such office where large quantities of papers must be delivered, a truck is used, a capacious four-wheeled conveyance with composition fiber wheels which render it noiseless in operation. It is pushed around from station to station, its roller bearings making this an easy task. Papers are sorted on the rack as the messenger goes around, and a burden many times heavier than an ordinary messenger could reasonably carry is easily transported to the points where needed.

In many offices with extra large floor space and great distances to

cover, the messengers are provided with roller skates, the use of which makes travel much quicker and far less fatiguing. On still longer routes which must be covered quickly, some offices use a bicycle.

MECHANICAL DEVICES FOR DELIVERING MESSAGES

In addition to aids that help the messengers do their work easier and faster, there are also available mechanical carriers of messages and papers, the possibilities and limitations of which should be considered.

The pneumatic tube is a well-known device that delivers messages very rapidly and, where there is a clear need for it, is exceedingly effective. Either small or large tubes may be used, but not both in the same conduit. The cost of installation is rather high, and once installed is permanent and inflexible.

The passenger or freight elevator is rarely considered as a means for delivering messages. In offices with several floors it can be used to transport the messenger's delivery bag from floor to floor so that each messenger route need cover no more than one floor, thus reducing the labor of covering the route. There are also certain types of automatic conveyers which work on a vertical plane similar to elevators and travel from floor to floor, delivering papers at each floor automatically.

Extensive use is made of the belt conveyer in carrying papers from one operation to another; when this device is equipped with brush-off stops at each station, it can be arranged to deliver automatically at specified points.

Carriers working upon wires and impelled by springs are useful for transmitting papers from one point to another. Carriers operated with a continuous running cable may be used for either horizontal or vertical delivery or both.

Two electrical devices which transmit instantaneously written or typed messages, respectively, are the telautograph and the teletypewriter. The teletypewriter has a typewriter keyboard; a message typed at the sending machine is simultaneously typed at the receiving machine, wherever located, on a tape or sheet of paper as provided. It may be used not only between departments in the same building, but also between buildings and between branch offices in different cities, either by private wire or through a central teletypewriter exchange, operated by the telephone company.

The telautograph does the same for handwriting: what one writes on a metal plate is instantly reproduced in the same handwriting at any desired station or stations, wherever located. Data or information thus

USING TELEVISION IN THE OFFICE

New techniques developed from television are being applied to business in London, where offices 25 miles apart can "see" files placed before a camera.

A London bank is installing television equipment to enable its head office to check records stored at a country deposit. On request by telephone, a clerk at the storehouse can put documents before the television equipment at his end, and they can be read on a screen at the receiving end.

Apart from the time saved, the bank saves money avoiding the need for duplicates in the head office. Space charges and insurance costs are also cut. (*Courtesy of Reuters and The Christian Science Monitor.*)

transmitted may be authenticated, if desired, by the actual signature or initials of the person giving the information.

Before any of the above-mentioned devices are decided upon the situation should be thoroughly analyzed as to actual requirements. The device itself should be subjected to the strictest investigation to determine whether or not it is the best for the purpose.

LIMITATIONS OF MECHANICAL DEVICES

Mechanical devices for carrying messages are strictly limited in many particulars. Thus, they must always follow some established path, a fact which is at first not usually recognized as a drawback; as soon as some change in the office arrangement is proposed, however, the difficulty is at once apparent, and it is realized that a change may involve considerable expense. For this reason, many installations of mechanical devices have fallen into disuse. The remedy for this situation is not the abandonment of mechanical devices, but the extremely careful consideration of their use and limitations beforehand and their establishment only in such paths as will not readily change.

A device carrying messages from floor to floor will seldom have to be changed; as long as the office occupies these floors, the necessity for communication between them will remain. A device which carries messages from one end of the room to the other, with stopping points on the way, will seldom require changing. But a device which runs from one definite point to another will either have to be changed at the very

first alteration of arrangement, or the proposed change will itself be hampered by it.

Mechanical devices are also limited by the size of the package or the volume of messages to be delivered. When installed, this limitation may not have been anticipated; but, as the business expands or other uses are found for the device, it becomes a serious handicap. The remedy in this case is essentially the same as in most other problems. These conditions must be foreseen through a more careful study and analysis of the proposed installation, and especially its capacity in view of expected future growth.

DEVICES FOR ORAL COMMUNICATION

The telephone is, of course, the most common and most useful device for oral communication, other than face to face. The use of extensions of the outside telephone through a private branch exchange gives a flexibility that more than offsets the comparatively small cost of this timesaving service.

The automatic telephone serves the same purpose as the extensions but gives instant service and eliminates telephone operators. Various types of interior automatic systems are in use, on some of which it is possible for several people to hold a conference over the telephone at one time; this is frequently a considerable advantage, for it saves much needless walking on the part of high-priced executives.

There are certain types of loud-speaking telephones with which a person may be called and may answer from any part of the office without going to a telephone instrument. The use of a device of this type is not to be recommended in a room where there are many clerks.

For locating executives who may be, at the time, in any one of a dozen places in the building, there are various types of signals, bells,

At 60 cents an hour, clerical time costs 1 cent a minute. If a clerk spends only 5 minutes daily in needless walking to talk face to face with another clerk, the cost per month of 25 working days is \$1.25. The monthly cost will vary according to the salaries paid the individuals concerned. An extension telephone would save the walking time, which can be put to more valuable use. This is a good illustration of the old saying that if you need something, you are paying for it, whether you have it or not.

lights, buzzers, and so forth, operating on certain codes, which save much time in searching. The use of one of these devices makes it possible for an executive to go freely about the establishment, without worry as to whether or not he will receive important messages during his absence from his accustomed place; it saves the time of the telephone operator trying to locate him as well as the time of every person who answers the telephone while she is trying one location and then another. The device will instantly locate him wherever he may be on the premises; it can be operated with various tone bells, buzzers, or horns, or even flashing lights, and is equally suited to a very quiet office or a noisy factory.

The dictating machine, described in Chap. XIII, may also be used effectively for the delivery of messages. If an executive wishes to give important instructions to some person who is not present at the moment, he may dictate the message into the machine, using as many words as he wishes. The record can then be sent by the regular messenger to the desk of the person for whom intended; this person on his return can place the record in his machine and listen to the message just as it was dictated, without the services of a typist.

ANALYZING THE PROBLEM

Before any method for the improvement of intercommunication is adopted, the intercommunication needs of the whole office—not merely a part of it—should be thoroughly analyzed and studied. The beginning of the study lies in some such questions as these: Where are written messages best? Where are they least desirable? Where should oral messages be used? Only when the correct answers to these queries and others of similar fundamental nature have been worked out does the consideration of the various devices that may be used logically follow. The usual way is to think of a device and then try to find some way to use it.

When the various forms of the messages to be delivered, their urgency, quantity, and so forth, have been studied, the office manager should then—and only then—list all the possible means of accomplishing the work and consider them one by one as to their suitability.

The next step is to figure the cost of each method and compare results. All requirements must be known thoroughly, and the means (and cost of such means) for satisfying these requirements must be weighed and compared. Only when the problem is analyzed in this manner can it be solved correctly.

DETERMINING THE REQUIREMENTS

1. *Number of Stations.* The number of stations where messages are to be sent or received should be known. Without this knowledge, no mechanical device can be effectively installed.

2. *Volume of Traffic.* The volume of traffic at each station should be estimated. This can readily be done, with approximate accuracy, by a study of the records of past performance. In addition, an allowance should be made for expansion; this should be calculated, not merely guessed at.

3. *Distances between Stations.* The distances between stations should be ascertained, to assist in determining the comparative value of various methods.

4. *Speed Required.* Another important factor is the speed required. A messenger walking 2 miles an hour proceeds at the rate of 175 feet a minute. Is this fast enough? Is anything to be gained by delivering the message over that distance in 1 second?

5. *Frequency of Messages.* The frequency of messages that must be delivered is a factor in determining whether a messenger system or a mechanical device is preferable.

6. *Amount of Space Available.* This is important, for a mechanical device may occupy more room than can be conveniently spared.

7. *General Appearance of the Office.* Finally, it should be realized that the installation of certain mechanical devices to some extent detracts from the appearance of the office, if appearance is important.

FIGURING THE COST

Comparative costs should be figured closely and accurately for each method under consideration. Both the amortization and the running cost should be calculated as closely as possible.

Amortization is based on the first cost of the equipment installed and ready for use, and is related to the length of life of the equipment, not overlooking the period of time that the building lease has still to run, as well as the possibility of moving the equipment, or selling it if it cannot be moved.

The running cost includes power, labor required for operation and maintenance, supplies, probable repair bills, and the cost of the space to be occupied by the device. Running cost plus amortization gives the total annual cost of the equipment.

OPENING AND DISTRIBUTING THE MAIL

The organization and facilities set up for handling office intercommunications may also be used for expediting the distribution of the incoming mail, in order that no delays may ensue between the arrival of the mail and its prompt and adequate handling.

The opening of the mail should be so organized that, when the office opens for business, the first morning mail, or the bulk of it, will have been opened, sorted, and distributed to the desks of those who are to handle it, with all necessary previous correspondence attached to it. In fact, work should begin everywhere throughout the office *at the hour the office opens*.

Of course, it will not be possible for the clerks on the second step of a routine to begin work promptly on mail that is on the desk of the clerk working on the first step, but this difficulty can usually be overcome somewhat as follows:

Plans can be made for the performance of specific daily duties by each clerk at the opening hour, and such work should be not merely fill-in jobs that may be done at any time but tasks that will advance the routine of the work throughout. In almost every job there is a certain amount of preparatory work occupying a few minutes only, perhaps, but which nevertheless must be done. A study should be made to determine, select, and assign tasks which can be done for the first 15 minutes or so at the opening of the day's work, which will directly advance that work; thus junior clerks can help in distributing the mail, while the more advanced clerks can work on the first few operations so as to get things well started.

STANDARD METHOD OF OPENING MAIL

Where there is a large volume of mail to be opened, the following standard requirements and method should be adopted:

1. *Study and standardize the mail-opening procedure.* The entire procedure of mail opening should be studied and standardized according to scientific methods.

2. *Start mail opening early.* Work should be started on the mail well in advance of the opening of the office—a half hour in some cases is not sufficient; sometimes an hour or two is necessary.

3. *Train the mail-opening clerks.* All mail-opening clerks should be trained to perform each operation at the standard rate of speed or better.

4. *Get the entire office started on time.* The office manager should have a rigid and complete plan, not only for the mail-opening routine, but also for getting the entire office started punctually, to avoid the usual waste of from 8 to 12 per cent of the day's work.

Since time and energy are the controlling factors, every effort should be directed toward getting the mail opened, regardless of the number of people required. A large crew, however, is not necessary, as one proficient mail-opening clerk, working with standardized methods, can open and sort 240 letters an hour—4 a minute. Neither is it absolutely necessary that all mail received on the first delivery be opened before the starting hour. It will do if enough is ready to start everyone working.

SORTING ENVELOPES BEFORE OPENING

It is customary to make a preliminary sorting of the envelopes before they are opened, for two reasons: one, to separate company mail from personal mail; and two, in order that the first-class company mail may be opened, sorted, and delivered in the quickest possible time, laying aside the less important mail for later handling.

Such preliminary sorting can easily be done in most offices. Catalogues, pamphlets, and advertising matter, being usually in odd-sized packages and large envelopes, are easily recognized and almost sort themselves. As a rule they are delivered in a bundle by the postman. Again, letters with 1-cent, 1½-cent, and 2-cent postage usually contain circulars, which can be at once set aside, leaving for consideration only the first-class mail.

Trained clerks soon learn to identify the different items in the first-class mail, from postmarks, printed corner cards, colored envelopes, or specially printed return envelopes. They learn, for example, that certain envelopes are from suppliers and usually contain bills and statements, or that a distinctively colored envelope may indicate that it is intended for the credit department. They learn that letters in certain kinds of envelopes are from customers and contain either checks, orders, or important correspondence; these, of course, should be given preference in handling. Letters in reply to advertisements will often contain key numbers, which will serve to indicate their importance.

OPENING THE ENVELOPES

The simplest way to open envelopes is by hand with a steel envelope opener, which is all right when there are only a few envelopes to be

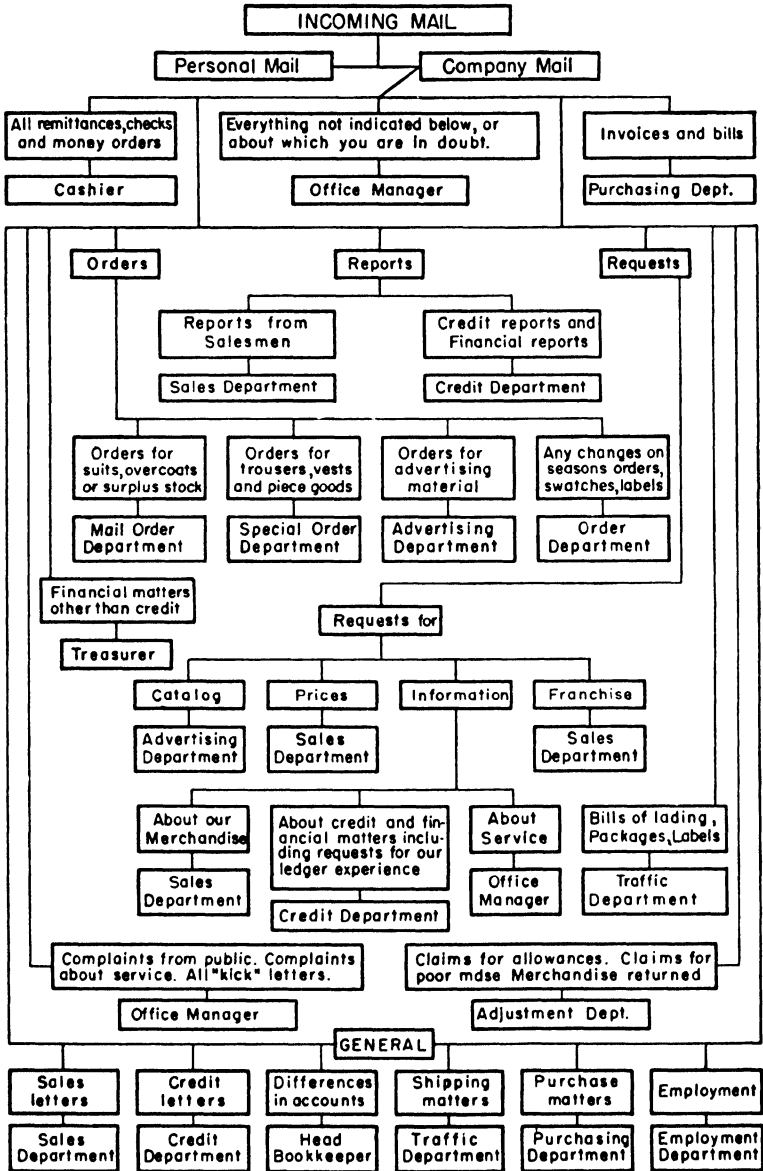


FIG. 16. A chart like this shows where each piece of incoming mail is to be sent.

opened. For handling 100 to 200 envelopes, a hand-operated letter-opening machine may be used; handling over 200 envelopes calls for an electric opener—not to save energy, but to save time. It should be remembered that even though the mail in a small office is proportionately small, the number of persons to handle it is also small, and it is just as important to save time in the small office as in the large one.

REMOVING THE CONTENTS

A quick method of removing the enclosures is as follows: The clerk stacks a bunch of envelopes at his left, face down, open side toward him. As he lifts the top envelope by the edge, the weight of the contents causes the envelope to open wider. The clerk inserts the thumb and forefinger of his right hand, removes the contents, arranges them neatly, and places them on top of the envelope, which his left hand has meanwhile laid down on the table in front of him, face up. With his right hand the clerk reaches for a pin, which is in a small glass oblong tray to his right, and pins together the enclosures and envelope. (Except to avoid mutilation of documents, clips should never be used to fasten papers together, since a clip is likely to pick up other papers, which may then be permanently lost.) The clerk places the pinned set on the table in front of him, somewhat farther back.

The letters can then be roughly sorted into a few divisions, orders being separated from correspondence, and cash mail from both. If the sorting is not difficult in this operation, it may be made final; if it is difficult, it can be continued as described below.

THE CASH-SHEET PLAN

Some offices, where considerable cash mail is received and handled, have the opening clerk put all cash mail in a separate basket, and the cash in compartments provided for it; then, as soon as a batch of mail is sorted—or, for that matter, at any time—the mail is recorded on a listing adding machine, the listing being done on a special sheet. This sheet may, if desired, be made in duplicate by inserting a carbon sheet. After listing the amounts and drawing the subtotals at the end of the sheets and the final total for all, the letters containing the cash are again handled, and the name—the address also if desired—written on the space provided. The list and the cash are then taken to the cashier, who gives his receipt; the cash and the total items should agree. If checks, money orders, and other negotiable forms of paper are separated

from the currency and put on a separate sheet, this form—the original or duplicate—can then be used as a deposit slip, thus saving the cashier the trouble of making an additional listing.

FIX THE TIME OF RECEIPT

Before reading the mail, many concerns stamp the time or date of receipt on the back of the letter. Either a hand or electric time stamp may be used, depending upon the volume of mail. In any case, care

To _____ Department The following EXTRACT is taken from a LETTER dated _____ Received from _____
Extracted by _____ on _____ from letter going to _____ Dept.

FIG. 17. Form for extracts taken from letters intended for two or more departments.

should be taken to see that the date and time are correctly set on the time stamp, to avoid embarrassment.

READING THE MAIL

The object of reading the mail is to determine to which person or department a letter should be sent. In many cases a glance will indicate the proper destination. Sometimes the entire contents may have to be read. In any case, the mail reader should understand that if the first reading of a letter does not indicate where it should go, he should lay it aside for attention later, or "throw" it to the office manager's compartment, instead of holding up the rest of the mail while he tries to figure out where one particular piece should go. Equipment for sorting mail is described in Chap. XII.

If a letter is in response to a previous letter, it may be necessary to get out the correspondence referred to; in such cases it should be placed in a separate compartment and marked with the name of the person

who is to get it, so that the file section can deliver directly when the needed correspondence has been located. If a correspondent receives a letter referring to previous correspondence which has not been attached, he will either attempt to answer the letter from memory—a bad plan—or send for the previous correspondence, in which case action is delayed

DAILY REPORT OF INCOMING MAIL for _____ 19

FIRST MORNING MAIL

OPERATION	TIME STARTED
Mail arrived	
No. of pieces	
Open company mail	
Read company mail	
First distribution	
Distribution completed	

SUBSEQUENT INCOMING MAILS

OPERATION	TIME COMPLETED					
Mail arrived						
No. of pieces						
Mail sorted						
All delivered						

Reasons for delays, if any: _____

Reported by _____

FIG. 18. A daily report like this keeps the office manager informed, and the mail clerks on their toes.

that might have been advanced by the earlier handling. Attaching the correspondence gives the file clerks an early-morning task, enabling the correspondents to start writing letters early in the day. In some offices, one of the file clerks comes in a half hour or hour early, to get out the previous correspondence, so as not to delay the handling.

It is a question whether it should be an invariable rule to have all correspondence accompany the letter when it comes to the correspondent; in some cases it would entail needless work for the file department.

It would be well to prepare definite rules as to the cases when the previous correspondence should be attached, for the guidance of the mail reader.

DISTRIBUTING THE FIRST MAIL

The most important, or strategic, points in the office should be considered first, and the mail distributed to them from 5 to 15 minutes before the office opens, or earlier, if desirable. Repeated trips should be made to the file section, removing the contents of the special compartment reserved for this purpose, at frequent intervals, so that as soon as the file clerks arrive they can commence getting out the previous mail. Since it is not at all likely that they will do so without special instructions, that work should be planned as standard practice for them. Orders should be started to the order department with the least possible delay, and if necessary, delivered repeatedly. Furthermore, enough clerks should be provided in the order department to get the first operations into action quickly all along the line. Cash should be delivered to the cashier; if the cash-sheet plan is used, a sheet at a time can be delivered without interfering with the control.

It may be necessary, in cases of a very large volume of mail, to supplement the first delivery by additional trips of junior clerks selected for this work.

THE OFFICE MANAGER'S CONTROL

The office manager should receive daily reports of the mail received on each delivery, the amount of cash received in the mail, the time the first mail was completely delivered, the time the first order passed completely through the routine, and other similar information. These reports will, of course, have to be devised to suit local conditions, but their value is that through them it is thoroughly understood that work is to begin all over the office at opening time.

OUTGOING MAIL

All the time, effort, and energy consumed in getting the incoming mail opened and distributed early in the day may be of little avail if the ensuing outgoing letters are not handled expeditiously and to advantage.

Whether each department handles its own outgoing mail, or whether

GETTING THE MAIL THROUGH EARLY IN THE DAY

1. It is one of our general office rules that mail is to be signed at different times during the day and sent through promptly to the mailing table. All of this is done by the regular delivery service of the office boys. If, however, the mail clerk finds that mail is not coming through early in the day, he is to telephone the different departments which send mail and request them to sign and send it through at once. This means that he is responsible for keeping the mail coming through steadily and consistently without a large congestion the last thing in the evening.

2. The last collection of mail is made from the Stenographic Division at 4:30 and the last one from the dictators at 5 o'clock. We wish to arrange matters so that in the 5 o'clock delivery there will only be enough mail to keep the mailing clerk and the office boy, who will assist him at 5 o'clock, busy until 5:30. No mail collections will be made after 5 o'clock unless dictators ring especially for a boy to take later mail. The mailing clerk will also report to the office manager any dictators who continue to get their mail in later than the last delivery, or who get a large volume of mail in the last delivery instead of distributing it through the day. (*From the office manual of one office.*)

a central mailing department is set up for the purpose, is largely a question of volume and control. Even in small offices there are advantages in having all outgoing mail handled by one person or department. It is easier to control the use of stamps, the responsibility is definitely fixed, and a proficiency is acquired in handling the mailing operations which is foreign to the other clerical work. In many offices the outgoing mail is handled by the same staff that handles the incoming mail, with proper adjustments of the hours worked, of course.

Some of the reasons for not putting outgoing letters in the "out" baskets earlier in the day:

Delay in signing letters

Delay in delivering letters for signing

Delay in getting letters typed

Delay in dictating letters early

Delay in getting needed information

Delay in delivery of morning mail

All these delays can be prevented by a little careful planning and—*getting work started on time.*

The factors involved in outgoing mail are the collection, sorting, folding and enclosing, sealing and stamping, and mailing.

As fast as letters are signed they should be placed in the "out" basket. Many offices provide a stout manila envelope to protect the letters while en route to the mailing room. The messengers pick up the outgoing



FIG. 19. Trays like these may be kept in the different departments to receive the mail as it is ready. The truck takes the trays to the mailing room as often as is desirable.

mail as they make their regular collections from station to station and deliver it to the mail room, where it is folded and enclosed, ready for sealing and stamping. If there are several letters for the same correspondent, as in the case of branches or jobbers or large customers, it is customary to place all mail for the same addressee in one envelope, thereby effecting a considerable saving in postage and envelopes. For this purpose there may be provided special sorting racks containing stout manila envelopes already addressed.

For folding letters a bone or celluloid folder is best; creases can be made more neatly and with less fatigue to the operator than when creasing is done with the fingers. As each letter is folded, the address on it must be compared with that on the envelope. This work should be done as rapidly as possible, regardless of quantity, so as to develop the habit of speed and ability to handle a large quantity of mail on occasion.

Sealing and stamping are handled as described in Chap. XIII.

Some offices have the messengers make one last trip after office hours to pick up last-minute outgoing mail. If the office closes at 5:00, this last trip may be made at 5:15. It sometimes happens that outgoing letters will be placed in the "out" basket after the last trip has been made. To prevent a complaint the next morning that "Your boy didn't pick up these letters last night," many office managers have the messenger deposit in each tray on his last trip a large pink card on which is printed in heavy black type:

LAST COLLECTION HAS BEEN MADE.

WHY LETTERS SHOULD BE MAILED EARLY AND OFTEN

Every day of the business week 1,000,000 business letters pile into the Boston post office between 5 and 7 P.M., overwhelming the handling staff so that only a fraction of the mail makes the trains between 6 and 8 P.M., which provide the best connections for the West and South.

In another city post office there are 50 men on duty at 4 P.M. At 6 P.M. there are 200 men on duty.

Mailing may comprise merely dropping letters down the mail chute in office buildings, putting it in the corner mail box, or taking it to the post office, depending upon the quantity and the time of day. Suffice it to say that letters should be mailed as early in the day as possible, and frequent trips should be made if necessary. Close cooperation with the local postal authorities, who are always ready and willing to help in any way they can, will help to assure that every advantage is taken of the post-office facilities.

QUESTIONS FOR DISCUSSION

1. Give several instances in which inadequate or inefficient office service may influence the effectiveness of office workers.
2. Upon which is the effect of poor office service more costly, on the work or on the workers? Comment briefly.
3. Why is it important to have the office staff depend upon the office services? Illustrate your answer by an example.
4. What is the simplest way to increase the output of an office worker? Do you believe it? Why or why not?
5. Why is intercommunication important in office work?
6. In how small an office is intercommunication a problem?
7. Regardless of the size of an office, should the methods of intercommunication be looked into? Why or why not?
8. Why is the intercommunication problem particularly pressing in a large office?
9. State and comment on the three different forms which intercommunication takes in modern business.
10. What are the three main factors of the problem of intercommunication? Comment on each.
11. What are the two possible methods of transmitting written messages?

12. Why is the buzzer method of messenger service ineffective?
13. How can a messenger service be made effective?
14. How is a messenger route planned?
15. What is the minimum number of deliveries per hour that an internal-mail service should provide? How would you determine this?
16. When would it be advisable to have more frequent deliveries than the minimum given in question 15?
17. Compare the advantages and disadvantages of making collections and deliveries from department to department, with the making of collections and deliveries *within* a department.
18. How may an office manager test the effectiveness of his internal-mail service?
19. What equipment should be provided for handling the internal-mail service?
20. How may the destination of a paper be clearly indicated?
21. Why should the messenger call at all stations regularly, whether there is anything to deliver or not? How may this point be checked?
22. To what extent should provisions be made for special trips and rush messages? Why?
23. When should an internal-mail messenger be taken off his route to deliver a special message? If your answer is "never," how should the "emergency" be handled?
24. How may the office manager check the abuse of special messenger calls?
25. Compare the relative advantages and disadvantages of the use of roller skates, bicycles, and pneumatic-tube systems, where there are great distances to be covered. Which would you recommend, and why?
26. List several mechanical devices which may be used for delivering messages, and comment briefly on each.
27. What are the limitations of mechanical devices, and how may those limitations be avoided, or at least minimized?
28. Describe three types of telephone systems used for interoffice communication, naming their advantages and disadvantages.
29. How would you defend the cost of an extension telephone set, when needed?
30. How may an executive be quickly located if he is in the building but not in his office?
31. Describe the use of the dictating machine for interoffice communication.
32. What seven factors should be considered when contemplating the installation of mechanical communicating devices?

33. How would you figure the cost of intercommunicating equipment?

34. What are the two main objectives to be attained in opening and distributing the morning mail?

35. What are the four requirements to be met in establishing a standard method of opening the mail?

36. Why is it not necessary for all mail received in the first delivery to be opened before the starting hour? Is it desirable? Why or why not?

37. What kind of mail can be sorted before opening?

38. Describe the preliminary sorting of mail before it is opened, and state the purpose of this sorting.

39. Describe a quick method of removing the contents of a letter.

40. What is cash mail and how is it handled?

41. Should incoming mail be time-stamped? Why or why not?

42. What is the object of reading the mail?

43. What should the mail reader do with a letter that is not entirely clear after the first reading?

44. Should previous correspondence always be attached to incoming letters? Explain.

45. To what points in the office should mail be distributed first? Why?

46. What information about the daily mail should the office manager have as a control? What would he do with this information?

47. Why is the prompt and proper handling of outgoing mail important?

48. Describe the outgoing-mail routine.

49. Name six reasons for delays in handling outgoing mail.

50. What steps may an office manager take to make sure that no mail is left in the "out" baskets after the last collection has been made for the day?

PROBLEM I

In the office of the Milady Soap Company there are 300 clerks. About 1,500 letters are received daily. The office opens at 9:00 A.M. At 7:30 A.M., 15 office boys assemble around a large table and, after one clerk has slit the envelopes on a mail-opening machine, proceed to open the letters rapidly. As they are opened, two other workers gather them up and sort into 30 baskets for later distribution. By 8:45 the letters are usually all opened, and the boys start delivering

them to the various parts of the office, so that by 9 o'clock, when the office opens, the morning mail is all on the desks.

How can this method be improved?

PROBLEM II

The Wisconsin Mutual Liability Insurance Company, with 983 clerks, is about to build a home-office building and naturally wants to secure all the best intercommunicating devices available.

How would you go about making a traffic survey to determine just what is necessary and advisable?

"Most business has been lost this year through slow handling of letters and inquiries."—A Branch Manager.

VIII

CORRESPONDENCE AND TRANSCRIBING

Two important problems confronting every office manager are how to get the necessary letters well written, and how to eliminate the unnecessary ones. The satisfactory solution of these two problems lies in organization and supervision. The requirements should be thoroughly analyzed, an organization set up to handle the work, and its operation supervised with care.

If all that is involved were merely the writing of routine letters by a centralized correspondence department, the difficulty of arriving at a satisfactory solution would be greatly simplified. Actually, so many persons in the office have occasion to send a written communication every now and then, if not regularly, that absolute control is probably out of the question, as well as absolute perfection, or anything near perfection. Nevertheless, there are possibilities which are well worth considering, since any improvement is better than none.

Correspondence may be external or internal. External is that between the company and those outside of the company. Internal is that between workers in the company, often called company correspondence, office correspondence, interoffice correspondence, intraoffice correspondence, or intracompany correspondence. Correspondence with branches is usually considered internal, since a branch is really a department of the business.

EXTERNAL CORRESPONDENCE

Letters to those outside of the company may be written by the company's officers, by department heads and lesser executives, and by so-called correspondents, whose entire work is writing and answering letters. Others may also have occasion to write letters from time to time;

proper and adequate organization and supervision will help to control the quantity and quality of such letters.

Two aspects present themselves: the organization of facilities, and the improvement of the quality of the letters written. Facilities include the provision of stenographers or dictating machines to take the dictation. The organization of facilities goes further than merely providing them; it comprises getting the letters to those who are to answer them, together with whatever information is necessary to answer each letter intelligently; it includes seeing that a stenographer or a dictating machine is available when the correspondent is ready to dictate; it requires that the dictated matter be transcribed promptly so that the signed letter may be mailed early in the day instead of the last thing at night. All of the above involve setting up a routine.

THE LETTER-WRITING ROUTINE

The letter-writing routine starts at the mail desk with the opening of the morning mail, as explained in the preceding chapter. Its early

EIGHT WAYS OF ANSWERING A LETTER

1. The correspondent may dictate the entire letter to the machine or to a stenographer.
2. He may dictate certain personal paragraphs and the numbers of form paragraphs to round out the letter.
3. He may answer it by form paragraphs or by a form letter; a succession of numbers marked in the letter will give a properly instructed typist all directions. To add a personal touch, when desired, certain "fill-in" paragraphs or a personal opening sentence or postscript will serve.
4. He may answer it by a printed form. To pencil the number of the form on the letter should relieve him of further thought regarding it.
5. He may jot down the bearing of the proper answer and let his secretary shape it up.
6. He may turn the letter over to an intelligent secretary without comment.
7. He may dictate a special letter which is to be sent to several widely separated correspondents. Each letter may be separately typed, or the copy may be put on a duplicator. There may be "fill-ins" and detailed changes in the body of the letter, which may be left to a stenographer of reasonable intelligence. A rule may be laid down that the first copy typed is to be O.K.'d before the others are written.
8. Where he wishes to show intimate personal interest, he may add a brief note in his own longhand.

start continues with the delivery to the correspondent's desk, before the office opens, of letters to be answered, with previous correspondence attached, if needed. Promptly at the opening hour a stenographer appears at the correspondent's desk, ready to take dictation; or, if dictating machines are used, the dictator finds his machine in running order, with a supply of blank records at hand, so that he can start his dictation at once.

After dictation, the stenographer will transcribe her notes, or the dictated records will be picked up by a messenger and delivered to a transcriber, who types what has been dictated. When the transcription is finished, a messenger brings the typed letters to the correspondent, who reads and signs them, then puts them in his "out" basket for collection and delivery to the mailing room, where they are folded, enclosed, sealed, stamped, and mailed.

Now these things do not just happen. Back of their effective functioning is the carefully laid out routine, together with the directions and scheduling by the office manager, supervised by him or by the four supervisors of the mail, file, correspondence, and transcribing divisions, if such divisions have been established.

If the procedures described in the preceding chapter have been followed, the letters are on the correspondent's desk when he arrives. But if there is no stenographer, or no blank records, he cannot start dictating. The provision of blank records is the joint responsibility of the messenger department and the correspondent. There should be at least three blanks ahead of the correspondent at all times. As a messenger takes away dictated records, he should observe the number of blanks left in the dictator's rack and see that they are replenished. The dictator should also watch this point, and if he finds his supply of blanks is dwindling too rapidly, he simply drops a colored slip in his "out" basket, which notifies the messenger that more blanks are needed. This slip is about 7 inches long and 1½ inches wide, of a distinctive color such as light blue, with the correspondent's name or initials on it. Ordinarily, it will seldom be used; if it is used, the messenger who brings a fresh supply will leave another slip. In some offices a messenger checks the supply of blanks before the office opens.

When dictating machines are not used, the assigning of a stenographer is the responsibility of the head of the stenographic or transcribing division, or of the office manager if there is no such division. This assignment is a problem of scheduling, which is covered more adequately in a subsequent chapter. Arrangements are made by the office manager or the division head to have a designated stenographer at a

designated correspondent's desk at a stated time each day. A substitute stenographer is also named to take the place of the regular one if she should be absent.

The head stenographer controls the assignment of her girls by a simple line chart which shows at all times where each girl is, whose dictation she is taking or transcribing, and how much work she has ahead. Assignments are made accordingly, so that the work is spread evenly among the members of the force.

PROVIDING FOR NONROUTINE DICTATION

The described routine takes care of the regular correspondents. What about those whose letter writing is intermittent and irregular? How may their requirements be taken care of?

There are three ways of handling this problem. One is to have all requests for service made to the head stenographer, who will assign the first available girl.

A second method is for the office manager to try to arrange with the individual for a definite time each day for dictating his correspondence, with the understanding, of course, that allowance will be made for interruptions and provision for emergency dictation at any time. If it is understood that "emergency" dictation is not the result of pro-

PERSONALITY IN DICTATION

The correspondent was dictating a letter.

As he warmed up to his subject and began to drive home his arguments, his dictation came faster and faster until the stenographer's fingers were twinkling back and forth like the shuttle of a sewing machine. Finally he reached the climax:

"That," he declaimed, "is all you could expect of any machine. Can you ask for more?"

"No, sir," said the stenographer unconsciously, and then waited for more. That stenographer paid the correspondent the greatest tribute he ever received. She proved to him that he was writing a letter—a real, red-blooded, business-getting clinching argument. His very force and the interest he had put into his story had compelled an uninterested listener to answer his question involuntarily. He had dictated his letter as he would have talked to his prospect, and his stenographer, catching the inflection, had subconsciously placed herself in the position of the recipient.

How do you dictate your letters? (*Courtesy of Montgomery Ward & Company.*)

crastination on the part of the individual, but something that cannot be foreseen, the office manager should have little difficulty in arranging a schedule if he allows for variability in human temperaments. After all, the occasions which require letter writing are relatively few—mail comes in, conversations are held, certain situations arise. The mail arrives at regular times, providing a basis for scheduling. The other two factors, if all concerned are reasonable, can readily be accommodated. Even though adaptation to a schedule may seem awkward and confining at the start, the formation of the habit of looking forward to a definite time for dictation each day will cause the earlier apparent restriction of freedom to fade into the background because of the resulting improved service.

A third method, which has possibilities beyond simply providing for those whose letter writing is intermittent and irregular, is dictation by wire. In the central stenographic or transcribing division, certain girls will have telephone lines running to their desks, with transmitter and head set. An employee desiring to dictate will lift his receiver and ask for wire dictation. When the stenographer responds, the dictator will give whatever preliminary instructions are necessary and then proceed to dictate over the telephone. Depending upon the circumstances, the stenographer may type the dictation as it comes over the wire; or she may take it down in shorthand or on the stenotype for transcription later. One company provides for rush cases by having the wire dictation stenoyped by one girl while another immediately types it from the tape as it comes off the stenotype; by the time the dictator has finished talking, the material is practically all typed.¹ The rapid development of desk microphones suggests almost unlimited application of "dictation by wire."

GETTING EFFECTIVE LETTERS WRITTEN

The fact that an organization has been set up, routines established, and facilities provided for dictating and transcribing letters does not necessarily mean that the company's correspondence will be automatically taken care of from now on. The purpose of organizing the correspondence facilities is not simply to get letters written, it is to get *effective* letters written—letters that do not say too much or too little, that cover the ground adequately, and that accomplish the objective or objectives for which the letter was written. A letter may be a model

¹For a detailed description of wire dictation, see *AMA Office Management Series*, No. 91, pp. 27-31, published by the American Management Association.

of English composition, it may be beautifully typed and attractively centered on the letterhead, perfect in appearance, diction, and style, but if it does not accomplish the purpose for which it was written, it is not a good letter—that is, it is not an effective letter.

WHY LETTERS ARE WRITTEN

The main purposes of a business letter are to convey information, to get action, or both. Unless a business letter fulfills one or both of these

The test of a good letter writer is not that he knows how to manufacture an automobile at low cost; or buy supplies at bottom price; or sell goods to a retail merchant. The test of a good letter writer is his ability to express clearly in writing what he has to say, so that it will be understood, and what is still more important, acted upon favorably, whether it be a sales proposition, a request to remit, or an offer of adjustment. No matter how good a factory manager a man may be; no matter how good a salesman he may be; if he cannot write a letter that will produce the desired results, and keep on writing such letters, then he is not a good letter writer.

Letter-writing ability may exist apart from all other technical ability. Whoever heard of a factory manager being hired because he could write good letters? What the factory manager wants is production. If he spends his time trying to write letters, how much time will he have left for production? And what kind of letters will he write, with his mind on the shop?

Here is where the office functions as a facilitating factor. Suppose we have a good letter writer available; and suppose the factory manager tells this letter writer what he wants to say; and suppose this good letter writer proceeds to say it, in a letter. What has been accomplished? The superintendent attends to his job of production, without worrying about how the letter is going to sound. And the letter writer attends to his job of wording the letter in such a way as to accomplish the desired result. In other words, each man is a specialist in his own field and does that which he can do best, leaving to others the things that they can do best. But that is just organization, you say. Right! And good office management is based upon correct organization.

To carry this bit of organization to its logical conclusion, our good letter writer handles the letters not only of the factory manager, but also of the adjustment department, the sales department, the traffic department, and so on, with reasonable limitations, of course. In large offices having centralized correspondence departments, there may be several individuals who do nothing else but handle correspondence. In these concerns, the same correspondence was once handled by some officer or department head of the company. That is one way in which the office facilitates the work of other departments—by placing special functions in the hands of specialists.

requirements, it may represent simply a waste of time on the part of the writer and an imposition on the reader.

The same comment applies not only to the business letter as a whole, but to every part of the letter: not only should the entire letter have as its main purpose one or both of the characteristics mentioned, but every part of the letter should also justify its existence by the same standards. This necessity leads us to a consideration of two features which should appear in every business letter, and a third feature which may be equally desirable at times. These features are brevity, friendliness, and firmness.

Brevity. To state that a letter should be brief is by no means to suggest that it be curt. In business, time is money; there are so many things to do, with limited help and means, that every minute must be made to count. Otherwise, both time and money are wasted. Unnecessarily long letters are expensive to the extent that they take the time of three people—the man who dictates the letter, the stenographer who takes the dictation and transcribes it, and the recipient who is expected to read it.

Brevity in business letters, then, does not mean curtness. It simply means saying what one has to say and then stopping. It means coming directly to the point without wasting any words. Brevity is obtained by omitting *unnecessary* words, phrases, and sentences. Necessary expressions may *not* be omitted; all rules of grammar and rhetoric are to be observed with the same care that should distinguish any written composition. Any other procedure borders on the ridiculous.

Friendliness. Friendliness in a business letter is an indication of the good will that the writer bears toward the reader. Someone has said that there is no such thing as an excess of good will. If that statement is true, then the more quickly a firm's letter writers realize that they are either building or destroying good will by the letters they write, the better for the firm's business.

Friendliness does not mean familiarity. Perhaps no worse offense than familiarity can be committed in a business letter; here, if ever, is it true that familiarity breeds contempt. Nor is civility the same as friendliness. About all that civility does is to recognize the existence of the reader and tolerate him. It is a good deal like saying, "If we weren't in business, we shouldn't trouble to write to you; but since we must do business with someone, we are writing you."

Firmness. Firmness is needed in letters that call for the observance of specified terms. Such letters include credit and collection letters, complaint and adjustment letters.

In credit and collection letters the writer desires to create the impression that "these are our regular terms, which all are expected to comply with." In complaint letters the thought is, "the situation must be corrected quickly." In adjustment letters—probably the most difficult letters to write satisfactorily—the writer wants the reader to accept the adjustment made, and to feel that not only is this the very best adjustment that could be made under the circumstances, but that it is the only fair one.

Firmness does not mean discourtesy. Discourtesy has no place in any letter. Wasn't it Emerson who said, "Life is not so short but that there is always time for courtesy"?

THREE IMPORTANT QUESTIONS

Since the primary purpose of a business letter is to convey information, to get action, or to do both, it is necessary, before starting to write a business letter, to ask these two questions:

1. What is the purpose of this letter?
2. What do we want the reader to do after he has finished reading the letter?

The answers to these questions vary with the type of letter. In general, however, we may say that we want the reader to do one or more of the following things:

- a. Believe what we say in the letter
- b. Accept our decision
- c. Ask us for further information
- d. Send us some information
- e. Fill our order (or substitute other goods)
- f. Send us an order
- g. Adjust our complaint
- h. Accept this adjustment
- i. Grant us credit on regular or special terms
- j. Accept terms granted
- k. Send us money
- l. Accept money enclosed
- m. Grant us an interview
- n. Receive someone introduced

A third question to ask is, "What are the facts?" Every fact that is pertinent should be procured and jotted down. Then the writer should consider which, if not all, of the facts should be used in the letter. If there are certain policies of the house that affect our answer, those

should be noted, also. For example, if we are answering an inquiry for information, we should ask ourselves the following questions:

Can we comply with his request?

If so, when and how?

If not, why not?

Correspondence Supervisor

Dictator *F. J. M.* No. *700*
 Letter to Date
 Address
 Subject

The attached letter could have been improved as checked:

<p>① <input checked="" type="checkbox"/> Clarity</p> <p>② <input checked="" type="checkbox"/> Incomplete information</p> <p>③ <input checked="" type="checkbox"/> Inverted</p> <p>④ <input checked="" type="checkbox"/> Ambiguous</p> <p>⑤ <input checked="" type="checkbox"/> Conciseness</p> <p>⑥ <input checked="" type="checkbox"/> Sentence length</p> <p>⑦ <input checked="" type="checkbox"/> Needless words</p> <p>⑧ <input checked="" type="checkbox"/> Unnecessary information</p> <p>⑨ <input checked="" type="checkbox"/> Repetition</p>	<p>⑩ <input checked="" type="checkbox"/> Emphasis</p> <p>⑪ <input checked="" type="checkbox"/> Arrangement</p> <p>⑫ <input checked="" type="checkbox"/> Correct words</p> <p>⑬ <input checked="" type="checkbox"/> Choice of words</p> <p>⑭ <input checked="" type="checkbox"/> Courtesy</p> <p>⑮ <input checked="" type="checkbox"/> Tone</p> <p>⑯ <input checked="" type="checkbox"/> Policy</p> <p>⑰ <input checked="" type="checkbox"/> Subject</p> <p>⑱ <input checked="" type="checkbox"/> Delayed answer</p> <p>⑲ <input checked="" type="checkbox"/> Construction</p>
--	---

PLEASE REWRITE

Remarks

① *1st sentence*
Attached is a suggestion

② *2d P*
Your statement is not correct
and my concept one to make

③ *3d & 7th line*
Will go through in dit form!

After noting correction please sign this slip and return it to Correspondence Supervisor. If any point is not clear kindly ask about it.
F. J. M.
What does "dit form" mean?

FIG. 20. How one company suggests improvement in its letters.

With the answers to the foregoing questions in mind, the correspondent can proceed to dictate a letter that will satisfy the requirements just discussed and that will properly represent the company.

THE REAL PROBLEM

The real problem in handling correspondence is not merely in setting up the organization and providing the necessary facilities, but in getting correspondents to observe and follow what are really simple, fundamental principles like those mentioned above. This calls for training in letter writing by someone who not only knows a good letter when he sees it, and can write a good letter when he tries, but who can tactfully and skillfully show others how to write good letters. If the office manager is a good writer of effective letters, he may be able to teach others how. If he is not, or if he has not the time, then he would be

Like many other companies, one concern was bothered with cancellations of orders and returns of merchandise, for reasons other than dissatisfaction with the goods. For years these cancellations and returns had been handled by an officer of the company, who reviewed the facts in each case, made the decision to accept or reject, and wrote the letter accordingly. The office manager of this company hired a competent young woman stenographer with good correspondence experience, to take this officer's dictation on cancellations and returns. He told her that at the end of three months she was to bring him a report on the entire problem of cancellations and returns, stating the policy of the company, the facts that policy was based on, the various considerations governing the policy, and so on, together with suggested sentences, paragraphs, and even complete letters for handling each aspect of any situation that might arise.

The report was handed in before the three months were up. Actually, it comprised a combination policy book and standard-practice manual with respect to cancellations and returns. It enabled the young woman to prepare each case in such a way that all the officer had to do was to say "yes" or "no," how much, and why or why not. The young woman wrote all the letters with complete satisfaction. The officer prided himself on the good job of training he had done, without ever knowing that the letters written by the young woman were for the most part all contained in the manual she had prepared for the office manager. This is a prime example of the possibilities of standardization of policies.

well advised to hire someone on either a full-time or a part-time basis, who can do what needs to be done. He may be fortunate enough to find in his present organization some man or woman who can do the job. Or he may have to hire a correspondent who is also able to supervise the company's letter writing. A good correspondence supervisor can earn his salary several times over.

STANDARDIZING THE GENERAL AIMS AND POLICIES OF THE COMPANY

Every company has certain policies which apply to the conduct of its business. Unless these policies are in writing, however, their application will not be uniform; in some cases a company policy may go by the board simply because no one knows what the policy is. Also, since a policy answers the question, "What do we do under these circumstances?" a slight change in the circumstances may indicate a change in the policy, at least in this instance. That may be why some company officials hesitate to reduce their policies to writing. On the other hand, the lack of written policies simply means that all questions of

Instead of seeing us from in front of a counter many of our customers see us from in front of the letters you write to them.

Before you start to dictate a letter, be sure you have digested the customer's or prospective customer's letter. Whether it is a complaint or an inquiry, be sure you have put yourself in his place and know just why he is dissatisfied or just what he wishes to know.

Be sure you answer every portion of his complaint or inquiry in language he will understand. If you do not, he will either have to write us again or send his business to some other house.

And do not pass your letter to the mailing desk until you have again read his letter and your answer to it.

He will judge the house by your letter.

FIG. 21. Each correspondent of one company has before him a card reading like this.

policy will continue to be referred to some executive, even though he may have passed on the same point hundreds of times before. But one of the most effective ways of conserving executive energy is to put every company policy in writing just as soon as it has been proclaimed, then make the written policies available to everyone who has occasion to apply them. The office manager might set the example himself by putting his policies in writing; every time someone comes to him for a decision, let him ask himself, "Is this a policy?" If it is, put it in writing.²

From what has been said, it is obvious that a correspondent who is not familiar or even aware of company policies applying to the company's correspondence is at a distinct disadvantage. He is definitely handicapped, since he cannot write an effective letter without knowing the company's policy in each instance.

There are still many organizations which make no consistent and sustained effort to train correspondents; nor do they even devise and adopt a correspondence manual in which the aims and policies of the company are set forth. Most correspondents are self-taught, though some large offices conduct training classes in correspondence, and some have correspondence counselors who visit the office periodically and criticize the letters written. But in every office it is easily possible for the company to state its aims and policies clearly in a manual and

² For an excellent discussion of policy manuals and the standardization of policies, see *Management News*, Vol. 20, No. 3, p. 3, and AMA Research Report, No. 11, *How to Prepare and Maintain a Supervisors' Policy Manual*, both published by the American Management Association, New York, 1947. See also Chap. XXI.

Parker Marshall Company

Fifteen Emmonsdale Road

BOSTON, 32, MASSACHUSETTS

May 9, 1950

J. A. Blaisdell Company
2967 Franklin Street
Indianapolis, Indiana

Attention of Mr. Robert Clark

Gentlemen:

Office Style for Letters

In order to secure uniformity of style in the arrangement of all letters from our office, our stenographers and typists are provided with a model letter, of which this a copy. The parts of the letter are taken up in order.

Since the appearance of a letter is directly affected by the margins, an attempt should be made to have margins nearly equal—at top, sides, and bottom. The width of the margins is determined by the length of the letter. In a short letter the margins will be wider; in a long letter they will be narrower. If the letter as a whole is centered on the letterhead, the result will be pleasing, like a well-framed picture.

The date is typed at the right, two spaced below the last printed line of the letterhead, and ending flush with the right margin of the letter. The inside address is placed flush with the left margin, at least five spaces below the date line. No punctuation is used at the ends of the lines.

If the letter is addressed to an individual, his name and title should occupy the first line of the inside address, and the salutation should be "Dear Sir" or "Dear Mr. Doe." If, however, the letter is addressed to a company but to the attention of an individual, the attention line should be centered two spaces below the inside address as shown above, and the salutation should be "Gentlemen."

The salutation should begin flush with the left margin, two spaces below the last line of the inside address, or if an

FIG. 22. Many firms place in the hands of their secretaries, stenographers, and typists a model letter like this, indicating the setup and other points of letter style

J. A. Blaisdell Company

-2-

May 9, 1950

attention line is used, two spaces below the attention line. The salutation is followed by a colon.

If the subject of the letter is given, it should be centered two spaces below the salutation and underscored.

The body of the letter begins two spaces below the salutation (or two spaces below the subject line if one is used). The typing is single-spaced, but with double spacing between paragraphs. Block style is used; that is, there is no paragraph indentation.

If the letter is too long to be typed on one page, a blank sheet of the same kind of paper is used for the second page. The name of the individual or firm to whom the letter is addressed, the page number, and the date are typed across the top of the page. The body of the letter is continued five spaces below, with margins of the same width as were used on the first page of the letter.

The complimentary closing is begun halfway between the side margins, two spaces below the last line of the body of the letter. No comma is used after the complimentary closing.

Two spaces below the complimentary closing, the firm name is typed in capitals, beginning under the first letter of the complimentary closing. Three spaces below the firm name and flush at the left with the two preceding lines the word "By" is written.

On the same line with "By" and flush with the left margin of the letter are typed in capitals the initials of the dictator and the transcriber, separated by one space.

If enclosures are to be mailed with the letter, the abbreviation "Enc." should be typed directly below the dictator's initials. If the number of enclosures is known, it is indicated by a figure following "Enc."

Yours very truly

PARKER MARSHALL COMPANY

By *Sheldon Moore*SBM AMT
Enc. 3

adopted by the company. Minor points of style in letters differ with different concerns.

for the office manager periodically to examine the letters or carbon copies for departures from these policies.

STANDARDIZING THE METHODS

A study by an experienced observer of the letters written by almost any large company might lead to the conclusion that many of the dictators had one language for letter writing and another for speaking, the former seeming to be almost completely devoid of persuasive power. Hackneyed phrases, endlessly repeated, almost give color to the belief that the dictators have formed the habit of disposing of letters as if they were so many pieces of paper to be got rid of and utterly fail to realize that the recipient of each of these pieces of paper is a real, live human being, and perhaps a present or prospective customer.

It is a mistake to assume that real and effective salesmanship cannot be put into a routine letter, for it may be expressed in many ways, in a few extra words about the goods, a paragraph dealing with the service of the company, or a few sentences showing an interest in the customer's business; but efforts are all too rarely made in this direction. Unfortunately, it would almost seem sometimes that the opposite effect is striven for. Thus, if a customer makes a claim or complaint, a common method of dealing with him in correspondence is first to show him why he is wrong and the company is right and to demonstrate that the damage, delay, or defect complained of should not, or could not, or probably did not happen; the letter ends by grudgingly granting the claim. This treatment is hardly calculated to promote good will on the part of the customer. A much better way would be first cheerfully to allow the claim and afterward add any explanation that might be thought necessary. If a customer loses his temper and writes an abusive letter, the situation is made still worse by replying in kind.

STANDARDIZE THE STYLE

The general style of letters should be standardized, for if each stenographer is permitted to choose her own style of arrangement, the individuality of the company is not expressed. This is a valuable sales point, since the style of a company's correspondence in a certain sense expresses the general character of the company; in other words, the company itself is associated in the minds of its customers with the form and style of correspondence they receive from it, and with which they have become familiar.

To achieve this expression of individuality of the firm in its correspondence, the letter should be standard in form from the date line the signature. Such points as the form of the opening salutation, the length of the lines, the paragraphing, the rules governing indentation, the complimentary close, and the manner of writing the signature of the company should generally be the same on all correspondence, unless there is good reason for doing otherwise.

Many communications covering a specific subject can be handled by standard letters, but going to extremes should be guarded against. To

O.M.Scott & Sons Co.
LAWN AND GOLF COURSE SEED
Marysville, Ohio

Your Lawn Seed is on the Way!

A personal letter could not tell you more sincerely than this card that we appreciate your order for seed and hope it marks the beginning of a mutually pleasant relationship.

Scott's Lawn Seed is enjoying popularity even beyond our fondest hopes. It gives us incentive to continue our efforts to furnish the very purest and best lawn mixtures that can be assembled.

Please be sure to bring us any of your grass-growing problems that may arise. It is only natural that we should want to help you get the best possible lawn, so don't hesitate to call upon us to serve you at any time.

Yours cordially,
O. M. SCOTT & SONS CO.

FIG. 23. The effectiveness of this printed form letter—for that is what it is—lies in the careful choice and phrasing of words.

send a standard letter when a specially typed letter should be used is mistaken economy. It is not easy to lay down specific rules on this, for it depends largely on the character of the company and the kind of customer. Some of the mail-order houses use form letters to an extent that another company perhaps could not afford to, owing to the entirely different nature of its business.

BLANKET LETTERS

There are real possibilities in the use of what one office manager terms a "blanket letter." On a letterhead—or for that matter, on a sheet of paper—are printed, sometimes in facsimile typewriting, sen-

tences or paragraphs covering the most frequently used statements in letters answering inquiries or sending out enclosures. The correspondent checks the appropriate item and mails the blanket letter instead of a specially dictated letter.

This sounds like a cold way of handling a customer's or prospect's inquiry. Actually, whether it is cold or not will depend largely upon



so that we can serve
you more promptly. . .

we are taking the liberty of replying to your attached letter by making a marginal notation on the letter itself. The volume of mail which we are receiving—particularly inquiries concerning prices and shipping dates of back-orders—would make it impossible for us to reply to your attached letter in less than three or four days if we adhered to the conventional procedure of typing a formal answer.

Please understand that in replying to your inquiry in this informal way, we value it nonetheless highly—but we do feel that a prompt response is far more important to you at this time than formality. We hope you will agree.

BELL & HOWELL COMPANY
J. K. Booth
J. K. Booth
Vice President

Form 24564 AQ 14g 9246 Printed in U.S.A.

FIG. 24. Bell & Howell use slips like this to speed up correspondence. Many letters need only brief answers that need not be filed. The answer is jotted down in the margin and the letter returned to the sender with a slip like this attached.

the care given to the preparation of each statement used in the letter, just as in any other letter. For use with catalogues, price lists, bulletins, and other enclosures, the blanket letter has a place in a company's correspondence and makes possible a respectable saving in time and money without offending the inquirer.

One point should be emphasized: since the purpose of the blanket

letter is to save time and make it possible to answer letters more quickly than through the usual routine of dictation and transcription (although that routine, if properly organized and supervised, should take care of letters within one day at the most), the effectiveness of a properly prepared blanket letter will depend on the actual speed with which the inquirer gets his reply. If an inquirer waits a week and then gets a printed sheet of paper, he will not be much impressed. But if he gets an answer by return mail, giving him the information requested, he will appreciate the effort made to save *his* time. In short, it is not the fact that a printed reply is used, but the way it is used that counts.

HARDWARE MUTUALS

It is a pleasure to tell you that the rates on your property have been reduced as shown by the enclosed endorsement, which should be attached to your policy. The item checked below indicates how we have handled this refund.

1. The refund has been applied to your account as shown by the enclosed invoice.
2. The refund is being returned to you by means of the enclosed check.
3. A portion of the refund cancels the charge on your account as shown by the enclosed invoice. The remainder of the refund is enclosed by means of our check.
4. The refund has been sent to the Finance Company in accordance with your agreement with them. You will hear from the Finance Company within a few days

FIG. 25. A simple but effective "blanket letter" used by an insurance company.

As more and more concerns use this timesaving device, it will come to be accepted just as have window envelopes, printed postage indicia, the simplified letter, and other advanced practices, nearly all of which have had to endure a period of development and criticism before being accepted as normal features of everyday business correspondence.

THE USE OF STANDARD PARAGRAPHS

In answering routine correspondence, the standard paragraph is unquestionably superior to the form letter, since in practically every office there are innumerable subjects that require either identical or generally similar treatment, and on which identical or generally similar answers must be returned.

If standard paragraphs are devised with some literary skill and are sufficiently varied they need not bear even a trace of the formality and wearisome repetition so often found in business correspondence, nor need the "personal touch" be lost. It must be remembered that what



NATIONAL OFFICE MANAGEMENT ASSOCIATION
19 EAST CHELSEAN AVENUE
PHILADELPHIA 44, PA.

THIS IS A
SIMPLIFIED
letter

June 30, 1942

Dr. Edwin M. Robinson
15 Edmondale Road
West Roxbury 32, Mass.

SIMPLICITY IS EFFICIENCY

There are many reasons why the form of the letter you're reading is an assist to better business correspondence, Dr. Robinson. Most of them will suggest themselves to you when you try NOMA's Simplified Letter.

I'll take this welcome opportunity to suggest a few of the reasons why Simplified Letters make sense in their physical composition.

- 1 Reduction in keystrokes — more production
- 2 Reduction in motion for positioning typewriter — more production
- 3 Improvement in typist morale — more production

More important, of course, is letter content. We like to insist that dignity plus informality equals good taste. We believe in putting a soft collar on our business correspondence. Yes, we try for conciseness, clarity, courteousness — and friendliness.

It's not easy, Dr. Robinson, but it's a worthwhile ambition. Please join us in adopting sensible simplification.

Vaughen Fry
VAUGHEN FRY - PUBLIC RELATIONS

Mr. H. A. Michert - Mr. V. H. Evans

there is more to a truly
SIMPLIFIED LETTER
than simply dropping
dear and yours truly

FIG. 26. In many concerns it has always been the custom to omit the salutation and complimentary close in interdepartmental memorandums. The simplified letter extends this custom to all letters, in addition to other features stated in the specimen shown above.



NATIONAL OFFICE MANAGEMENT ASSOCIATION
18 EAST CHELSEA AVENUE
PHILADELPHIA 44, PA.

August 1, 1949

this is a
SIMPLIFIED
letter

Mr. E. C. Adams
421 Main Street
Audubon, N. Y.

NEW-OLD LETTERS

It's an old saw, Mr. Adams, that there's nothing new under the sun. But there certainly is room for improvement in the age old job of business letter writing.

The form of this letter is one approach to simplifying the mechanical part of the job. It will save your secretary many needless typing motions — improve production and morale.

Even more important — Simplified Letters challenge the writer to depend on his own resources, to think directly of the person to whom he's writing and of the subject he's developing.

The salutation and closing are no longer crutches to composition. The subject heading starts the thought-train. The first sentence is printed directly at the reader. Each paragraph ties in with the letter's theme.

You'll find many more advantages when you try the Simplified Letter. Certainly they represent sound principles that good letter writers have practiced for years.

So it isn't the "new" that we stress in recommending your adoption of the Simplified Letter, Mr. Adams. It's really the best of the "old."

You're very welcome to our growing group of Simplified Letter writers.

Vaughn Fry

VAUGHN FRY - PUBLIC RELATIONS

Mr. E. A. Withert - Mr. W. M. Evans

there is more to a truly
SIMPLIFIED LETTER
than simply dropping
dear and yours truly

FIG. 27. One might reasonably question the desirability of placing the date of a letter at the top left instead of the top right, which has long been recognized as the logical place for the index to any material that is to be filed, to make finding easier and quicker.

is called the personal touch is not a question of whether the communication is intended for one person or many, or a single acquaintance or a number of strangers, or for the public generally; it is wholly a question of style, a fact universally recognized—though perhaps not always consciously—in the works of the most successful writers. There is no reason whatever why well-constructed standard paragraphs for business correspondence cannot achieve something of these qualities.

THE ADVANTAGES OF USING STANDARD PARAGRAPHS

1. *Better work can be done and better results achieved.* Since nearly all persons use similar words, phrases, and expressions in conversation and in writing, good writers and conversationalists take advantage of that fact. They use familiar words and phrases to be sure; but those words and phrases are always carefully selected, fitted, rounded, and polished until they become attractive and pleasing in form and style and at the same time produce the exact shade of meaning intended, thus creating the desired effect on their hearers or readers. Like all other human activities, which become habits through continued practice, this faculty persists and is apparently exercised with little effort, as can be readily recognized in the statements of a skilled conversationalist or an accomplished writer.

If, on the other hand, words and phrases are used carelessly or thoughtlessly, the statements made become dull, tedious, hackneyed, and unattractive, or, to use a popular slang term, "bromidic." Since it is obviously impossible for a person who is constantly dictating about the same subject to use different words each time, the tendency is to adopt unconsciously certain phrases, which become stereotyped; still more unfortunately, the inferior style tends to deteriorate still further, rather than to improve. On the other hand, if a carefully constructed and extensive standard paragraph system is used for this purpose, sufficient thought can be brought to bear on each paragraph and its variants to create the desired effect; letters so constructed will possess both style and attractiveness, as well as literary quality, a result that is utterly impossible with exclusive "personal" dictation.

2. *More work can be done.* Time and labor expended on the proper arrangement of words, sentences, and paragraphs in a standard-paragraph system render it unnecessary to continue repeating them orally. The mental energy saved by a properly constructed paragraph system can well be expended on other matters and on special cases that demand special attention.

The chief argument for standardizing correspondence is the establishment of a uniformity of style and policy. This argument applies with equal force to a one-man business and to the concern employing dozens of assistants. This uniformity is almost impossible in an office without a paragraph system, but where that method is used, the preponderance of paragraphs written by one person dominates the style, and the correspondent unconsciously adopts it in a very short time.

It must be admitted, however, that a paragraph system has never been designed which will answer all of the routine letters that come into the house. This is no argument against the system, for if one can dispose of but 50 per cent of the letters in 25 per cent of the time necessary to dictate, that will leave so much more time to dictate the special letters. Without a paragraph system, a busy correspondent will be often tempted to slight the important correspondence.

Another important advantage of the paragraph system is that one can write good letters on all kinds of days, which, as every correspondent knows, is a practical impossibility by any other method. A correspondent at times gets dull, which has its effects on the letters he dictates, but no matter how dull he may feel he can remember that paragraph B24 just fits a certain case, and he can write those figures on the letter and hand it over to the typist.

In preparing a system of standard paragraphs one should realize that the principle of reuse is being employed, that of using innumerable times, brain-work performed but once. There is therefore no necessity for speed. Take as much time as is necessary with each paragraph in order that it express exactly the thought that it is intended to convey. Another advanced principle must be employed, that of scheduling. A certain portion of the day must be set aside for this work and continued daily until the system is sufficiently completed. I have known many cases where a paragraph system was needed and actually desired, yet not devised because no one had time to do the work. A correspondent should never consider it time lost to prepare paragraphs which will shorten his day's labor. Set aside a definite time each day for this work.--W. H. Leffingwell.

3. *The work itself becomes more interesting.* The oral dictation of the same words over and over again becomes very monotonous to people with active brains, who are the type of persons doing this work. If they are freed from this wearisome repetition and thereby enabled to use their intellectual powers on the special work where special thinking is demanded, they will certainly find their tasks much more interesting.

4. *Better control of the work is secured.* The constant apprehension of the dictator that he may have used faulty, inadequate, or imprudent statements in his dictation will disappear.

5. *It is easier to train new correspondents in the simpler routine dictation work that results from standardization.*
6. *The task of checking carbon copies will be greatly reduced.*
7. *The typists and transcribers will produce more.*

THE CONSTRUCTION OF A STANDARD-PARAGRAPH SYSTEM

The construction of a scientific standard-paragraph system involves the following essential requirements:

1. *The original writing should be done by someone who is now actually doing the work covered by the system.* It must be founded on actual cases; that is, in constructing each original paragraph, the writer must bear in mind its actual application to a real condition, and

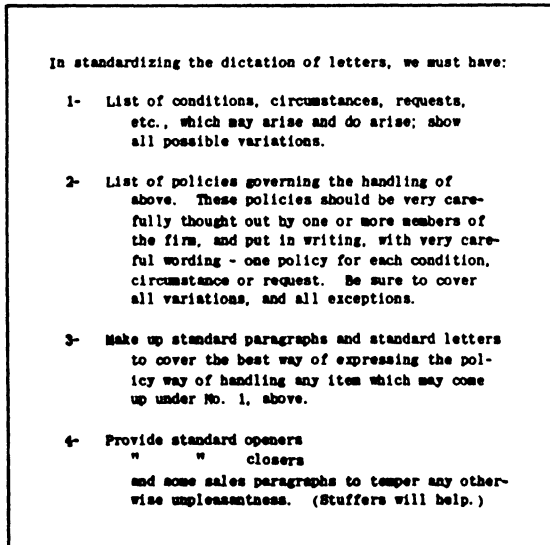


FIG. 28. How one office manager approaches the preparation of standard paragraphs and letters.

with a real person, to whom it is addressed, in mind. Each paragraph should then be gone over by a trained writer for any possible improvement in the diction, and, finally, by some person in the organization in a position superior to the original writer, to make certain that the paragraph carries the exact meaning that the organization desires to convey to those who have business relations with it.

2. *No attempt should be made in the beginning to have the system cover all possible conditions and situations.* Begin with the most frequently used sentences or paragraphs and gradually extend the scope. It is well to go over carbons of previous letters and select the paragraphs which seem to occur most frequently.

3. *Variants should be prepared for paragraphs most frequently used.* This relieves the dictator of the necessity of constantly using the same paragraph. In many cases it may be desirable to write a considerable number of variants.

4. *No paragraph should contain more than one subject.* Any variant of a paragraph should be handled in the same way as the original. Where conditions are even slightly different, special paragraphs should be used.

5. *A comprehensive classification should be prepared and a standard indexing system devised.* Use letters and numbers to indicate specific paragraphs.

6. *The typists, as well as the dictator, should be supplied with complete copies of the paragraphs,* indexed and classified as above.

7. *Individual oral dictation should be interspersed with standard paragraphs,* whenever possible.

INTERNAL CORRESPONDENCE

As has already been stated, internal correspondence is written communication between employees in the company. The purposes of that communication are to ask for information, to give information or directions, or to make an explanation. In a large office there is proportionately more written internal communication than in a small one, because the office is spread out over a greater area. Nevertheless, much of this writing is unnecessary, and much of what is necessary can be handled more economically and effectively than is often the case. An examination of the internal correspondence of almost any large concern will reveal the room for improvement.

ONE CAUSE OF EXCESS INTERNAL CORRESPONDENCE

Undoubtedly, many intra- and interdepartmental memorandums are written for the purpose of "going on record." When a clerk or minor executive is criticized for something for which he does not consider himself responsible, he immediately resolves not to be caught that way

again and in future to go on record by writing a memorandum, instead of delivering his message orally; it is a natural form of defense. The result is not only much writing that should be unnecessary; there are also being built up files that should be unnecessary. Here are three wastes, all avoidable. The remedy is for the higher executive to use more care and discretion in his reprimands, if indeed frequent reprimanding is necessary, a point that is debatable.

To _____	Date _____
From _____	
<input type="checkbox"/> For your information <input type="checkbox"/> For your attention <input type="checkbox"/> For your file <input type="checkbox"/> For your action <input type="checkbox"/> Sent you at your request <input type="checkbox"/> Will you look this up, please? <input type="checkbox"/> Can you give me this information? <input type="checkbox"/> What is your opinion? <input type="checkbox"/> Will you answer this, please? <input type="checkbox"/> Will you handle this, please? <input type="checkbox"/> Let's go over this together <input type="checkbox"/> Please read and destroy <input type="checkbox"/> Please note and return <input type="checkbox"/> Please O.K. and return <input type="checkbox"/> Please sign and return <input type="checkbox"/> Please O.K. and pass to <input type="checkbox"/> Please take up with <input type="checkbox"/> Is this yours? <input type="checkbox"/> For correction	

FIG. 29. Interdepartmental memorandum.

Where interdepartmental memorandums are necessary, it is often possible to eliminate all writing by standardizing the message. The use of a printed or mimeographed slip with a list of standard phrases like those shown in Figs. 14 and 29 will minimize the necessity of dictating and typing internal communications. Room may be left at the bottom for a brief note, if necessary; generally it is not necessary. Write dates with figures only, as 12/15/50, and omit salutation and complimentary close. Where a certain division has frequent occasion to ask another division for information, a special inquiry blank may be used like that shown in Fig. 30. It should never be forgotten that the savings made possible by the use of standardized office memorandums can be fully realized only when the internal mail-service is functioning with precisionlike effectiveness.

CORRESPONDENCE MANUALS

As with all other office work, the office manager should prepare or have prepared written standard-practice instructions covering the handling of both external and internal correspondence. These instructions, gathered together in the form of a loose-leaf manual with an adequate

To <input type="checkbox"/> ADJUSTMENT <input type="checkbox"/> AS HAD <input type="checkbox"/> BOOKKEEPING <input type="checkbox"/> FILING <input type="checkbox"/> MAIL <input type="checkbox"/> ORDER DIV.—G. O. <input type="checkbox"/> TRANSCRIBING <input type="checkbox"/> TRACKING	WANTED: <input type="checkbox"/> At once <input type="checkbox"/> S. A. P. <input type="checkbox"/> Today <input type="checkbox"/> By <input type="checkbox"/> Before <input type="checkbox"/> When ready
Please get the material or information checked below pertaining to the attached. Return with information requested to <input type="checkbox"/> M. L. Doty <input type="checkbox"/> E. M. Robinson <input type="checkbox"/> A. L. Matheny	
AS HAD DIVISION: <input type="checkbox"/> Ratings <input type="checkbox"/> Dun <input type="checkbox"/> Brad	FILING DIVISION: <input type="checkbox"/> Previous <input type="checkbox"/> File folder, this year <input type="checkbox"/> File folder, last year <input type="checkbox"/> Their letter dated <input type="checkbox"/> Our letter dated <input type="checkbox"/> Ticker dated <input type="checkbox"/> Carbon of last Statement <input type="checkbox"/> Spring order <input type="checkbox"/> Fall order <input type="checkbox"/> Special order shipped <input type="checkbox"/> Mail order shipped <input type="checkbox"/> Remittance slip rec'd <input type="checkbox"/> Credit folder <input type="checkbox"/> Latest financial statement <input type="checkbox"/> Financial stmt. dated <input type="checkbox"/> Order record card <input type="checkbox"/> Spring order credit card <input type="checkbox"/> Fall order credit card
BOOKKEEPING DIVISION: <input type="checkbox"/> Statement of Account in full <input type="checkbox"/> Open Item Statement <input type="checkbox"/> Copy of Last Statement <input type="checkbox"/> Carbon of last Statement <input type="checkbox"/> Statement for Wilber, to <input type="checkbox"/> Special Statement. (as noted) <input type="checkbox"/> Amount owing \$ <input type="checkbox"/> Amount past due \$ <input type="checkbox"/> Last pay't \$ Date <input type="checkbox"/> Amount of Fall order \$ <input type="checkbox"/> Paid on Fall order \$ <input type="checkbox"/> Owing on Fall order \$ <input type="checkbox"/> Past due on Fall order \$ <input type="checkbox"/> Amount of Spring order \$ <input type="checkbox"/> Paid on Spring order \$ <input type="checkbox"/> Owing on Spring order \$ <input type="checkbox"/> Past due on Spring order \$ <input type="checkbox"/> Amount shipped on <input type="checkbox"/> Fall order \$ <input type="checkbox"/> Spring order \$ <input type="checkbox"/> Compare collection register <input type="checkbox"/> How does he pay? <input type="checkbox"/> Discounts <input type="checkbox"/> Prompt <input type="checkbox"/> Slow	TRACKING DEPARTMENT: <input type="checkbox"/> Spring order <input type="checkbox"/> Fall order <input type="checkbox"/> Standing of order <input type="checkbox"/> Shipper
MAIL DIVISION: <input type="checkbox"/> Duplicate of Invoice Date Amount \$ \$ \$ \$ <input type="checkbox"/> Envelope received in <input type="checkbox"/> Enclosure missing	ORDER DIV.—G. O. <input type="checkbox"/> Check in Coll. Reg. and <input type="checkbox"/> Return to me <input type="checkbox"/> Send to Credit Files <input type="checkbox"/> Change in Name <input type="checkbox"/> Make Collection Register Sheet <input type="checkbox"/> Check for accuracy
TRANSCRIBING DIVISION: <input type="checkbox"/> Draft on Wilber for \$ <input type="checkbox"/> Proof of claim for \$ <input type="checkbox"/> Affidavit for \$ <input type="checkbox"/> Extract for Dept. <input type="checkbox"/> Please correct and Return	
Customer	Date

FIG. 30. A special blank like this saves time and energy in getting specific information from other divisions.

index, will encourage uniform handling of all correspondence by establishing standards of quality and showing all correspondents how to attain those standards. A list of the subjects which should be included in such a manual is given on page 169.

Many an office manager, after looking at a list like that, will agree that his office should have a correspondence manual and will determine to go ahead on one "just as soon as he finds the time." This means "never." There is never enough time to do everything that we should like to do, especially if we keep postponing action. The way to begin is to begin. Start with something and get that going. Then do a little more, and eventually you will have something worth while. Somebody once said, "Everything can't be done in a day, but *something can.*" In the preparation and use of standard-practice instructions, it is indeed true that half a loaf is better than no loaf.

PROVIDE A MODEL LETTER SETUP

A good place to start is with the model letter shown on pages 154 and 155. Have that letter typed up on your company letterhead. Caution the typist to follow the instructions exactly as given. Then run off several copies and pass them out to those who write letters in the company (including stenographers and transcribers), asking for their criticisms and suggestions. Set a deadline for the return of these. Eventually you will have a standard letter setup on which all or the majority are agreed. Then adopt that setup as standard for all company correspondence and issue it as the first part of a correspondence manual. Until your manual has grown to the point of requiring a ring binder, you can provide attractive but inexpensive brief covers with typed labels. Include dictators, stenographers, and transcribers in the distribution, for you will also wish to develop a manual for stenographers and transcribers; some material, such as the model letter, will appear in both manuals.

For your second issue, you have a wide choice of material. Consider what would be most helpful to the correspondents and transcribers. A list of the company's products, its branch-office locations, and the names and locations of the officers, department heads, and branch managers is always helpful and saves a lot of time and inaccuracies.

STUDY CURRENT CORRESPONDENCE

Meanwhile, you can be looking over carbon copies of current correspondence. Have extra carbons made for this purpose. Try to look

WHAT A CORRESPONDENCE MANUAL SHOULD CONTAIN

Introduction and explanatory notes

- Brief history of the company (for background)
- Scope of company's business (for understanding)
- Location of company's offices and branches (for information)
- Names of company officials, department heads, branch managers (for use)

Company policies

- General house policies (for background and understanding)
- Policies pertaining especially to correspondence (for practical application)
- Procedure when policy is unknown (for guidance)

Facilities for handling correspondence

General office organization, with particular reference to

- Incoming mail service
- Internal-mail and messenger service
- Outgoing mail service
- Filing service
- Telephone service, external and internal
- Stationery stock and supplies

Central correspondence division

- Organization and general procedure
- Use of equipment

Central transcribing division

- Organization and general procedure
- Provision for rush and emergency dictation

Model letter setups for use in all company letters

- For external correspondence
- For internal correspondence
- Telegrams, cablegrams, and radiograms
- Specimens of authorized stationery

General style for company correspondence

- Spelling
- Punctuation
- Acceptable salutations
- Acceptable complimentary closings
- Sentence structure
- Paragraphing
- How to begin a letter
- How to end a letter
- Referring to enclosures

Suggestions for writing better letters

- How to think clearly
- Expressing an idea or thought in words
 - Choice of words and expressions
- How to plan the letter
- Standards for judging letters

through a stated number, say 10, each day; otherwise, you are likely to put it off indefinitely. Any ideas you get can be made the subject of subsequent bulletins, even though they may consist of only one page at a time.

One of the things you will notice in examining carbon copies of correspondence is the number of useless and unnecessary letters being written. Eliminating the writing of useless letters is an educational project, reinforced by "horrible examples" and their revision and correction. Regular and periodical checkups, with a clear explanation of why this or that example is useless, will bring improvement sooner or later. But don't get discouraged at slow progress; keep whittling away and you will soon have something to point to with pride.

In the same way, develop other points in the manual, so that your manual is constantly growing in both size and importance.

Draw up an outline of a manual for stenographers and transcribers and develop that in the same way. Before long you will have standard-practice manuals for every kind of work in the office, which is as it should be.³

TYPEWRITTEN TRANSCRIPTION

Getting letters dictated is a very important part of the office manager's problem of handling correspondence, which we have examined at length in this chapter. We have seen that letters may be dictated to a stenographer, who takes it down in shorthand or on the steno type; to a typist, who types the letter as it is dictated; or to a dictating machine, which makes a record of the dictation. Transcription of dictated material into typewritten form has two purposes: first, to provide a written statement to be read by the person for whom the message is intended; second, to provide a more or less permanent written record of the message, which may be filed, if desired.

Where no permanent written record is necessary or desired, the record produced by machine dictation may be sent to the addressee, who puts it on his reproducing unit and listens to the dictation. This procedure, of course, is analogous to giving oral messages in person, with the added advantage, however, that the record may be "played over" as many times as the recipient needs to absorb its meaning. While this plan has its advantages—mainly the saving of time and expense otherwise consumed in transcription—it also has its disadvantages. The most obvious disadvantage is that without the reproducing mechanism, the record is just a bit of material—wax, plastic, or wire. It has

³ See Chap. XXI for specific suggestions for the development of office manuals.

no meaning, no significance, no particular value until it is put on the reproducer. A written message, on the other hand, can be carried around, passed along to others, read and reread, filed, with no machine needed to interpret it. For these reasons the typewritten transcription of dictated messages will continue to be an important part of the work of every office handling correspondence. Since that is so, it is desirable for the office manager to know how to get dictation transcribed quickly, neatly, and accurately.

PHYSICAL FACTORS INVOLVED

A number of factors are involved. The two basic essentials are the typewriting machine and the operator. Both must be in good working condition; in addition, the operator must be a competent typist. Supplementing the operator and her typewriter are certain factors with whose effectiveness the office manager is very definitely concerned. These include facilities for getting the dictated material from the dictator to the transcriber promptly; the furnishing of stationery and other needed supplies before they are needed; the provision of good working conditions such as adequate light, fresh air, comfortable working temperatures, absence of disturbing noise, and a comfortable chair and table or desk to work at—the same features that every office worker should have, as discussed more in detail in Chap. XV. The internal-mail and messenger service will see that the dictated material is brought to the transcription division. The division supervisor will assign the work to the first available operator and will keep tabs on the progress of the work.

So much for the mechanical routine involved. Let us now consider certain other aspects which affect the speed and excellence of the work done by the transcriber.

SPEED IS NOT HASTE

It is imperative to distinguish between speed and haste or hurry. Speed denotes swiftness of movement, which may be voluntary or involuntary; haste and hurry are confused, urgent, sometimes precipitate, confined to voluntary action. Speed may be controlled; haste and hurry, seldom. Nor is speed, *i.e.*, swiftness of movement, accomplished by driving, as hurry almost always is. Speed is accomplished by three factors:

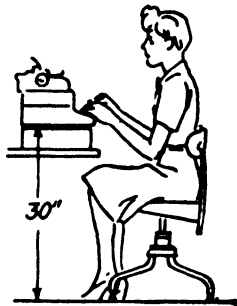
1. Elimination of all waste motions and conditions
2. Development of skill through training and practice, coordinating mental with physical activity

3. The development of automaticity, which, while seldom attained absolutely, can be approached relatively

Good training will accomplish all three of these factors, given, of course, trainable personnel; driving never will. The art of typewriting was one of the first office tasks to be taught in outside schools; high schools, business schools, and similar institutions are annually turning out scores of thousands of typists. Since the methods of teaching typewriting are improving each year, the chances of getting well-trained typists are increasing. Conditions, of course, will vary with the locality and circumstances, as will the supply.

HOW TO ELIMINATE TIME-WASTING CONDITIONS

Below are listed a number of time-wasting conditions with suggestions for their elimination and for general improvement. From these one can make up a check list, adding thereto any other conditions observed.



1. *Is the operator's posture correct?* This calls for an erect body with the small of the back firmly against the chair back rest and the feet squarely on the floor to give the body support and balance for the carriage throw; in any other position good work cannot be done. To secure this correct posture at first may require constant attention and corrective exercises, together with the correct type of chair.

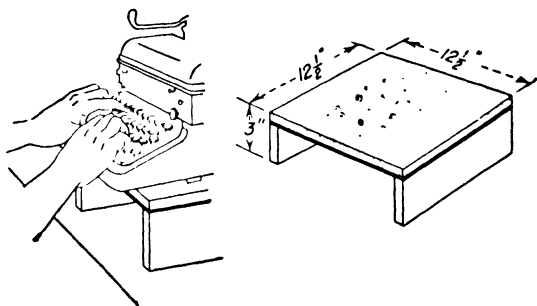
2. *Are the operator's forearms and hands in the correct position when writing?* Most typewriters are placed too low for comfortable working position and effective control of the keyboard. Champion typists use machines 30 inches from the floor, instead of the usual 26 inches. In any case the table or desk should be high enough so that the slope of the operator's forearms coincides with the slope of the keyboard. A box frame may be placed under the typewriter to raise it to the correct height. The height of the chair may also need adjusting to attain the relative positions here indicated.⁴

3. *Is the position of the copy correct?* A notebook holder should be used to hold the copy, or one of the adjustable devices placed at the back

⁴For details of a cooperative research by the U.S. Department of Agriculture and The Society for the Advancement of Management, see the Society's well-illustrated report, *A Study of Typewriter Height*.

of the typewriter. Twisting the head and neck or leaning to one side or the other to read copy is unnecessary and fatiguing and tends to reduce output.

4. *Does the typist insert the sheets into the machine properly?* A great difference may be noted between a trained and an untrained worker on this simple operation. In the correct method of insertion, the sheet is picked up with the left hand and placed squarely behind the cylinder against the paper rest and the left-hand paper guide. If the paper is square with the cylinder it will naturally come through the machine in correct position; if not, it will sit crookedly on the cylinder, requiring further adjustment. When the sheet has been properly placed



behind the cylinder, the twirler knob is grasped by the right hand and given a sharp turn, rolling the sheet into the correct writing position.

5. *Does the typist twirl the cylinder properly?* The untrained operator does this leisurely, turning the cylinder one notch at a time and grasping the knob several times. The trained operator does it with one grasp and a quick turn, which revolves the cylinder roller and turns the paper up the 10, 15, or 20 single-space lines that may be required; she will appear to place the paper in the desired writing position with one motion.

6. *Is the carriage thrown back properly?* The untrained typist will leisurely push the carriage back at the end of a line, sometimes using both hands for that purpose. The trained operator uses her left hand to strike the carriage-return lever a sharp, quick stroke, with just sufficient force to send it all the way back to the starting point of the new line. When this motion is correctly performed, it not only returns the carriage but at the same time turns the cylinder into position for writing

the next line; that is, one movement performs two operations simultaneously. The difference in the speed of performing this operation correctly and incorrectly may be two or three one-hundredths of a minute; since it is done between 15 and 50 times on each letter, the saving of time in a day is evident.

7. *Does the typist indent paragraphs with the tabulator?* All standard machines have a tabulator key and stops which may be adjusted at any desired position; these should always be used for indenting paragraphs.

8. *Does the typist remove the paper from the machine properly?* At the end of a page, the paper should be thrown out quickly by turning the twirler knob with the left hand, while the right hand simultaneously grasps it and places it on its pile, face down; the left hand instantly takes a fresh sheet of paper or envelope from the pile close by and places it behind the platen in the manner described in paragraph 4. An equally correct way is to remove the paper by a sharp pull with the right hand, while at the same time the left hand picks up the next sheet.

Many schools teach their typing students to remove the paper from the machine by using the paper-release lever. This method is very fast and quite noiseless; but since the paper-release lever is located on the right side of all but one make of typewriter, the right hand must be used to operate it, requiring the left hand to grasp the paper and remove it from the machine, instead of leaving it free to pick up a fresh sheet. A comparative test of the three methods will show which is best and fastest. In any case, a well-trained operator will remove one sheet of paper and insert another in one-quarter of the time required by the average untrained one.

9. *Does the operator use the touch system?* Even though learned in school, at least partially, not all operators use it consistently afterward. An operator may slip up on the following points:

a. *Are the nails properly manicured?* The proper method of striking the keys is with the tops of the fingers; if the nails are long, this cannot be done.

b. *Is each key struck with a firm, quick, snappy stroke, and the finger instantly removed as though the key were hot?* If not, there is a tendency to jam the keys by striking between two of them or by striking a second key before the first has returned to its place.

c. *Is the rhythm good?* This means a steady tap, tap, tap with an exact interval between taps, instead of irregular ones. A properly trained operator will read the copy far enough ahead so that there need be no pause between words, and, though she may not seem to be strik-

ing the keys any more rapidly her output will be much greater than that of the operator who reads a few words and types them, then reads a few more, and so on. The effective operator will keep the carriage of the machine in rapid and regular motion; the only noticeable pauses should be at the end of each line, the tap, tap, tap being continuous and regular from its beginning to its end—that is what rhythm means.

d. Are any of the fingers weak? An inspection of the carbon copies will show up any unevenness of impression; if all the characters are of even color, the strength of all finger strokes is equal. If no actual physical disability is present, weak fingers can usually be strengthened by corrective exercises.

THE CAUSES OF TYPEWRITING ERRORS

It is a well-known fact that the best operators make the fewest mistakes. Errors must be corrected, and their correction takes time; in some cases the time required to correct errors exceeds the actual writing time. Obviously, if errors can be reduced or eliminated entirely, the output will be immediately increased. The three usual causes of typewriting errors are incorrect touch, lack of concentration by the operator, and lack of proper training.

1. *Incorrect Touch.* This can be corrected by learning the touch system.

2. *Lack of Concentration.* This is perhaps the cause of most of the errors made in typewriting work, and is due chiefly to lack of interest in the work itself; to some physical defect, such as bad eyesight; or to some disturbing element or condition existing in the surroundings.

a. Lack of interest in the work itself. Lack of interest in the work is a problem for both the employee and the management. The manager should employ every known means to arouse and stimulate the employee's interest, for making work interesting is essential to successful leadership.

b. Physical defects. Physical defects, especially optical defects, should be corrected if possible.

c. Disturbing elements or conditions. Disturbing conditions of many kinds may exist in the surroundings. Such conditions may be caused by poor lighting, by the room being either too hot or too cold—a fatigue-producing condition in itself—or there may be excessive noise. The operator may be ill from causes unconnected with the work. What ever the condition may be, the management should, as far as lies within its power, make every effort to remove it.

3. *Lack of Proper Training.* The third cause of errors in typewriting is to be found in the lack of proper training.

a. *Errors in spelling.* These are a rather common defect in the work of typists. Spelling should be a purely subconscious process in typewriting. As the word is read or heard the fingers must mechanically type the spelling, directed by the subconscious mind, for were the operator to spell out each word consciously letter by letter, errors would constantly develop. It should be made a strict rule that, in case of uncertainty, the typist should look up the word in the dictionary, instead of taking a chance. Some typists make a note of each word looked up and refresh their memories from time to time. When this is done, there will be fewer and fewer words to look up. In the case of technical words peculiar to the company's business, each typist, transcriber, and stenographer should be provided with an alphabetical list of the terms she is likely to encounter in her work. Some companies supply the shorthand outline in an adjoining column.

b. *Defective reading methods.* The operator's method of reading notes or copy may be defective; if she reads one or two words at a time she will develop the habit of getting the context wrong. Copy should be read in phrases, not in separate words. This also applies to transcribing machine dictation, for it is difficult to understand the correct meaning of the spoken words by listening to one or two at a time; that habit tends to result in wrong punctuation and perhaps the insertion of the wrong word.

READING QUICKLY AND ACCURATELY

Though most people can read, not all can read accurately, and only a limited number can read quickly. Since a poor reader cannot read accurately more than 60 or 70 words a minute, the added distraction of copying materially slows down the work of typing. A good reader should be able to read aloud, accurately, 200 words a minute; an expert can read much faster than he can accurately pronounce the words. On subjects with which an expert is familiar he can sometimes read as fast as 600 words a minute. It is not necessary for a typist to be an expert reader of this sort, but the average operator should be able to read aloud and correctly at least 150 words a minute. The whole secret of rapid reading is to read in phrases; that is, the reader groups the phrases and simultaneously grasps their import while reading—his understanding, sight, and voice operate simultaneously.

WHEN MACHINE DICTATION IS POOR

Typing from machine dictation presents some difficulties for which the transcriber cannot be held responsible. Present-day equipment is so sensitive that unless reasonable precautions are taken, extraneous sounds may interfere with clear reception of the dictated material, causing confusion, doubt, and delay. Furthermore, some dictators may be careless in their dictating habits. It should be a standing rule in all offices for the transcriber to call her supervisor to listen to a faulty record. This will not only assist the transcriber in determining what was said, but also enable the supervisor to recognize the fault and take it up with the dictator.

Both dictator and transcriber should be trained in the proper use of the equipment for machine dictation and transcription. On his part, the dictator should watch his phrasing and enunciation; on her part, the transcriber should be taught to listen so as to catch the phrasing, and not merely a word or two at a time. This practice will give both increased speed and better and more accurate work.

QUESTIONS FOR DISCUSSION

1. What two correspondence problems confront every office manager? How may they be solved? Explain briefly.
2. What is the difference between internal and external correspondence?
3. Who may write letters to others outside the company?
4. What are the two aspects of external correspondence?
5. Describe the letter-writing routine.
6. What is back of an effective letter-writing routine?
7. How may a dictator be sure of always having a supply of record blanks?
8. When dictating machines are not used, what provisions should be made for taking dictation? Who is responsible for making that provision? Why?
9. What provision is made for nonroutine dictation?
10. What are the advantages and disadvantages of scheduling dictation?
11. Explain "dictation by wire."
12. List eight ways of answering a letter.

13. What is the test of a good letter writer?
14. What is the test of a good letter?
15. What are the two main purposes of a business letter?
16. What two features should appear in every business letter?
17. What third feature is sometimes required? Why?
18. What is the real problem to be overcome in handling correspondence?
19. Comment on the desirability and means of standardizing the general aims and policies of the company.
20. Why should the general aims and policies of the company be put in writing?
21. How did one company standardize the handling of cancellations and returns?
22. Why should the general style of letter setup be standardized? How may this be done effectively?
23. When should standard letters and paragraphs be used?
24. What are "blanket" letters, and how may they be used?
25. What are the advantages and disadvantages of standard letters and standard paragraphs?
26. Describe the construction of a form-paragraph system, mentioning seven points to be observed.
27. What is internal correspondence, and what is its purpose?
28. Comment on the writing of internal memorandums for the purpose of "going on record." What situation does such a practice connote?
29. How may the writing of interdepartmental memorandums be standardized?
30. What should a correspondence manual include?
31. How may a correspondence manual be prepared?
32. Name nine conditions that waste time in typing. Suggest methods of improving these conditions.
33. What are the three usual causes of typewriting errors? How may they be corrected?
34. How fast should a person be able to read? Explain.
35. What should be done when machine dictation is poor?

PROBLEM I

One of the defects found in the office of the Indiana Manufacturing Company is the inadequacy of intercommunication. Most information seekers ask for it orally and are answered in the same way. In other

cases, memorandums are scribbled on scrap paper and pinned to the order or correspondence.

Design a form that will serve the purpose better than oral communication, and state your reasons for thinking that it will do so.

PROBLEM II

In the typing section of the Parker Company there are 24 operators, consisting of 5 stenographers, 7 machine transcribers, and 12 typists on form letters.

There has been much complaint from executives and department managers that the work is very poor and many errors are discovered. It is proposed to make a thoroughgoing analysis of the situation.

What are the points to be covered? Make a skeleton form of analysis.

"A business decision is only as good as the facts on which it is based."—HERBERT HOOVER.

IX

OFFICE RECORDS AND FILING

Since a large part of all office work has to do with the records of the enterprise, any steps the office manager may take to reduce the time required to handle those records will facilitate the work of the executives who base their plans upon the information which the records reveal. The sooner the desired information is available, the more quickly it can be put to use where it will do the most good. Speed and accuracy are of the essence for obtaining records for control. This does not mean that no consideration need be given to the cost of providing the record, nor does it mean that all records have the same urgency value. Like all other office work, the value of any particular record is purely relative; some records are more urgent than others. There are, however, certain fundamental principles that govern record keeping of every kind, which it will be worth while to examine.

FUNDAMENTAL PRINCIPLES OF RECORD KEEPING

1. *The purpose for which the record is kept must be justifiable.* The mere recording of facts that some day may perhaps be of value is not considered good business. If the records of an office are examined one by one in the light of this principle, it will often be found that there are many records which seem to have no justifiable purpose. The purposes of records are described on page 182.

2. *A record must be capable of verification.* Unless this is possible, the record falls into the category of "hearsay evidence" in the courts, of little real value in making a wise decision.

3. *Records must be classified to be of use.* If the facts of a business are recorded chronologically and not afterward classified, their very bulk makes analysis difficult if not impossible. Classification of facts

of any kind is in itself a form of analysis or may be considered a part of an extended analytic process.

4. *The information desired must be available when needed*, since the purpose for which records are kept is to furnish a specific type of information. It is not necessary that all this information should be *instantly* available at all times, as some executives have insisted, for this depends upon the type of information. If it is such that it is frequently used and liable to be called for at any moment, the records which contain it should be kept in such shape that the information is always ready at hand and can be had in the shortest possible period of time. If, however, certain other information is needed only monthly or at some other definite period, it is not economical so to design the system that the record is instantly available, for that is clearly not necessary. The purpose of the record should govern the character and degree of its availability.

5. *Records must be produced at a reasonable cost*. Some managers make a fetish of records of facts and figures—entirely ignoring the cost of their collection—and justify their action by insisting that “it is impossible to run a business without facts and figures.” This statement may be true perhaps from one point of view, but it is the crudest of sophistries from another; as the logicians say, it is a “faulty syllogism.” It implies that because facts and figures are needed to run a business,

CLASSIFICATION

Classification may be considered either as a form of analysis, or it may form part of an extended analysis, as the case may be. There are two principal methods of classification used in books of record: (1) according to time, or chronologically, and (2) according to subject.

1. Chronological classification, though possibly the oldest form, has a definite, though strictly limited, application in modern business. As a basis for verification, it has a definite legal and commercial value, but for the purpose of analysis it has little or no value, especially if the volume of records is large. When combined with subject classification, its value is greatly enhanced.

2. Classification according to subject furnishes the real basis for analysis, by bringing together in one place all the information available on any particular question, thus obviating waste of time in extended search.

therefore *all* kinds of facts and figures are needed to run it, and you cannot possibly have too many of them. Some records being more valuable than others, the company can afford to pay a greater sum for their preparation; but any record will be no less valuable if the same information can be procured at half the expense.

PURPOSES OF RECORDS

Consider the purposes of records. There are four chief purposes of records:

1. *To Keep an Orderly Account of Progress.* The purpose of writing down and preserving memorandums of transactions, financial and other kinds, is to record the progress of the business. This may be regarded as the historical function of records; in these documents, the history of the business is recounted.

2. *To Make Possible the Preparation of a Statement of True Conditions.* Without the information shown by records of transactions that have actually taken place, it is not possible to know the true condition of the business at any one time. As this knowledge is of vital importance, all contributory records should be so prepared that information showing the existing state of affairs can be taken off at any time.

3. *To Enable the Making of Comparisons.* Records make it possible to compare one period of time with another period, one line of merchandise with another line, or other similar items with one another. This analytical function of records is becoming of increasing importance as businessmen progressively recognize the value of analysis.

4. *To Facilitate the Detection of Errors and Wastes.* To prepare records so that errors may be detected involves control figures of some sort, which are usually provided by any well-designed bookkeeping system. For the detection of waste, a control figure, such as standard unit costs for the item under consideration, is necessary.

RECORDS WILL NOT PROMOTE BUSINESS

Valuable as records are, they will not, of themselves, promote business. They are, strictly speaking, tools for the purpose of facilitating or limiting some main function. If these tools are not put to use, but are allowed to remain idle, they are only a useless expense, with the additional disadvantage that they are a constant expense for maintenance, whether used or not. Oversystematizing a business in the keeping of records is easily possible and by no means infrequent.

The adoption of records of doubtful value, or which are not used at all, does not come about because either the office manager or the general management intentionally desires to waste the profits of the business on record keeping. The chief cause in every case is the apparent lack of ability for constructive, original, purposeful thinking by those responsible for this useless work, which may explain why they copy the record practices of other offices, instead of designing their own.

RECORDS SHOULD BE DESIGNED TO ORDER

While it may be considered axiomatic that all businesses are basically alike, there is nevertheless considerable truth in the oft-ridiculed assertion that "my business is different." Businesses differ first with the general or special character of the industry; second, in relation to the conditions under which they are conducted; and finally, as to personnel. With these variables, it is practically impossible to find any two companies that are precisely alike in all respects, just as, although all human beings are constructed on the same general physical plan, no two will be found exactly alike in all physical characteristics.

The thoughtful office manager will, therefore, first strive to master the basic principles which govern all business, and then the particular conditions under which his own office works; guided by this combined knowledge, he will prepare or revise records accordingly. There can be no universal system of records applicable to all businesses, any more than a suit of clothes can be designed which will fit all customers. It is folly to copy a system of records from some other company, though one may occasionally chance upon a good idea and adapt it to suit

FOUR ESSENTIAL POINTS IN ANY SYSTEM

1. *Simplicity*—that is, fitting the requirements and not exceeding them, in such manner as to facilitate comprehension.
2. *Accuracy*—that is, preventing or avoiding chances for error, and at all times enabling proof of the work by simple processes of addition and subtraction.
3. *Economy*—that is, using as little time, energy, and material as is possible to procure the desired results.
4. *Usefulness*—that is, securing the facts needed for good business management in time to be of use to the management, and avoiding collection of details not needed or used.

local conditions. The continual imitation or appropriation of the brain-work of others, however, usually results in nothing better than patch-work; the best system is one which is constructively designed to fulfill each of the four purposes listed above and to suit exactly the conditions of the particular industry, the particular conditions of the business, and the personnel which is to use the system. Although devising such a system may take longer than copying that of another company, the results will certainly be more satisfactory and less expensive in the long run.

MODERN TENDENCIES IN RECORD MAKING

1. *Use loose-leaf and card systems.* The first notable tendency of modern business was to abandon the bound-book record and adopt the loose-leaf or card record in its stead.

2. *Avoid useless copying.* The second notable tendency is to avoid copying of all kinds, by using one of the duplicating methods described in Chap. XIII. Much useless copying is avoided by classifying and filing. Thus, by filing all invoices made out to customers, numerically and chronologically, the necessity for a sales journal is avoided. If there is a choice of copying a record or filing it, always file it.

3. *Question the necessity of each record.* The actual necessity of each record is being questioned and investigated; where it is found that a record is not being used and there appears to be no necessity for it, it is discontinued.

4. *Coordinate the record keeping.* Record keeping is being coordinated, so that one record may serve several useful purposes, instead of having many isolated records which do not tie up with the general books.

5. *Eliminate unnecessary motions.* There is an increasing tendency for office managers to study the possibilities of reducing labor by minimizing the amount of work necessary to produce any particular record. Every motion eliminated naturally reduces the amount of time required; standard abbreviations are used, and standard descriptions printed so that they may be checked, thus avoiding writing the entire description.

RULES FOR ANALYZING RECORD KEEPING

All records should be examined analytically for the qualifications outlined below, in the order stated.

1. *Are the records necessary?* Do they accomplish the purpose desired? Is that purpose justified?

2. *Are the records used?* The fact that a record is not used does not necessarily mean that it is useless. It may be an indication that its value is not appreciated; it may, of course, also mean that it is actually useless.

3. *Are the records so made as to avoid unnecessary writing?* It should be remembered that carefully chosen abbreviations reduce labor and that there are many forms of abbreviating or symbolizing.

4. *Is unnecessary copying avoided?* This may involve copying either the whole of a record or part of it.

5. *Are the forms used the best for the purpose?*

6. *Is the equipment—the binder, cabinet, or desk—the best for the purpose?*

7. *Are the tools used the best for the purpose?*

8. *Can the record be coordinated or combined with another already in existence?*

USE COMMON SENSE

What's the use of paying for a lot of bookkeeping frills that are never used?

What's the use of attempting to learn facts that are not worth the cost of knowing?

What's the use of building a system to give information that never has been used and that never could serve a useful purpose?

BOOKKEEPING AND ACCOUNTING

Strictly speaking, bookkeeping is the recording of transactions of one kind or another, usually financial. The bookkeeper is really a historian, making the facts about the business available for immediate or future reference. Accounting is the analysis and interpretation of these facts and records in terms of the progress of the business. The accountant must tell the management not only *whether* the company made or lost money, but also *why*. The man responsible for setting up the company's accounting system is the chief accounting officer of the company, who may be called the controller, the auditor, or sometimes just the head accountant. He may be aided by public accountants, who may also make periodical audits of the company's accounting sys-

tem. In some companies, the office manager is also the head accountant, and vice versa.¹

In a manufacturing company's office, several clerks were working upon a set of stock records. A test was made by selecting 100 items out of a thousand or so and comparing them with the actual stock on hand; in not one case was the quantity on hand what the record showed it should be. Of course, no reliance was placed upon these records; every person who desired to know the quantity on hand asked the stockkeepers for it; they, in turn, had actually to count the stock on hand. Nevertheless, although everyone knew the recording work was useless, these clerks were kept busy making entries of receipts and withdrawals of stock. There were more clerks than was necessary, because of the constant attempt to check errors; there were more stockkeepers than necessary, because the stock items had to be counted so many times.

OTHER BUSINESS RECORDS

In addition to the bookkeeping records of financial operations, other records are to be found in every office which deal with the movement of values within the organization rather than with the exchange of values between the company and those outside of it.

Such, for example, are *purchase records*. In addition to those bookkeeping records which exhibit the purchase as an exchange of values, there are records of quotations, records of the performance of materials purchased, and other records of similar character, which do not in themselves denote actual exchanges of values. A list of suppliers may be either a directory or a current record; in the latter case, the purchasing agent would not only record the names and addresses of the companies supplying certain materials but also what was purchased from them and the report of its satisfactory performance or otherwise.

Stock records are sometimes kept in the purchasing department, and sometimes elsewhere. They may constitute one of the most valuable methods of controlling the capital invested in merchandise or materials,

¹ An individual who holds two or more positions may clarify his understanding of his responsibilities by listing in separate parallel vertical columns the functions of each position he holds, which will enable him to proceed without running into conflicting objectives.

or they may become a more or less useless and misleading compilation of items.

Sales records are kept for both accounting and sales-analysis comparisons. Record of sales by territories is the most common practice, but some companies keep them by commodities also. If such records are fully utilized, they are of great value, although frequently much information is kept that is not used.

Production and cost records are also necessary in many offices but are usually poorly kept; much of the information gathered and recorded in them is never used.

PERSONNEL RECORDS

Adequate personnel records are too often absent, though they are exceedingly valuable. A company employing 200 persons will usually have an annual payroll amounting to over a quarter of a million dollars, an expenditure which really represents the purchase of that much labor.

Performance Records. If records of the performance of each employee are properly made and used, they are of great value. Such a record should contain a monthly compilation of the number of times absent and tardy; positions held, promotions, salary increases, and other similar information. If efficiency figures are kept on the quantity and quality of the work performed, these too should be included in this record. A record like this would provide a chronological history of the performance and progress of the employee while with the company and would prove of real value in considering salary increases and promotions. Without such records, the management simply makes a guess in the dark as to whether or not it is getting its money's worth from the payroll expenditure. With them, it can deal with each case on its merits and with justice to all concerned.

Labor Turnover Records. Records of labor turnover are also important and should be so kept as to show causes for leaving. The management may thus detect any particular cause which repeats itself frequently, for this will in many cases be significant of some defect in the organization or in the working conditions. Without adequate records these facts do not come to light. The requirements of the Social Security Act and the wage and hour laws have made imperative the keeping of precise and detailed personnel records as prescribed by those authorities. State labor laws also require the keeping of certain records.

FILING AS A FORM OF RECORD KEEPING

It may at first seem curious that filing should be considered a form of record keeping, yet a little reflection will show that filing a letter or document is equivalent to making a record of its contents, at very much less cost. Documents are filed in order that they may be available for use at some future date; that is also the precise purpose of making records. Classification of papers is a form of filing, with the object of getting all material of one class together.

REQUIREMENTS OF FILING

Filing provides a means of preserving records of business transactions; this was originally, and still is, its chief use. To accomplish this purpose, filing requires, first, *educated and trained supervision*.

The second requirement is that the methods shall be *thoroughly standardized*; that this standardization shall be based upon the selection of a carefully considered and scientifically correct system, and that no succeeding file clerk be permitted to design new methods or alter those which have been established and standardized.

Good training of the filing force is the final consideration. Accuracy should be especially stressed, as a letter misfiled is permanently mis-

Filing work should be 99 per cent accurate, one error in 100 pieces being the allowable maximum.—W. H. Leffingwell.

laid and may entail consequences far more serious than the wasted time consumed in locating it. Therefore, no clerk should be permitted to file any material until he has thoroughly mastered the filing system.

These three requirements constitute the main factors in all office management, but they are of particular application in filing because of the extreme difficulty of correcting errors and the serious consequence that may ensue if the filing work is not accurately and expeditiously handled.

CENTRAL FILES

The purpose of centralizing the files is to render a better service to all who handle material that has been or is to be filed. This improved service results from three factors:

1. *Expert file clerks will do the work*; they are trained and experienced in filing papers accurately and finding them quickly.

2. *Papers will be filed the same day* they are received in the central files. (With departmental files, the filing work is always last in importance, papers not infrequently piling up for days before being filed. This wastes time in searching for papers that have not been filed.)

3. Since *desired papers* are always in the files (or, if elsewhere, their location is known), they *can be promptly produced*.

EXCEPTIONS

It is obvious that not all records and papers should be filed in a central filing division. Records, for instance, which are constantly being referred to in the department in which they are made should remain there, since no good purpose is served in centralizing them. Such records might include purchase requisitions and copies of purchase orders in the purchasing department; paid vouchers in the accounting department; confidential data about customers in the credit department; and so on.

SURVEY OF FILES - SHEET I				Date _____	
What kind of material is filed? (Letters, orders, invoices, etc)	How is it filed? (Binders, vertical file drawers, flat file drawers, folders, etc)	What is this file called?	Who does the filing away?	Who has access to the file?	

FIG. 31. A form like this makes it easy to get and study the necessary information about all material that is filed.

HAVE DEPARTMENTAL PAPERS FILED BY EXPERTS

Even though not all papers should be sent to the central files, there is no reason why those departments which keep their own files should not have the benefit of the expert assistance available in the central file division.

Take the credit department files, for instance. The credit file consists of one folder for each customer, containing financial statements, trade references, and other confidential credit information about that customer. This material is highly confidential, not accessible to anyone outside of the credit department. Naturally the credit manager wishes to keep his confidential files near him, especially since he or some member of his staff is making constant reference to them. There is no reason why these credit files should not remain in the credit department; there are distinct advantages in their doing so.

The main concern of the credit staff is in having the credit information available when they want it. As long as any member of the staff can go to the credit file and pick out the desired folder without delay, that is all that is needed. The difficulty arises when the staff member

HOW TO MINIMIZE MISFILING

The chief difficulty is not in filing, but in finding. Here are some ways in which to minimize misfiling:

Permit no one to have access to files except the authorized file clerks.

Use written requisitions for the removal of papers from the files; these forms show by whom the material was received, and when, and are to be filed in the place of the correspondence removed.

Wherever possible, use the telephone for information needed, rather than removing material from the files.

If any material is removed from the files by executives, after office hours, as for directors' meetings, etc., specify that it is not to be returned to the files by them but is to be left out for the regular file clerk to return in the morning.

Make definite rules as to whether material is to be filed in front of, or behind, the guides. Current material is usually filed behind guides; transferred material in front. After the life of correspondence is decided upon, the files should be gone over once a month and all expired material transferred or destroyed. In this way the files are continually kept up to date, without a great deal of extra labor at one general housecleaning, as is too often the case.

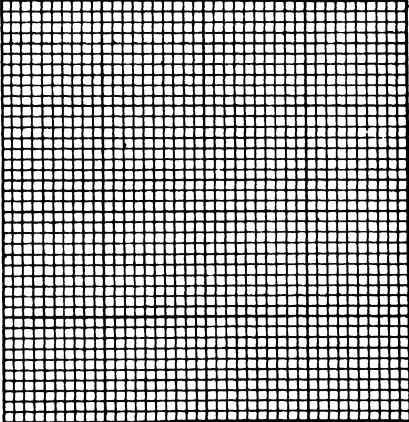
has finished with the folder and is ready to return it to its place in the file drawer. Here is where trouble awaits the unwary. The staff member may be an expert on credits, but is hardly one on filing. He fully realizes the unfortunate result of making a wrong credit decision; but he may not appreciate the unfortunate result of not replacing a file folder in its precisely correct location. With his attention on the credit angle, as it should be, he is not too much concerned with where the

SURVEY OF FILES - SHEET II

Date _____

What make of cabinets or binders	Size of drawers or binders	No. of drawers or binders	No. of pieces filed daily	No. of file clerks _____ How much space do files occupy _____ What direction is light _____ What kind of artificial light _____ What make of folders _____ Who does the sorting _____ Are sorters used _____ _____
				is arrangement effective _____ Why not _____ _____

PRESENT LAYOUT:



Remarks:

FIG. 32. The information on this sheet presents a picture of the arrangement and operation of the files, often indicating where improvement is possible.

folder belongs. If he misfiles it, as may well happen, the folder will not be easily found the next time he wants it; and he may want it in a hurry. Misfiling a folder one has finished with is just as likely to happen as replacing a library book on the wrong shelf—everyone has had that experience.

HOW TO PREVENT MISFILING

The remedy for misfiling is to permit no one to place material in the department file except an experienced file clerk familiar with the filing system. Provide a tray in which may be deposited folders and papers that are to be filed. Let an expert file clerk from the central files visit the department once or twice a day—or oftener if the volume of filing so indicates—to do the filing for that department. She will check each folder to see that no extraneous papers have been left in or put in by mistake; she will check loose papers in the tray to be sure they are ready for filing. Then she will file everything in its correct place. Thus all the papers are immediately accessible.

Of course, if there is enough filing in a department to keep a competent file clerk constantly occupied on filing, perhaps such a clerk should be permanently assigned to the department. But she should be subject to the supervision of the head of the central filing division, who is the one ultimately responsible for all the company's files. Otherwise, there is the danger that the departmental file clerk may be pulled off her file work to help on some "rush" job, thus causing the file work to pile up, with its resultant delays. It is astonishing how relatively few executives appreciate the importance of having the files up to date *all the time*; that cannot be accomplished without competent, experienced help, adequately supervised, giving priority to the filing work.

If a central filing division is decided upon, study carefully the best location for it, so that it will be accessible to the department most often referring to the files.

See that the files are arranged to minimize walking about. This means to avoid L shapes whenever possible.

Arrange for a sorting table and distribution racks.

See that the light is good; a strong light is needed for filing.

Be sure the equipment is adequate. Much time is lost with overcrowded files.

Arrange for telephone communication.

Dept.....	Div.	Sect.	Position.....
Fill out one of these sheets for EACH		Your name.....	
paper, record, or report that you use, work upon, call for, or file.			
Name of () paper () record () report.....			
(check one)		() by name	() by product
How do you identify it? (check one) () by number () by territory			
		() by date	() by subject
Explain the identification you have just checked. That is, if you identify it by name, what is its name? If you identify it by number, what do you call it the number of? If you identify it by date, what is it the date of? and so on.			
How many items like this one pass through your hands daily?.....			
Do you have occasion to refer to them afterwards? () yes () no			
If so, how many times a day do you refer to them?.....			
Where are they kept?.....			
How long after you have originally handled these items, are they valuable and referred to? If you do not know, put an X here: ()			
.....			
How large is this item? (for example, 3 x 5, 4 x 6, 8 x 10, 11 x 18, etc.).....			
What shape is it? () square () rectangular () other.....			

A survey sheet like this may be used to obtain the preliminary information needed before starting to centralize any files. Where several clerks work upon the same kind of item, the sheets covering the same item should be clipped together.

ORGANIZING A CENTRAL FILING DIVISION

The first step in the organization of a central filing division is to make a detailed survey of all desks in the office for the purpose of determining, from their contents, just what material there is to be filed and what information each desk occupant requires from the central file. The survey, which may be in questionnaire form, should cover every paper, record, or report made, handled, or kept in the office.

DESK-DRAWER FILES

In making the survey, files will be found in the drawers of some of the desks. It is a debatable question whether individuals should be permitted thus to retain files for their private or exclusive use. Sometimes it is advisable, and at other times it is not. If the drawer files are of a private nature they should not be taken away from an indi-

vidual unless the filing department is well organized and can render equal or better service than the individual is getting now by handling them himself.

Where there are individual records or reports frequently referred to, drawer files may be used, though there is no particular reason why they should be. The practice is allowable only where there are papers which are particular to the job, which have no relation to any other part of the work of the organization. For example, the standards division might have a number of investigations under way; the papers belonging thereto should be classified and filed, and, as they are frequently referred to by an individual, may be filed in a desk file.

Executives may be reluctant to give up certain private papers in their possession, but they may be willing to do so if a special confidential file cabinet with a lock is provided in the file room.

However, no executives or other individuals should be permitted to keep in their desk-drawer files any papers which are commonly used by others, as this practice will neutralize the central filing plan. It is axiomatic in filing practice that there shall be only one place to look for any desired item.

WHICH FILING SYSTEM SHOULD BE USED?

It cannot easily be demonstrated that any one filing system is better than any other, since every business must, of course, select the method or methods best suited to its particular purposes. It is a fact that some methods which are best for certain lines of work would not be the best for others. The alphabetical method seems the most natural because all persons are more or less accustomed to the dictionary arrangement and grouping of words. It is, therefore, probably the best understood and should perhaps be generally used in preference to some more complex method, unless there are real advantages to be gained by adopting such a method. Nor should all material necessarily be filed according to the same system. Each type of material can ordinarily be filed by one method better than another; the method that best fits each type should always be selected.

It should be remembered that both alphabetical and geographical methods are direct filing methods and do not ordinarily require the double indexing necessary in the numerical method. The cross index is not only an additional expense, but it may require more time to locate a letter than under the direct alphabetical plan; some geographical systems require an alphabetical cross index.

ANALYZING AN EXISTING FILING SYSTEM

The following questions will be found helpful in analyzing an existing filing system. Write down the answer to each question as you determine it in the course of your investigation.

1. How is filing done, at a central station or scattered?
2. If central, make a layout; if scattered, give the locations of files by floors or departments.
3. If central, how are different departments or divisions handled?
4. If scattered, try to find out if different departments ever write on opposed items, or without complete information.
5. What system is followed: alphabetical, numerical, geographical, or combination?
6. If alphabetical, who determines divisions and subdivisions? How much room has been allowed for expansion?
7. If numerical, is cross index properly kept up and used fully?
8. Is there a logical, scientific reason for the present classification, whether it is alphabetical, numerical, or whatever it may be?
9. How long has the present system been in use? Who originated it?
10. Is the filing equipment modern? Is the light good?
11. Are the files overcrowded? Do folders or guides buckle up? Are metal, manila, or pressboard guides used?
12. Are there sufficient guides? Are folders in good shape?
13. Who has charge of the files? Who has access to them?
14. If the files are scattered, who does the filing and locating for each department?
15. When papers leave the files, how are they kept track of?
16. Is there much misfiling?
17. What, in your opinion, are the chief causes of misfiling? Who besides the file clerk puts letters back in the files?
18. How are catalogues, folders, etc., handled?
19. What is the rule about filing? Is everything filed? If not, who decides what to file?
20. Classify all material filed, *e.g.*, letters, orders, quotations. State how each class is filed and where.
21. How are answers matched to the original correspondence? (Carbons pinned, clipped, or stapled to original; or filed in front of it, or behind it, or how?)
22. Is work sorted before filing?
23. Is the work of file clerks measured?
24. If not, get the number of pieces filed and taken out of the files over a period of a week. Multiply by the number of hours of all file clerks, and compute the average per hour. If possible, get a record of the time spent on each operation.
25. Is a signal system used for follow-up work in any department? If so, describe it.
26. How and when is transferring done? Are there any definite rules?
27. How do department heads like the present system? What are the chief complaints? Have clerks or department managers any suggestions for improvement?

Manufacturer	Name of System	Position of Tabs of Alphabetical Orders	Position of Tabs of Miscellaneous Papers	Highest Miscellaneous Papers	Position of Tabs of Individual Papers	Height of Individual Papers	Open Space for Special Markings	Type of End-View	Range of Tab-Numbers
A. J. Ashbury Book- ness Equipment Corporation	Streamline	2nd and 4th position of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	2nd and 3rd of 1/8 cut tabs	9 1/2"	4 1/2	Double or Single Tabs	25-50-100-etc.
A. J. Ashbury Book- ness Equipment Corporation	Standard	Last 2 of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	2nd and 3rd of 1/8 cut tabs and 5th of 1/8 cut tabs	9 1/2"	4 1/2	Multiple Tabs	25-50-100-250-500-etc.
A. J. Ashbury Book- ness Equipment Corporation	Newsday	Last 2 of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	2nd and 3rd of 1/8 cut tabs and 5th of 1/8 cut tabs	9 1/2"	4 1/2	Double or Single Tabs	25-50-100-250-500-etc.
Ashbury File & Index Company	Puritan Hand	Last 2 of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	2nd and 3rd of 1/8 cut tabs and 5th of 1/8 cut tabs	9 1/2"	Four and one-half inches at left	Double Tabs	25-50-100-250-etc.
Ashbury File & Index Company	Marine	Last 2 of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	2nd and 3rd of 1/8 cut tabs and 5th of 1/8 cut tabs	9 1/2"	4 1/2 inches at left	Multiple Tabs	25-50-100-250-500-etc.
American Business Supplies Company	Practical	First and second of 1/8 cut tabs	First position of 1/8 cut tabs	10	2nd and 4th of 1/8 cut tabs	10	Four and a half inches at right	Single Tabs	25-50-75-etc.
Art Metal Construc- tion Company	Twain Index	Third and fourth 1/8 cut tabs	Third position of 1/8 cut tabs	9 1/2"	1st and 2nd of 1/8 cut tabs	9 1/2"	Two and a half inches at right	Single Tabs	25-50-100-150-etc.
Art Metal Construc- tion Company	Amco Visible Index	Second and third of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	All positions, 1/7, 1/8 and 1/3 cut widths	9 1/2"	None	Single Tabs	25-50-100-150-etc.
Automatic File Index Co.	Standard Index	First and second of 1/7 cut tabs	Third position of 1/7 cut tabs	9 1/2"	5th, 6th and 7th of 1/7 cut tabs	9 1/2"	Two and a half inches at right	Single Tabs	25-50-100-etc.
Automatic File Index Co.	Automatic Index	First 2 of 1/7 cut tabs	First position of 1/8 cut tabs	9 1/2"	2nd of 1/8 cut tabs and 5th of 1/8 cut tabs and 7th of 1/8 cut tabs	9 1/2"	9 1/2 inches at right	Single Tabs	25-50-100-etc.
C. L. Bentley & Company	Facile	Second and third of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	4th and 5th of 1/8 cut tabs	9 1/2"	None	Double Tabs	25-50-75-etc.
Brown-Morse Com- pany	Service Index	First 2 of 1/8 cut tabs	First 2 of 1/8 cut tabs	9 1/2"	2nd of 1/8 cut tabs and 3rd of 1/8 cut tabs	9 1/2"	Six and a half inches at right	Multiple Tabs	25-50-100-etc.
The Dushway Com- pany	File Expanding Sys- tem	First 2 of 1/8 cut tabs	First 2 of 1/8 cut tabs	9 1/2"	2nd and 4th of 1/8 cut tabs	9 1/2"	Two and a half inches at right	Multiple Tabs	25-50-75-100-150-etc.
Filing Equipment Bureau (F. E. B.)	See-Line	First position of 1/8 cut tabs	Second position of 1/8 cut tabs	10	4th and 6th of 1/8 cut tabs	10	Two and a half inches at right	Single Tabs	25-50-100-150-etc.
The General Fil- ing Company	Stimphed	First 2 of 1/7 cut tabs	Third position of 1/7 cut tabs	10	4th and 5th of 1/7 cut tabs and 7th of 1/7 cut tabs	10	None	Double Tabs	25-50-75-etc.
The General Fil- ing Company	Super System	First of 1/8 cut tabs	Third of 1/8 cut tabs	10	4th and 5th of 1/8 cut tabs	9 1/2"	First of 1/8 cut for special cases and common systems guides and 1/8 cut for their subdivisions	Double and Single	25-50-75-etc.
Globe Wire- rope Company	Safe-Guard	First 2 of 1/7 cut tabs	First 2 of 1/7 cut tabs	9 1/2"	4th and 5th of 1/8 cut tabs	9 1/2"	Two inches in center	Single Tabs	25-50-100-150-etc.
Imperial Methods Company	Rapid System	First 2 of 1/8 cut tabs	2nd position of 1/8 cut tabs	9 1/2"	4th and 5th of 1/8 cut tabs	9 1/2"	None	Double Tabs	25-50-100-etc.
Maery Company	Clear Visible Index	First 2 of 1/8 cut tabs	Third position of 1/8 cut tabs	10	4th and 5th of 1/8 cut tabs	10	None	Single Tabs	25-50-100-150-etc.
Maery Company	Purposive Index	First 2 of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	1/8 cut tabs to right of center	9 1/2"	None	Single Tabs	25-50-100-150-etc.
Oxford Filing Supply Company	Speed-Index	First 2 of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	2nd and 3rd of 1/8 cut tabs and 5th of 1/8 cut tabs	9 1/2"	Four inches at right	Single Tabs	25-50-100-etc.
Remington Rand (Library Bureau)	Automatic & Alphanu- merical	First 2 of 1/7 cut tabs	Third position of 1/7 cut tabs	10	2nd and 4th of 1/8 cut tabs	10	Two and a half inches at right	Single Tabs	25-50-100-150-etc.
Remington Rand	Triple Check Acto.	First 2 of 1/7 cut tabs	Third position of 1/7 cut tabs	10	2nd and 4th of 1/8 cut tabs	10	Two and a half inches at right	Single Tabs	25-50-100-150-etc.
Remington Rand	Varifold	First 2 of 1/7 cut tabs	Third position of 1/7 cut tabs	10	2nd and 4th of 1/8 cut tabs	10	Two and a half inches at right	Single Tabs	25-50-100-150-etc.
Shaw-Walker Com- pany	Ideal	First 2 of 1/8 cut tabs	Third position of 1/8 cut tabs	10	4th and 5th of 1/8 cut tabs	10	None	Multiple Tabs	25-50-75-etc.
Shaw-Walker Com- pany	Super-Ideal	First 2 of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	2nd of 1/8 cut tabs and 3rd of 1/8 cut tabs	9 1/2"	Six and a half inches at right	Multiple Tabs	25-50-75-etc.
Speed Manufac- turing Company	Tall (Eye) View	1st and 2nd of 1/8 cut tabs	2nd position of 1/8 cut tabs	10	4th and 5th of 1/8 cut tabs	10	None	Single Tabs	25-50-75-100-etc.
The Vetter Safe & Equipment Com- pany, Inc.	Visible Name	1st 2 of 1/7 cut tabs	Last position of 1/7 cut tabs	9 1/2"	1/8 cut tabs to right of center	9 1/2"	1 1/2 (1/7 cut three positions)	Single Tabs	25-50-75-100-etc.
Whelan Cabinet Company	Alpha-Merical	First 2 of 1/7 cut tabs	Third position of 1/7 cut tabs	10	4th and 5th of 1/7 cut tabs and 7th of 1/7 cut tabs	10	None	Double Tabs	25-50-75-etc.
Whelan Cabinet Company	Adoption	First 2 of 1/8 cut tabs	First 2 of 1/8 cut tabs	9 1/2"	2nd of 1/8 cut tabs and 3rd of 1/8 cut tabs	9 1/2"	Six and a half inches at right	Double Tabs	25-50-75-etc.
Wagoner Com- pany	Duplex	First 2 of 1/8 cut tabs	Third position of 1/8 cut tabs	10	4th and 5th of 1/8 cut tabs	10	None	Double Tabs	25-50-100-150-etc.
Wals Mfg. Company	Clear Index No. 1	First 2 of 1/7 cut tabs	Third position of 1/7 cut tabs	10	4th and 5th of 1/7 cut tabs and 7th of 1/7 cut tabs	10	None	Double Tabs	25-50-75-etc.
Wals Mfg. Company	Clear Index No. 2	First 2 of 1/7 cut tabs	Third position of 1/7 cut tabs	10	4th and 5th of 1/7 cut tabs	10	Fourth 1/7	Double Tabs	25-50-75-etc.
Young and Behl Mfg. Co.	Devot Name	Second and third of 1/8 cut tabs	First position of 1/8 cut tabs	9 1/2"	4th and 5th of 1/8 cut tabs	9 1/2"	None	Double Tabs	25-50-100-etc.

* Also furnish 9 1/2 inch width guides of same body height. ** Also furnish 9 1/2 and 10 inch width guides of same body height. † Also enter columns for subdivisions of each letter on all 250-etc. tabs as below.

Bro 17 AND Bro 16 BER 7 OR DV-DZ-30 BLOOMING BLOOMING 42 OR 100-150-200-250

FIG. 33. The physical characteristics of 34 correspondence filing systems.

Another point to be borne in mind is that sometimes the main difference between different makes of filing indexes is simply the positions of the tabs on the guides and folders. An examination of the chart of filing systems in Fig. 33 will quickly demonstrate this point.

In any case, a filing system set up by an expert will be more suited to the company's requirements than one set up by a novice. The saving in time required to operate an excellent filing system more than offsets the initial cost of setting it up. More is needed than simply buying a set of guides, folders, and cabinets from a manufacturer of filing equipment.

Written standard-practice instructions should also be prepared for the operation of the filing system, just as for every other kind of office work. These instructions should cover every step in the operation of the files, including getting material to the file, classifying it, filing it, finding it, giving it out, getting it back again, transferring, central tickler file, and so on.

CENTRAL TICKLER FILE

This is merely a series of guides for the months of the year and folders for the days of the month. Into this file in chronological order are placed follow-up copies of letters, memorandums of appointments, due dates, or other items which should come up automatically on the day set. This file is searched daily, the first routine operation in the morning being the delivery to the proper persons of the material indicated by the file. Some offices do this the day before, so that the next day's work can be planned to include the tickler items. Some executives may wish to keep their own ticklers; but the central tickler file, run as a routine operation, is more reliable. All kinds of memorandums wanted at a future date can be placed in this file, and the more general its use throughout the office, the more reliable it will prove. Private matters may be placed in sealed envelopes bearing the notation, "Bring up on . . . (date)" and signed by the person who is to receive it.

FILING EQUIPMENT

As previously observed, filing is in effect the same as record keeping. By filing a piece of paper which may contain information of future value, we avoid the necessity of either briefing or copying it at length; furthermore, many of these documents would lose their chief value as legal evidence if they were copied and the originals destroyed; for

this reason the originals are always preserved.² But they must be stored, and this storage must be arranged in a systematic manner so that they can at once be located when desired.

Vertical filing is a subject of such great and peculiar importance that its full value is hardly realized by the younger generation of office workers. Our grandfathers did most of their filing in pigeonholes, in tin boxes, in pasteboard boxes, and in desk drawers; in those days a systematic businessman was a rarity. The introduction of vertical filing marked the utilization of a great efficiency principle, namely, that there is almost always more room for growth in a vertical than in a horizontal direction. When we use the surface only, a much greater area must be covered than when we use the third dimension, height.

REQUIREMENTS OF GOOD FILING EQUIPMENT

1. *Adequate for the Purpose.* The first requirement of any filing equipment is that it should be fully adequate for the purpose for which it is to be used; that is, it should be the right kind and there should be enough of it. Although this necessity is so obvious as to seem almost a truism, it is exceedingly common to find filing equipment that falls far short of adequacy. Overcrowded file drawers—a common sight—increase the labor of filing four or five times, and the expense, too. If it takes a file clerk four times as long to file and find papers because she has to push each folder into place by main force, she can do only one-fourth the work she should do. Therefore, four clerks may have to be hired to do the work that one file clerk could do if she had adequate equipment. And don't forget that it does not take many pay checks of unneeded clerks to pay for the equipment required to do the work of the clerks that are needed.

2. *Simple to Use.* The system of filing should be simple to use, with adequate indexes, guides, and folders.

3. *Require Little Energy.* The use of equipment should not entail laborious work; that is, no more energy should have to be expended upon it than is absolutely necessary. The use of plain wooden boxes on shelves is still considered economical in some offices; others buy the cheaper transfer cases rather than spend money on a cabinet that works smoothly and easily.

4. *Provide for Transferring.* Sufficient equipment of the proper

² See Microfilming, Chap. XIII. See also NOMA Handbook for Office Managers, pp. 612-613.

sort for transfer should be provided, so as to make it easy to refer to transferred material.

5. *Of Good Quality.* The equipment should be of a quality that will last and give perfect service for a period in excess of 20 years, with ordinary constant use. Most modern filing equipment satisfies this condition.

6. *Economical of Space.* The equipment should be economical in its use of space.

OPEN-SHELF FILING

An interesting development in filing, practiced by life insurance companies and adopted to a limited extent by others, is the use of open shelves instead of cabinets for their central files. Since the policy number is the key to the insurance company's records, the files are on a numerical basis, with one folder for each policy number.

The shelves are open during the day but may be protected from dust at night by a zipperlike cover. When the cover is removed, the effect is just as though every file drawer in an entire battery of file cabinets had been opened up for ready reference. The file clerks do not need to pull open and push shut loaded file drawers, but simply walk along the rows of shelving and pick out any desired folders. The cost of steel shelving has been estimated as about half the cost of equivalent steel filing cabinets.

Of course, open-shelf filing requires more floor space than do cabinets, since there must be an aisle for each row of shelving. On the other hand, open shelving can be carried up higher than filing cabinets. One company carries its open shelves up to 9 feet.

METHODS OF TRANSFERRING CORRESPONDENCE

As the file cabinets fill up with correspondence, some provision must be made for additional filing space. This may be handled in two ways—by purchasing additional filing cabinets, or by clearing the files through the operation called “transferring.” In addition to the expense of buying new cabinets, another objection is that unless the files are

An office manager should have a routine which operates to clear the files as well as to fill them.—Willard E. Freeland.

A good method of handling doubtful cases is to have a "suspense" file, which is cleared out weekly. Into this file go all letters which have only a transient value or regarding which there is some doubt as to whether or not they have any value. It is a startling fact that more than half of the papers usually filed in an office are never referred to.

cleared regularly and with reasonable frequency, the file clerks are handling more and more dead matter in getting at the current items, causing unnecessary delays.

Transferring is simply taking inactive correspondence out of the current files and storing it where it is accessible, if reference should be necessary. Removing the inactive correspondence leaves the space in the cabinets available for filing. The active correspondence is called the "current" files; the material that has been transferred is called the "transfer" files.

It is desirable to establish two policies:

1. How long is it necessary to keep the correspondence?
2. How long should it be kept in the active files?

The answer to the first question will depend upon the length of its probable activity and the Statute of Limitations; the answer to the second question will depend upon its period of greatest activity.

There are two plans for transferring files: (1) the periodic and (2) the continuous.

The *periodic plan* consists of transferring material in the filing folders from the "live" to the "dead" at regular periods, say annually or semiannually, though the date of this transfer can be set for any time. Some firms place it at a date just before the opening of a new season, if their business is subject to great seasonal fluctuations. In the operation, the folders are transferred just as they stand, but the guides are allowed to remain. In some cases, where there is sufficient equipment, the two bottom drawers are used for the transferred material, and the two top drawers for the active files.

The *continuous plan* provides that a definite time be set—say, one year—in which papers are permitted to stay in the active file. The date of the first letter placed in a folder is then put on the folder label, and the file clerk is allowed a period of grace—perhaps from three to six months—to make the transfer. From time to time the clerk transfers all folders in the file on which the date marked is for the maximum period. The contents are examined, all letters within the minimum

period are returned to the active file in a new folder, and the pieces in the old folder are filed. In files where there is much correspondence relating to some particular job, the open and completed method of transfer can be used; that is, all completed jobs are transferred on completion, and all open jobs allowed to remain in the files until they are completed.

With the hope of reducing the space and work required for the maintenance of general files, the following rules have been adopted:

1. No circular letters or advertising literature will be sent to the general files.

2. The dictator's copy of the inter-office memorandums, except memorandums from branch offices, will be the only copy which will be filed in the general file, and then only when in the opinion of the dictator there is a possibility of the memorandum having a future reference value. This means that the person receiving inter-office memorandums, except from branch offices, will in no case send such memorandums to the general files.

3. Persons receiving correspondence from or sending correspondence to branch offices will send to the general files only that correspondence which, in such person's opinion, may have a future reference value.

4. The general file clerk is instructed to destroy all memorandums, correspondence or other literature received for filing in violation of any of the preceding paragraphs.

5. Each executive receives and ordinarily files a considerable amount of material which has no future value in the files, but as a matter of routine and habit often goes into the files. Routine acknowledgment of payment and "Thank you" letters of various kinds are examples. These can just as well be destroyed when received. Judgment must be used and in doubtful cases the material should be filed, but by taking thought each executive can safely reduce to some extent the amount of material sent to the file.

FIG. 34. Simply issuing these instructions resulted in a direct reduction of 25 per cent in the quantity of material filed in one office.

If a folder becomes crowded before the transfer period, it should not be transferred, but the contents should be split evenly into two or more folders, as required.

DESTROYING OLD RECORDS AND CORRESPONDENCE

The only object in keeping correspondence or other material any considerable length of time after it has been transferred is to have available letters or other records which may be called for or needed as evidence in law suits or for inspection by government agencies. It is

evident that some letters and papers, from their very nature, are not of sufficient importance to be kept. They may, therefore, be destroyed at any time. The most effective time to destroy unimportant papers

HOW A RECORDS CENTER SAVES MONEY

Contents of file cabinet in office

6 square feet of space

Transferred to records center

Occupies 3/10 as much floor space

17 1/2 square feet of space holds contents of 10 file cabinets.

<p>1 file cabinet @ \$50.00 (Amortized 10 years).. \$5.00</p> <p>6 sq. ft. of space @ \$2.50 per sq. ft... 15.00</p> <p>Overhead and maintenance for 6 sq. ft. @ \$1.50 per sq. ft. 9.00</p> <p style="text-align: center;">TOTAL COST \$29.00 IN OFFICE SPACE</p>	<p>1/10 steel stack section @ \$32.00 = \$3.20 (Amortized 10 years)... \$0.32</p> <p>6 cardboard cartons @ \$0.15 = \$0.90 (Amortized 10 years)..... \$0.09</p> <p>1/10 of 17.5 sq. ft. of space @ \$0.50 per sq. ft..... \$0.87</p> <p>Overhead and maintenance for 1/10 of 17.5 sq. ft. @ \$0.50 per sq. ft..... \$0.87</p> <p style="text-align: center;">TOTAL COST \$2.15 IN RECORDS CENTER</p>
--	--

SAVED, \$26.85 YEARLY
Every time the contents of a file cabinet are transferred to a records center

(From Hoover Commission Report)

is before they are filed; such destruction settles the point once and for all. If one hesitates to adopt such a drastic method, there is no reason why a date for "killing" cannot be marked on the papers before filing.

Although it is unprofitable to retain old records which have no fur-

ther value, few managers have the courage to destroy them, as they believe there may be possibly a few very valuable papers hidden among the obsolete ones. This fear may be well founded, for executives often do not know what and where the valuable ones are, and they dread the task of searching the haystack to find the needle.

This doubtful and vexatious question or condition may be permanently disposed of by standardizing the policies in connection with it. Certain pieces of the material in the files should be kept indefinitely. It should be positively determined what kind of material this is. Certain other kinds should be kept for periods of, say 5 or 10 years, and the remainder can be destroyed almost any time after the expiration of 1 year. What these divisions will be must of course be decided by each individual company according to its needs and considering government regulations, but the determination should be carefully made, the material minutely and accurately defined, and the standard adopted rigidly maintained.³

CONTROLLING THE WORK OF THE FILE DEPARTMENT

The office manager should require regular reports from the file department as to the number of pieces received for filing and the number of requests for material to be withdrawn from the files; this record is to be kept daily and reported weekly. It requires little labor and furnishes a good index to many features of office management besides the work of the file department itself.

A regular routine inspection plan should also be put in operation. It cannot be done by merely glancing at a file drawer now and then, nor is it necessary to make a complete examination of the entire filing section. The inspection should consist of a complete study of a small section of the work of each filing clerk selected at random. It should cover the accuracy of the filing, the thoroughness of the cross indexing—where that is necessary—the neatness of the folders, and the correct position of folders and guides. The preparatory work, such as indexing, should also be checked by holding back for examination a section

³ Of the many available manuals on policies and schedules for record destruction one of the most comprehensive is that published by the Chicago Bureau of Filing and Indexing. See also *NOMA Forum*, Vol. XXI, No. 12, pp. 18-25. Study the Hoover Commission Task Force Report on *Records Management*, published 1949 by the Superintendent of Documents, Washington, D.C. Professional assistance is available from the National Records Council, 100 Washington Square East, New York City 3.

of the work before it is filed. Attention to these points will give the office manager an effective control of the filing work.

OTHER USES FOR FILING CABINETS

The most frequent use for filing cabinets is naturally the keeping of correspondence, but there are many other things which can be systematically filed in them to advantage.

Invoices, for example, are very easily kept in order by the use of a special cabinet, which can be had as regular stock from any maker of filing equipment. These cabinets are designed to fit the standard invoice form, which is about $8\frac{1}{2}$ inches wide by 7, 11, or 14 inches long.

Special check files are also made for banks and other large users of checks; cabinets are also made for ledger sheets.

Catalogues are readily stored in filing cabinets, though there is still unfortunately no standard size of catalogue. Some concerns use book-cases. Others use a special cabinet with shelves and partitions adjustable to the various sizes of catalogues.

The use of a filing cabinet for the storage of stationery is as yet unusual, but where there are large numbers of forms of $8\frac{1}{2}$ by 11 inches or smaller, considerable economy in space may be secured by such use. For such storage, folders are not necessary, although pocket expansion folders are helpful; heavy pressboard guides should be provided, and the follow block should be compressed.

VISIBLE INDEXING OR BLIND INDEXING?

Visible indexing is used with both cards and loose leaves, in trays, panels, drawers, and binders. It is accomplished by fastening cards or sheets to a holder in such a way that the edge of each card or sheet projects the width of one line beyond the edge of the next one, as shown in Figs. 35 and 36. This makes it possible to read the index line on every card or sheet without removing it from the holder. As one manufacturer advertises: "Look at the record, not for it."

With so-called "blind" or nonvisible indexing, the card records are filed behind guide cards, one guide to so many cards. No card can be definitely located without searching in its approximate location as indicated by the guide cards. The more guide cards, the faster the locating. Relatively few nonvisible card records have enough guide cards to facilitate reasonably rapid handling of the work; one guide to every 10 or 15 cards is about right.

The main advantage of visible indexing over blind indexing is in

locating the record, not in making entries. In other words, when no entry is to be made, but simply reference to a single line of information, the visible index is a real timesaver. There are other factors, however, which should be considered. For instance, the overlapping of cards or sheets requires more space than the same number of cards properly guided in a drawer. Visible equipment costs more than non-

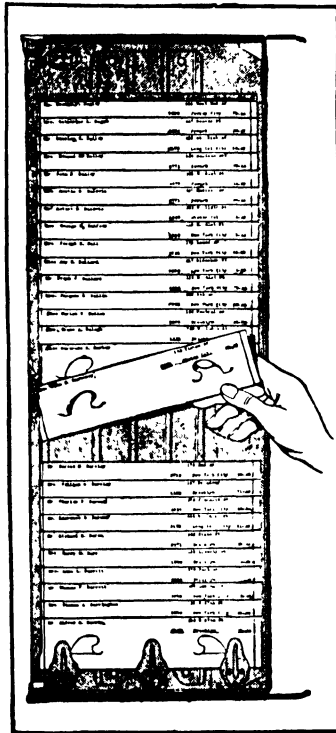


FIG. 35. Index Visible rack and cards.

visible, but an analysis may show that the savings in time and labor more than offset the additional cost.

All card work consists of the following cycle of unit operations:

1. *Locate card.*
2. *Read information.*
 - a. In some kinds of work it is necessary only to read the information.
 - b. In other kinds, it is necessary to first read and then withdraw card.

3. *Withdraw card or tray of visible records.*

4. *Make notation on card*—sometimes omitted as stated in 2a. In some kinds of visible systems it is not necessary to withdraw the card in order to make a notation.

5. *Return card to tray.*

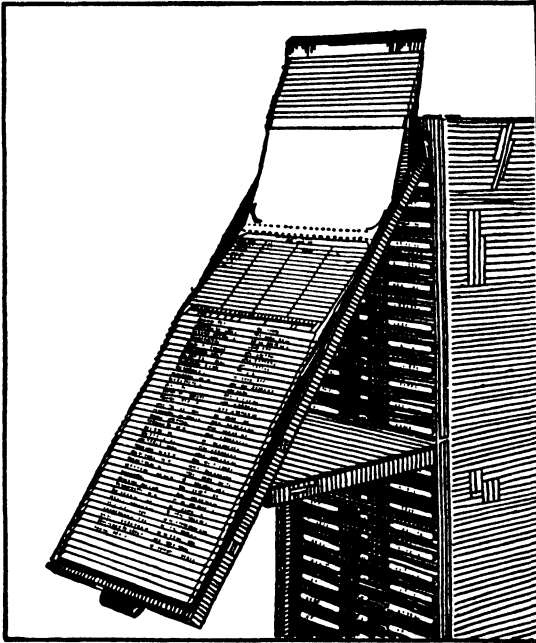


FIG. 36. Visible index cabinet, tray, and cards.

Time studies have shown that it is possible to locate cards (operation one) by the visible system in about one-fourth the time necessary for the nonvisible, but this factor also depends upon the space covered by the complete number of cards operated upon by one person.

It requires just as much time to make a notation on a visible record card (and sometimes longer on account of its awkward position for writing) as it does on the nonvisible-system card.

The solution of the problem, therefore, depends upon not the relative time required for one unit, but that required for all of the units in the operation, and this in turn depends upon the number of cards that can be handled by one person, or the activity of the cards. For example, if

the list contains 50,000 cards, on which there are but 500 entries to be made in one day, and 500 entries constitute a day's work for one person, it is obvious that these cards should be placed in such a position that they could be handled by one person. If, however, there were 1,000 entries to be made in a day, and conditions remained the same, the list would have to be divided between two persons. But if, on account of the space to be covered, one person could not normally handle 500 entries on the visible system, no matter how quickly the names could be located when the clerk was on the spot, the visible system would require more labor.

Therefore, in making his decision regarding which type of system to employ, the office manager must get the following facts:

1. How many entries are to be made in a day?
2. How many cards or names in the entire list?
3. How much space will be required with each system?
4. How many names will be easily accessible to one person?
5. What is the complete operation time per entry with each system?
6. What is the cost of equipment in each system?
7. What is the cost of supplies in each system?
8. What is the cost of labor with each system?

Armed with this information he can easily make his decision, independent of the persuasive arguments of the salesmen for either device, and his decision will be correct—if he has correctly gathered his facts.

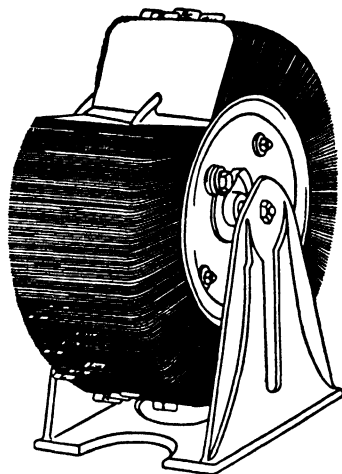


FIG. 37. This desk model of a wheel-like index holds 2,400 3- by 5-inch cards for instant reference.

QUESTIONS FOR DISCUSSION

1. Name five principles that govern successful record keeping and comment on each.
2. Why should records be capable of verification?
3. State the four chief purposes of records and comment on each.
4. "Records will not of themselves promote business." Explain.

5. Why are records of doubtful value sometimes adopted?
6. Why should records be designed to order and not copied from other offices?
7. What are the four essential points in any system? Explain each briefly.
8. Distinguish between subject classification and chronological classification. Which is preferable? Why?
9. Name five modern tendencies in record keeping and comment on each briefly.
10. List in proper sequence the eight rules for analyzing record keeping.
11. Name several kinds of written records and comment on each kind.
12. Comment on personnel records.
13. "Filing is a form of record keeping." Explain.
14. What are the three requirements of filing?
15. Why is it vitally important to have standard filing methods?
16. Are central files advisable? If so, why? If not, why not?
17. What are the advantages of central filing? Can you think of any disadvantages?
18. In setting up central filing, what records should be left in certain departments?
19. Who would do the filing in departmental files? Explain.
20. How can misfiling be prevented in departmental files?
21. How can misfiling be prevented or minimized in a central file?
22. What is the first step in the organization of a central filing department? Why is this step necessary? How may it be done?
23. Comment fully on desk-drawer files. Should they be allowed? Why or why not?
24. Is one kind of filing system better than any other? Comment.
25. What is sometimes the main difference between two filing systems?
26. How would you analyze an existing filing system?
27. What is the purpose of filing equipment?
28. List six requirements of good filing equipment.
29. What may be kept in filing cabinets besides correspondence? Do you think such use is wise and economical? Why or why not?
30. What do you think about the substitution of open shelves for filing cabinets, as practiced by some insurance companies? by other offices?

31. What two policies determine how long correspondence should be kept?
32. What are the chief disadvantages of crowded filing cabinets?
33. Name and describe in detail two methods of transferring material in filing cabinets.
34. How would a suspense file operate?
35. Comment on the destruction of old records.
36. What is the purpose of the office manager's control of the filing department?
37. How may the office manager control the work of the filing department?
38. How may the work of the filing department be inspected?
39. Compare fully the use of visible systems of indexing with non-visible equipment.
40. When is the visible system superior to the nonvisible?
41. Explain the cycle of unit operations in making entries on card index records.

PROBLEM I

In the Bonner-Poole Company, a department store, there is a file in the credit department of correspondence with customers, and a file in the accounts payable department of correspondence with suppliers. Each buyer keeps a small file of his own correspondence. Besides these, the personnel director has a file of employees and applications.

Do you recommend a central file for this company? If so, why? If not, why not? Do you recommend one system for all files? Explain.

PROBLEM II

The Davis Brush Company keeps a visible index record of its dealings with 6,000 customers. From the invoices, two clerks record each order received, giving the amount in dollars, and classified by 14 commodities. This information is recorded on 5-by-8 cards, there being room on the card for a record, by months, of four years' business. The sales manager consults this record several times each week whenever a question arises about the amount of business the company gets from a particular customer. No other person in the office refers to it.

Is this a superfluous or useless record? Or is it not? If useless, should it be discarded? And if so, how would the sales manager get

the information he desires? If it is valuable, what procedure would you recommend to utilize it fully?

PROBLEM III

Norcross & Company, polish manufacturers, have a card list of their customers, by towns. There are 50,000 names in this record and entries are made on it at the rate of 3,000 a month. The entry requires 45 seconds to make on a card 3 by 5 inches in size. These cards are referred to ten or fifteen times a day by the sales manager, who usually comes into the department to see them, but sometimes requests they be brought to him.

Would you recommend a visible or nonvisible system here? Why? What are the advantages of a visible system? What are its disadvantages?

"Nothing happens in an office except to or by means of pieces of paper."—FRANK M. KNOX.

X

THE DESIGN AND CONTROL OF OFFICE FORMS

Forms are printed sheets of paper or cardboard used to collect and transmit information; that part of the information which is always the same is printed, multigraphed, or mimeographed in order to save the time and effort required to write it each time the form is used. Nearly every office routine centers around one or more printed forms, each of which has to be handled at least three times: someone has to put the information on the form; someone has to read and understand it after the information has been written down; and many times someone has to copy the information or part of it on still another form; then, after everybody has seen it who is going to, the form is filed, bound, or destroyed.

In view of these facts, it would seem obvious that careful attention given to the correct design, proper use, and effective control of forms would result in appreciable savings to any office. It is so easy, however, to copy someone else's forms and systems that in many offices, if indeed not in most, practically no scientific analysis and study has ever been made of the forms in use, and the result is an unnecessary waste of time, paper, effort, and money. When a firm is over ten years old and has had several different managers or clerks with varying ideas of "system," it is not at all unusual to find hundreds of forms in stock, some in continuous use, some in partial use, and many obsolete. In many companies a careful examination of these forms will reveal a condition approaching chaos with respect to size, shape, type style, use, and so on.

The addition or elimination of only one form may mean the addition or elimination of one or more clerks to handle that form. Office managers are constantly trying to keep within reasonable bounds the number of persons required to handle the office detail. The simplification of

In one office a certain record was carried on a sheet kept in a loose-leaf binder. The cost of keeping this record was \$7,000 a year. The shape and size of the form were all right, and the binder was a standard one. The record was easy to use and in fact had been so simplified that to make an entry took but a matter of seconds. It seemed as though nothing could be improved. A little further study, however, showed that the information contained on this form was being independently gathered in another department; the study also showed that this loose-leaf record was referred to so seldom that it could be eliminated altogether, thereby saving the \$7,000 a year.

forms and routines is one way. The principles of form design are simple and easy to apply; the control of forms includes their proper use as well as their supply; the subject will yield savings in direct proportion to the amount of scientific thought devoted to it.

THE PRINCIPLES OF FORM DESIGN

1. *Define the purpose of the form.* The purpose of the form must be carefully studied, in relation not only to the form itself, but also to the routine of which the form is a part. The general purpose of a form is to make clerical work easier than would be possible if a blank sheet of paper were used. There is no advantage in having a special form printed if a blank sheet of paper will serve the purpose equally well; where there is no advantage, it might be wise to eliminate the form entirely. A checking sheet in the form of a standard questionnaire will help to determine just to what extent the form accomplishes the purpose for which it was designed, and whether or not it does so in the best way. All the things the designer needs to know about any form should be included. The following list of questions is suggestive of what is needed in this respect; from it, the designer can make up his own list.

- a. What is the purpose of the form?
- b. If it has more than one purpose, which is the most important?
- c. Is the purpose justifiable?
- d. Will the purpose of the form be fully accomplished by its use?
- e. Is there another form, for the same, or a similar purpose, now in use elsewhere in the office?

A consideration of the first five questions will often cause the designer to abandon the making of the form altogether—a very desirable thing

in general, as most offices have too many. The next four questions have a bearing on the kind of paper to be used.

- f. What will be the general style of the form?
- g. How is it to be used? (See principle 2 below.)
- h. How is it to be preserved after making?
- i. How many copies are to be made and how are they to be made?

The following four questions will give the designer a general idea of the kind of form he is to make.

- j. What is the source of the information that is to be entered on the form?
- k. In what shape is this information received, and in what manner does it come?
- l. Is there a cheaper or more convenient method of getting the information?
- m. Is the information always complete?

A study of the manner in which the information to be written on the form is received will frequently suggest changes either in the form as

STUDYING FORMS NOW IN USE

1. In gathering forms for inspection, endeavor to get forms that have been filled out in the regular way. Look for unfilled spaces. These will usually indicate whether or not that particular information is at present used or desired.

2. Gather the forms by departments; often it will be found that two or three forms can be combined into one.

3. If any forms are obsolete, find out as nearly as possible their original use. It is often found that a good system was started and then for some unaccountable reason discontinued. Find out why the discarded systems are obsolete.

4. Trace the object of every form and see if it is thoroughly accomplishing that object. Perhaps you will find that the clerk is writing, hundreds of times a day, information that should have been printed on the blank.

5. If the forms are reports which are later filed in a book, endeavor as far as possible to standardize in size so as to have uniform binders. Better prices can usually be secured if binders are bought in quantities. Besides, there is much wasted motion in storing and getting at binders of all shapes and sizes.

6. Interview the users of all forms and see if they have any suggestions about improvements. Do not adopt any suggestions, however, without finding out what effect these changes will have on the rest of the work.

7. Study each blank carefully, with the idea of limiting the amount of writing as much as possible. Get all the writing bunched together. If possible, get numbers in the corner where they can be easily read.—W. H. Leffingwell.

HOW ARE COPIES USED?

Indicate the source and use of a separate sheet attached. List the operations through which each copy passes from maker to final recipient, under reporting such the following questions:

1. Who uses copy?
2. How is it used?
3. How often is it referred to?

68

ANALYSIS OF FORMS, DOCUMENTS OR RECORDS

Title _____ City _____ Sta. _____
 Made by _____ Name of firm _____
 Made by _____ Div. or branch _____
 Approved by _____ Date of study _____ Study No. _____

Write in order to show your findings. Give the title, nature and use of the form, the number of lines, lines of text, length, whether or not it is a form of record, its main function or use and so on.

DESCRIPTION OF FORM

General style of copy: _____
 Standard sheets _____ Size _____ Kind of paper _____
 Loose-leaf books _____ Size _____ Kind of paper _____
 Size of type: _____ Size _____
 Color of ink: _____ Kind of ink: _____
 Character of type: _____ Print line(s): _____
 Number and position of lines: _____
 Number of spaces: _____
 Number of lines: _____
 Number of columns: _____
 Number of rows: _____
 Number of pages: _____
 Number of sheets: _____
 Number of copies: _____
 Number of forms: _____
 Number of documents: _____
 Number of records: _____

69

Fig. 38. Pages 1 and 2 of the analysis-of-forms sheet.

originally conceived, or in the routine of providing the information; all these changes should be made before designing the form.

n. Can energy or time be saved by:

- (1) Making more than one copy at a time?
- (2) Eliminating entries?
- (3) Abbreviating entries?
- (4) Eliminating writing by using check marks?
- (5) Eliminating writing by using symbols?
- (6) Eliminating lines?
- (7) Proper sequence of information?
- (8) Will the size affect the ease of use?

o. What should be the size of the form? (See principle 5 below.)

p. What quality of paper should be used? (See principle 8 below.)

These questions will give the designer a fairly complete picture of what he wishes to accomplish. In asking the questions and interpreting the answers, it will be helpful to refer to the other principles of form design, which follow.

2. *Consider how the form is to be used.* The manner in which a form is to be used will affect the design of the form and the quality of the paper. A form which is to be used on a typewriter or on a bookkeeping, billing, or adding machine should be so designed that there will be a minimum number of starting places for the typist, for each new starting position on the form requires an extra operation in setting the machine, a needless effort that can be avoided by proper design. Furthermore, on all forms intended for typewriter use, care must be taken to inform the printer that typewriter spacing (6 lines to the inch) is desired between the type lines, so as to avoid the necessity of adjusting the machine every other line. Also, horizontal ruled lines should be omitted on such forms; they are quite unnecessary.

Forms should be easy to use, a statement that perhaps can be best explained by an actual example (Fig. 40). In this case it was necessary to copy the information from an application blank to a special form, and though the same items appeared on each form, they did not appear in the same order. The copyist was compelled to take one item perhaps from the top of the form, and the next from the bottom or the middle or elsewhere; that is, she had to search for it. When this form was redesigned so that the information appeared in the same order on each form, the copying labor was greatly reduced. This point applies to all forms where the entry is to be copied from another—the information should be arranged in logical and consecutive order. Ledger sheets in a post binder should not require writing too near the binding edge, as writing

there is difficult. Many other examples of forms that are not easy to use could be quoted.

3. *The design should be simple.* Forms should be simply designed and their use easy to learn. Information should be placed on the form where it will best serve its purpose. For example, if cards are filed alphabetically by name, the operation of finding them is to "finger" the top of the card. If the name is placed near the top, it is easy to find; but if it is placed, say, an inch below the top, the operation of finding will take several times as long.

Forms which bear consecutive numbers should have such numbers placed where they can be readily seen in handling the papers. Information that is most frequently used should be placed in such position on the form as to be most readily accessible.

Column heads should be clearly described, rather than marked with some cryptic, obscure symbol that may puzzle the user. Where it is necessary to include instructions for the use of the form, such instructions should be printed on the form itself, concisely but clearly.

A form should be so designed that it logically divides into three parts, not necessarily equal:

a. All identification matter, such as name and address, number, and so forth, should be somewhere near the top of the form, except in cases where the form is designed to be bound at the top. In such cases, the identification matter should be at the bottom. For ease in handling, the identification matter can in most cases be at either the top or the right-hand side of the form.

b. The data or entries which are to be copied on the form should constitute the second part, the body of the document.

c. Special instructions, such as shipping instructions on an order form, should be placed in the third, or remaining, part. The object of this division is to secure a general logical rule for all forms, so that one clerk can readily use the forms of another department than his own, should occasion to do so arise.

4. *Every form should have a name and number.* A name is more easily remembered than a number, and most clerks identify a form by name rather than number, when they have use for it. To avoid confusion, all such names should be standardized and printed on the form, and the number likewise, the latter for the records of the stockkeeper. The name should be short, yet clearly descriptive, and the numbering system should be carefully thought out. Most companies use a simple consecutive number from one up, the latest form having the highest number. This, though simple enough, cannot be regarded as order, for

ANALYSIS OF FORM

Name of form _____ No. _____

Position of person filling it out _____ Dept. _____

Who supplies the information from which the form is made out? _____

In what manner is the information furnished?

_____ word of mouth _____ customer's letter

_____ pencil memo. _____ another form, No. _____

_____ t. w. memo. which comes from _____ Dept.

To whom does the form go? _____

Who is the next person to handle it? _____

What does this next person do with it? _____

What other forms are affected? _____

What use is made of the information contained on the form? _____

If filed, how is it filed?

_____ bundles _____ vertical files

_____ flat files _____ loose leaf binders, kind? _____

Is form referred to after being filed? _____ How often? _____

When is it destroyed? _____

Name of person supplying this information? _____

Remarks: _____ Date _____

FIG. 41. A simple form-analysis sheet used by one company.

after the lapse of a few years there will be many discarded numbers because of obsolete forms, and the system will become confused. The decimal system of notation is to be preferred. The first two numbers in this system could be allotted to the various departments, allowing for 99 of them if necessary; following these two numbers, a decimal point can be placed and, following that, the number of the form. Thus, 10.44 would indicate Form 44 in department 10. With this system, if it is desired to collect all the forms of one department together, it is a simple matter. The first two numbers can be used to designate any other logical division instead of department, if it is so desired. Both name

Standard Form Specifications

Form No.

Date of These Specifications

Drawn by Name of form

Department using Section Auth by

Size of form Which cuts Sheets from

Checked by Grain long way? Short way?
 Stock generally runs with the grain, the long way? ()

Printed? Mimeographed? Ditto?

Examined by Ruled? (Pen Padded) Punched? Numbered? Perforated? Gunned?

One side? Two sides? Tumble? Folder? Pages?

Plates? If so, how many Wax Electro Zinc

Approved by If so, where are they? Condition?

	STOCK		INK		RULING (Color)	
	Grade	Size & Wt Base	Color	Color	Horizontal	Vertical
Revised by Orig						
on Dup						
Revised by Trip						
on Quad						
Revised by Quant						

PADDING: At top at left at right

If in sets, No. of sheets to set No. of sets to pad

If bound, use side stitch or middle stitch and specify cover stock.

If not in sets, No. of sheets to pad

PUNCHING: No. of holes distance from outside center to outside center in.

Size of holes inches diameter. Round Slotted

To fit Bender No.

(Punch punched end of sheet below, to show punching edge at top)

NUMBERING: From to in

(Describe exactly where numbering is to be placed)

PERFORATING: Describe exactly where perforating is to be placed

LINE SPACING: (If form is to be used in typewriter)

FIG. 42. The use of standard specifications prevents overlooking any important points and encourages uniform bidding by suppliers.

and number of the form should be printed in small type at the bottom of the sheet.

5. *Determine the size needed.* No form should be larger than is necessary to enable what is to be written on it to be entered in readable form, unless that size would be nonstandard, in which case it should be enlarged only enough to place it within the nearest standard size. As a rule there is no necessity for more than the following nine sizes:

3 by 5	7 by 8½	4 by 6
3½ by 8½	8½ by 14	5½ by 8½
4½ by 5½	3½ by 4¼	8½ by 11

The above sizes will cut with a minimum of waste from sheets of the following standard sizes, developed by the United Typothetae of America and the National Association of Employing Lithographers:

<i>Single</i>	<i>Double</i>
17 by 22 inches	22 by 34 inches
19 by 24 inches	24 by 38 inches
17 by 28 inches	28 by 34 inches

The following standard sizes for cards made from index bristol fit standard card-index equipment:

3 by 5
4 by 6
5 by 8

These sizes will cut from 20½- by 24¾-inch index bristols. Other sizes of index bristols are 22½ by 28½ inches, which provides for a 3½- by 5½-inch card for mailing or for enclosure in a No. 6¾ commercial envelope; and 25½ by 30½ inches, which also provides for a 3- by 5-inch index card and is therefore more economical to print where large quantities are required.

The office manager who desires to assist in the general reduction of the cost of paper used in office forms can advance this movement toward standardization by designing forms which will cut from sheets of the nine standard sizes listed above.

Loose-leaf binders are not universally standardized, but they are available in certain standard sizes and care should be taken to see that a size is specified and obtained which will accommodate the standard sizes of paper.

Note also the following points, which affect the size of the form:

a. Columns should be just wide enough to permit clearly writing in the largest number or description that will be entered. This width is determined by the number of digits or letters that will be written in the space, and not by the length of the column title, as is often done. For

In one office where the forms were examined, 75 different sizes were found; with the exception of two or three sizes which were required on home-office reports, this quantity was reduced to the nine standard sizes.

forms which are to be typewritten, the width of the columns may be readily determined by using a scale, which can be quickly made on a typewriter having the type that is to be used (pica or elite) as follows:

1 5 10 15 20 25 30 35 40 45
!.....!.....!.....!.....!.....!.....!.....!.....!.....!.....

If the column must be of sufficient width to take a figure such as 147.92, for instance, 6 spaces on the above scale will be needed, plus 2 for the dividing lines on each side—8 in all. After determining in this way the total width of all columns, the width of the form can be fixed.

b. Columns should be long enough to fit the average page of entries—no longer, since two or more sheets may be used whenever necessary. The amount of space required for descriptive matter and for the average number of entries will decide the length of the form.

c. The description at the top of the form should be brief and concise and should not waste space.

6. *Use one standard type face.* From the standpoint of good composition alone, it is not advisable to use more than one type face, or at the most two faces, on any one printed sheet. Where one type face is used there is a distinctive tone achieved that cannot be secured in any other way. Many firms which would not permit a low grade of composition on any of their advertising matter are careless on this point in regard to their forms. Some type faces are entirely unsuited for form use; some are hard to read; and some have hair lines which almost disappear under artificial light. It is advisable, therefore, to pick a type face which has been tested and found to answer all the requirements of good form design. For this purpose most expert designers of forms have practically agreed upon a Gothic face. There are many Gothics from which to choose, some very well adapted and some altogether unfit. Many office managers have standardized on the face illustrated in Fig. 43, choosing whatever sizes apply.

This face is especially recommended because it is open, round, clear, and easy to read; if it is necessary to blueprint or photostat it, good, clear copies will result. It can be read easily even in poor light, and it makes a neat-appearing form. However, if the space for column headings is limited, Alternate Gothic—a condensed face—should be used.

7. *Omit unnecessary ruled lines.* Forms intended for typewriter use should not have horizontal ruled lines. In designing the form, measure the distance from the top of the sheet to the first line of typing and indicate it so that when inserting the sheet in the typewriter it may be

rolled up to the first line without further adjustment. Subsequent typing lines should be spaced six to the inch, if single space, and three to the inch, if double. For forms to be written upon with pen or pencil, evenly spaced lines should be provided.

There are several methods of producing lines on a form, the oldest of which, and one which is still used to a large extent, is known as pen-ruled lines. These are the blue, green, red, and brown lines customarily

STANDARD TYPE FACE
Amerlean Type Founders Co., Gothic No. 545

Characters in complete fonts; all sizes:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z &
a b c d e f g h i j k l m n o p q r s t u v w x y z 1 2 3 4 5 6
7 8 9 0 \$? ! , . ' - ; :

<p>6 point</p> <p>THIS IS THE SMALLEST size that should be used on office forms—and very little at a time, capitals and lower case.</p>	<p>10 point</p> <p>THIS SIZE FOR TITLES—not to be used for column heads.</p>
<p>8 point</p> <p>USE THIS SIZE ALL CAPITALS normally for column headings provided there is suffi- cient room.</p>	<p>12 point</p> <p>THE LARGEST size recommend- ed for office forms</p>

FIG. 43. Standard type face for forms.

used on bookkeeping forms. They are produced by setting up a series of ruling pens on a machine, the lines running in one direction being ruled at the same time; if lines are required in two directions, the material must be run through the machine twice. It is usually more expensive to rule lines than to print them by other methods, especially on forms ordered in large quantities. If only a small quantity of forms is to be ordered, and the ruling is complicated, occasionally pen ruling will be cheaper. It is claimed, also, that the use of colored lines, which is possible in pen ruling, is an advantage, but the particular advantage claimed can also be secured by printing the lines of various thicknesses, or by doubling them.

Printed lines are usually obtained in four ways:

a. Cut rule. In the cut-rule process, the printer cuts and fits together small pieces of brass rule. It is expensive, because the brass is charged to the job, which also takes time to cut and fit. Another method, by Ludlow, using type metal, is quicker and not quite so costly.

b. Double printing. The double-printing process is much simpler and, on small runs, cheaper. The printer sets up brass rules for all lines which run in one direction, and then prints the quantity desired; he then sets up the rules for all lines which run in the opposite direction and puts the job through the press again. On small runs this double operation consumes less time than would be required to cut and join the rules, and much neater looking work is the result. On longer runs this method may prove expensive, since the job has to be run through the press twice, unless it can be run "work and turn," when only one press run is necessary.

c. Wax plate. The wax-plate process gives beautiful work, equal in quality to the best pen-ruled lines. It is expensive except on long runs or when the same form will be used over and over again without change. The high first cost includes making the wax plate.

d. Photolithography. For small runs of complicated forms, photolithography is perhaps the least expensive method. A good photolithographer can produce nice work at a reasonable cost.

8. *Select the best paper for the purpose.* Four factors enter into the selection of the paper to be used for each form: longevity, treatment, impress, and appearance.¹

a. Longevity concerns the length of time the paper must resist deterioration and depends upon the materials of which the paper is made. All wood pulp deteriorates rapidly; cotton stock is necessary for permanency, which varies according to the rag content of the paper. The following contents of paper are recommended by Mr. Barnum:

Time to be kept	Life and make-up of paper
1 to 3 years	Temporary—no rags necessary
5 to 15 years	Semipermanent—25 to 60 per cent rag content
20 years or over.....	Permanent—75 to 100 per cent rag necessary

Probably most office forms have no use after 3 years, so that as far as the requirement of longevity is concerned, a cheaper paper will suffice.

¹ For the technical information in this discussion, we are indebted to an authority on paper: Barnum, C. L., "Selecting Paper for Shop and Office Forms," *Management Engineering*, Vol. IV, No. 1.

Stock certificates, bonds, deeds, life-insurance policies, and other forms of similar character require paper having a permanent character. The life of most legal documents, or papers which may be used as evidence, is controlled by statutory limitation as to time, after which they become worthless. These, therefore, would fall most into the temporary class—a few of them perhaps into the semipermanent. Mr. Barnum believes

Number of years record is to be kept:	Number of times to be posted, handled or referred to:	Recommended quality of paper
over 25 years	{ any number { usual	extra 100% cotton and linen 100% cotton fiber
15 to 25 years	{ over 1000 { less than 1000	100% cotton fiber 75% cotton fiber
10 to 15 years	{ over 1500 { 750 to 1500 { 500 and less	100% cotton fiber 75% cotton fiber 50% cotton fiber
5 to 10 years	{ over 1800 { 1000 to 1800 { 500 to 1000 { 200 to 500	100% cotton fiber 75% cotton fiber 50% cotton fiber 25% cotton fiber
5 years and less	{ over 2000 { 1000 to 2000 { 500 to 1000 { 500 and less	100% cotton fiber 75% cotton fiber 50% cotton fiber 25% cotton fiber

FIG. 44. In using this table, remember that every time a page is turned or a card is picked up, it counts as one handling. Count them all. (Parsons Paper Company.)

that a 15 per cent saving in the paper cost can usually be made, while 30 per cent savings are frequent.

b. *Treatment* concerns the amount and severity of handling, folding, or exposure to which the paper will be subjected. It would be extravagant to provide the same quality of paper for an invoice form which receives a limited amount of handling as for the pages of a loose-leaf ledger which are thumbed over many times daily. Forms subjected to rough handling should be of a quality of paper to stand it. Paper submitted for forms requiring a great deal of folding should be tested for that purpose. Factory forms, which may be exposed to dirt, moisture, fumes, and so forth, and forms which are carried by delivery men or collectors, are frequently subjected to much abrasion and generally

rough usage. The strength of paper is governed by the quality and kind of materials used and the care taken in manufacture. Washing, bleaching, and beating of paper reduce its strength, as does the speed of the machine producing it.

Bond papers have a large ratio of strength to weight. Ledger papers are manufactured to supply a paper of even formation, smooth, uniform finish, and good wearing and erasing qualities. Generally speaking, leaving weight out of consideration, the ledger-paper grades parallel the bond-paper grades with reference to paper qualities; that is, a first-grade ledger paper, though heavier than a first-grade bond paper, is not much greater in strength. It should be remembered that, since paper is sold by the pound, ledger paper is more expensive per sheet than a bond paper of equal strength. Flat writing papers vary in grade from all-wood pulp to all-rag, but as the finish is beaten primarily to obtain uniform formation and a higher degree of capacity, the strength is low, with little or no folding qualities.

c. Impress is related to the method used to print or write on the paper. Bond, ledger, flat writing papers, and index bristols are developed particularly for pen and pencil writing, which requires nonabsorbency and erasive qualities. Generally speaking, bond papers should be used for pencil writing; ledger and flat writings, for pen writings; and bristols for either method of impress. There is a greater "tooth" to bond papers, particularly in the unglazed higher grades, that produces a sharp, clear-cut impression from a hard pencil.

For typewriting, a bond paper is preferable, the number of manifold copies required determining the weight. The lower grades of bonds will not stand much erasing, which injures the surface.

For mimeograph work, an unsized, absorbent paper should be used. If a bond paper is used, as when a form is to be produced for use with pen and ink, it will be necessary to "slip sheet," to avoid smudging and offsetting. Mimeograph papers are now available with a surface that will take pen and ink.

The use of papers developed especially for the gelatin and liquid duplicating processes will produce more satisfactory results in both appearance and quantity than will a paper not so suited.

All bonds, ledgers, writings, and bristols may be machine ruled, though care must be exercised with the unglazed, high-grade, loft-dried bonds, on account of the "cockle" to the sheet.

d. Appearance is the character or sense appeal in the paper itself and depends upon the finish, color, weight, and general quality of the paper used. Most of the specific finishes are obtained by sheet plating, which

consists of transferring a surface impression from a fabric to the paper, as in "linen-finished" or "lawn-finished" papers.

The factor of appearance is very largely a matter of personal choice; generally speaking, however, consideration should be given as to whether the appearance of the form is representative or suggestive of the company. A firm which endeavors to make a distinct appeal to wealthy or refined persons, would, for example, be correct in having certain of its forms printed on paper which it judged would have a sense appeal to those receiving them.

9. *Seldom use colors, if ever.* Colors should never be used on forms unless they are necessary for the purpose of a color system in which the various colors have a special significance. A form printed in red ink, for example, almost always means a credit memorandum. Some designers recommend white for an original copy, primrose for duplicate, pink for triplicate, canary, goldenrod, and so on, for other copies. In some cases, the forms which go to the shipping department will be all of one color, those to the sales department another, and so on. There is some question as to whether the advantage, if any, is worth what it costs.

10. *Specify precisely any punching, scoring, or perforating.* If punching of forms for post or ring binders is necessary, it can be done by the printer, who locks a special device in his press and punches each form as it is printed, doing a much better job than could be done afterward. Ring binders are not satisfactory for holding together a large quantity of sheets and are therefore not generally used for anything except miscellaneous data books. In any case, however, all binders should be standardized as far as possible so that the sheets in them will be interchangeable. A hand punch, set for standard punching, can be used when necessary. In specifying holes to be punched, the measurements should be given as from center to center of the holes. There are many sizes and shapes of holes; to save embarrassment, a sample sheet should be tested in the binders to be used, before the punching job is started. Some types of binders require a special form of punching which can be done only by the maker, who has special machinery for this purpose.

Scoring signifies printing or impressing a single line on the form, which creases the paper so that it will fold readily. File folders, for example, are scored. Be sure that the printer knows exactly what is desired; ask for a specimen for your approval.

Perforating may consist of either a row of small holes, as on a sheet of postage stamps, or a series of short dashes which cut partially through the paper. This type of work must be done by machinery, and most printers are equipped to do it. Give your printer exact specifications,

plainly marked. For form work, perforating of either type should be avoided, as the edge of the perforated side will be rough and make handling, jogging, and stacking difficult.

THE ROUTINE OF DESIGNING A FORM

The usual method of designing a form in the average office begins with the designer having a preliminary conversation on the subject with some persons interested. He then gets out a sheet of paper, a ruler, and pen or pencil, and starts work, first making an elaborate ruling of lines in vertical and horizontal directions and then lettering in the wording which is to appear on the form. In some cases this is larger than the space allowed for it, so he does some erasing and starts over again, and after getting the original sheet into a hopeless mess, discards it and prepares a new one. He will usually draw up half a dozen designs before he gets one which suits him. This is then sent to the printer, generally with but partial and insufficient instructions; when it comes back in proof form, the designer finds that he must make many changes in it. The process is exceedingly laborious and inefficient, the initial error being that the designer has not defined his purpose, analyzed his problem, or planned his work with sufficient care beforehand.

The first step in the routine of designing a form is to gather the information listed above under the first principle of form design.

The next step is to list, on a sheet of paper, each title, description, and column heading that he proposes to use, this list being divided into the three parts described in principle 3: (a) the identification material, (b) the main body of the form with entries, and (c) the special instructions. For example:

- | | |
|-------------------------|---------------------|
| 1. To be charged to: | 2. Part name: |
| Name | Size |
| Address | Catalogue number |
| Our order number | Quantity |
| Date | Price, and so forth |
| Entered | |
| Customer's order number | |

Listed in this manner, this information can be altered more readily than if written on a form; description can be shortened, words abbreviated, order changed, and so forth.

It will then be necessary to determine the general order in which the information is to appear on the finished form. This need only comprise a rough blocking out of the form with a pencil; free hand, no ruling;

FORM CONTROL

Under form control properly organized and maintained, no new forms may be printed or used until they have passed the scrutiny of some central supervising authority, such as the planning department, the office manager, or someone designated by him. The same is true of reprinting present forms.

In short, the purpose of form control is to make sure that no office routine is being changed without proper authority, that unnecessary work is not being added or kept in any routine, and that the forms in use serve a necessary and desirable part of the routines. Without form control there may be no end to the multiplicity of new forms and changes in present forms. At the same time it is not desirable to discourage employees from making suggestions as to changes or additions in forms, which may prove to be valuable.

The first step in establishing form control is to set up a central supervising authority and advise everyone concerned that hereafter all proposed new forms must be passed through this person or committee before they may be printed or used. That is, form control should cover not only the printing of a form, but its use also. The purchasing department is instructed not to order any new forms, nor reorder any present forms unless they bear the O.K. of the person supervising form control.

After making a thorough analysis of the form, and with the knowledge of the office routines which he should have, the supervisor is in a position to decide whether the proposed new form is necessary, or desirable, or useless. A brief explanation of his reasons may accompany his disapproval.

If he decides the new form is necessary or desirable, his next step is to study the form to determine its adaptability to the desired purpose, and whether it will be easy to use in its present shape. Sometimes a little re-designing is needed. Often information now obtained on another form may be included in the new one, thus eliminating one form.

After the supervisor is satisfied that the form carries all the desired information, and no more, the physical features must next be studied with respect to economy in printing and equipment.

After determining the size, grade, and weight of paper, the details of ruling, punching, binding, and tabbing must be settled. Pen ruling is costly and rarely essential; printed ruling will usually serve the same purpose.

Standard form specifications are then drawn up, the quantities to be ordered determined, the approvals of the office manager and department head secured, as evidenced by their initials, and a purchase requisition made out and sent to the purchasing department.

The stationery stock clerk will send the form control supervisor four copies of each form as soon as received from the printer. The form supervisor will then take the necessary steps to see that the new form is put into use as planned. This obviates the not uncommon experience of ordering new forms, which may be forgotten by the time they arrive from the printer and are never used, but lie on some shelf in the stock room, gathering dust.

only putting in sufficient lines or words to indicate the general order. In this work, consideration must of course be given to the other principles previously outlined, the logical order of the material, the ease and use of the form, and so forth.

It will now be possible to decide upon the standard size to be used for the form. A sheet of that size, or preferably larger, with the size bounded by pencil lines, can be taken to rule up the sample sheet. All ruling that is to appear on the form should first be made with a hard pencil, just as it is finally to appear. No lettering whatever should appear on this sample, it being only necessary to number the places where the lettering is to go, and then prepare a typewritten sheet with numbered descriptions and headings to correspond. The printer can set up his form from the typewritten copy much better than from the lettering, and considerable time will be saved. Before deciding the lettering that is to appear on the form, consideration should be given to the size of the space in which it is to appear. In narrow columns the words can often be abbreviated to fit the space. If they are written on a machine with elite type, it is a simple matter to judge the amount of space that the lettering will require, and the words which are too long can be abbreviated accordingly.

If a form is designed according to the principles and in the manner here described, the work will be better done and it will be unnecessary to draw more than one sketch (not including the rough, freehand, blocking-out sketch), the final one which is given to the printer. The resultant form will be economical of space, time, energy, and material.

PROVIDING FOR CHANGES

When a form has been in use for some time, a minor change of some sort will frequently be suggested, but there may be a large stock of the form on hand which the management is reluctant to discard in order to make the change at this time. Yet the suggestion, if it is a good one, should not be entirely lost to the management. Let a special folder be provided for proposed changes in forms, filing all suggestions in this folder, and placing a memorandum on the stock card for the item, reading, "When ordering a new supply, consult change-of-form folder."

Some offices keep a so-called "form book," in which is pasted a copy of each form in numerical order. As changes are suggested, they are noted on the copy of the form in the form book. Before a form is approved for reprinting, the form book is consulted. When the new supply of any form is received from the printer, a copy of the revised form

is immediately placed in the form book, tipped in over the old form. In one office, the date the new form is received is stamped on the copy in the book.

In another office, when the supply of any form is getting low, the stock clerk sends a copy of the form to the head of the department using it, attached to a "Change of Form Notice" like that shown in Fig. 45.

NOTICE OF CHANGE OF FORM

1. Mr. _____ Dept. _____ Date _____

2. Mr. Robinson, Office Manager Date _____

3. Mr. Joyce, Purchasing Agent Date _____
(Draw line through your name and drop in outgoing basket)

PLEASE NOTE—The stock of the attached form is getting low and we are about to reorder. Please examine and note any changes that may be desirable, returning with your recommendations or approval to the Office Manager. If form is O. K., please initial both form and this sheet.
Edwin M. Robinson, Office Manager.

FORM NO.	NAME OF FORM	PRESENT STOCK	STOCK LIMITS		DATE AND AMT. OF LAST ORDER
			LOW	HIGH	

Please answer these questions:

Is form still used? _____

Do you wish to make any change in size? _____

in design? _____

in color? _____

in stock limits? _____

Approved: _____

Department Head

Date: _____

DO NOT WRITE IN SPACE BELOW

Date O. M. received _____

Quantity to order _____

Changes if any: _____

Approved: _____

Office Manager

Date _____

FIG. 45. Before reordering a supply of any form, the stationery clerk fills in the information he has about the form and sends it to the department head for consideration.

This gives the department head an opportunity to make any suggestions he may have as to desired changes before the form is reprinted.

QUANTITY TO BE ORDERED AT ONE TIME

The quantity of forms to be ordered is rarely standardized. Many hundreds of thousands of dollars' worth of obsolete forms are destroyed annually. Much of this waste could be avoided if, before ordering, the requirements were analyzed by the office manager.

With any new form, it will be found profitable to proceed slowly. As a rule, no more than a month's supply should be ordered of a *new* form, unless it takes several weeks to produce. In this case the time required for delivery should be added to the month in determining the amount to order.

For an established or regular form, on which the monthly consumption is known, there should be a standard rule based upon some policy similar to those mentioned below.

Some offices order a year's supply on all forms, on the theory that when bought in manufacturing quantities, the cost per sheet will be lower than when bought in small quantities. This is certainly true in some cases, but frequently a manufacturing quantity can be had with one-half or one-quarter of a year's supply; the difference on larger quantities is not appreciable.

Other offices have a quarterly supply rule on the theory that the investment is small and that it is unwise to tie up capital in forms. The theory fails where, on some forms, the three months' supply is not sufficient to constitute a manufacturing quantity.

Still others hold to a middle policy, and order for six months, thus having a small investment, with more forms that reach a manufacturing quantity.

A better plan than any of the above would be to standardize upon the quantity to be ordered in each case, this standardization being based upon the following considerations:

1. Quantity used
2. Quantity required to make a manufacturing order
3. Amount of capital invested
4. Saving to be made if ordered in quantities
5. Possibility of changes in the form

For example, suppose the manufacturing quantity is 1,000; any form of which less than 500 will be used in a quarter should be ordered in lots of 1,000, provided the saving to be made will exceed 6 per cent interest on the capital invested, and provided the use of the form is established procedure and no changes are likely to take place in it. A set of such rules governing the different conditions on forms of various kinds could easily be prepared, and the amount to order could then be written on the stock record card. Thereafter the ordering would be automatically handled, accompanied by all the advantages of the careful thought given to the standards originally set.

STANDARDIZING THE PACKING

The printer delivers forms packed in small bundles for convenience in use, usually 500 or 1,000 to the package. This service of the printer is not always taken advantage of to the fullest extent. If the printer were instructed to wrap one month's supply in each package, and if but

one package were opened at a time, it would be very easy to protect the remainder of the stock from dust and deterioration and keep the supply room looking neat all the time. Even if a month's supply is only 100 sheets, which means five times as much wrapping as the printer is accustomed to doing, he will charge but a small amount for the work, and it will be well worth the charge. The quantity in the package should be marked on each package and also on the stock cards.

DISPOSING OF OBSOLETE FORMS

A form no longer used should be disposed of. Before disposing of any form as dead, it is necessary to obtain from the head of the department using that form either authority to kill the form or a statement that it is dead. This statement should be in writing, and if possible, on a copy of the form itself, with the word "dead," "junk," or "killed," followed by the initials of the department head and the date.

As soon as the form is declared dead in this way, it should be submitted to the office manager, who will designate the disposition of the supply on hand, if any, and will initial the form with the date.

The form bearing the initials of the department head and office manager should then be pasted in the form book at the proper place. All other lists and records showing this form number should also be marked dead with the date it was killed.

QUESTIONS FOR DISCUSSION

1. Why is the study of printed forms important?
2. Name the ten principles of form design.
3. What questions would you ask in defining the purpose of a form?
4. What four questions would you ask about the information to be placed on a form?
5. Eight suggestions are made for saving time and energy in filling out a form. What are they?
6. What effect should ease of use have upon the design of a form?
7. Comment on simplicity in form design.
8. What suggestions would you make as to forms designed for use on typewriting, bookkeeping, billing, or adding machines? Why?
9. Into what three parts should every form be divided? Why?
10. Why should every form have a name and number?
11. Do you agree that most clerks identify a form by name rather than by number? Give an example.

12. What suggestions would you make for a form-numbering system?
13. What advantages would you expect to result from the standardization of paper into a few sizes?
14. What standard sizes of paper are recommended? Why?
15. How many sizes of forms are advisable? Why?
16. In determining the size of a proposed form, consideration must also be given to column widths, column lengths, and the description. What features should be observed with respect to each of these three items?
17. What are the advantages of using a standard type face for forms?
18. "Forms intended for typewriting use should not have horizontal ruled lines." Why not?
19. In what ways may lines be ruled on forms? What are the advantages and the disadvantages of each way?
20. List four factors affecting the choice of paper for forms and explain each briefly.
21. Why does the length of time a form is to be kept affect the choice of paper?
22. What effect has the treatment the form will receive on the choice of paper for forms?
23. Papers for office forms are usually chosen from bonds, ledgers, flat writings, and index bristols. Comment on the characteristics of each.
24. Explain the relation of impress to the choice of paper for forms.
25. Comment on "appearance" in a paper for forms.
26. When should colors be used on forms?
27. Comment on the punching of holes for ring or post binders.
28. Comment on scoring and perforating. Where do you think these might be used?
29. Describe the routine of designing a form.
30. What provision should be made for changes in present forms when the form is next to be printed?
31. What is the purpose of a form book?
32. Explain the basis upon which to determine the quantity of forms to be ordered.
33. Why should no more than one month's supply of a new form be ordered, ordinarily?
34. What is meant by "standardizing the packing" of forms, and what benefits would you expect to result from that practice?
35. How are obsolete forms disposed of?
36. Describe a complete plan of forms control.

PROBLEM

The order-writing routine of the McLean Button Company calls for 17 duplicate copies for use in various sections of the office. There are approximately 300 orders daily, averaging 6 items to an order.

Design an order-invoice form for the company, specifying size, paper, type, and method of printing.

"The plan of purchase, stocking, distribution, and control of use determines whether or not a company is exercising all reasonable economy concerning necessary stationery and office supplies."—L. H. BRIGHAM.

XI

STATIONERY AND OFFICE SUPPLIES

Analyses of the amount of money spent for stationery and office supplies show an average expenditure of \$50 to \$200 annually for each clerk on the payroll. The amount varies according to the type of the business and the care with which the items are selected, purchased, stored, issued, and used. There are so many possibilities of waste in the handling of office stationery that in some cases it is not difficult to save up to 50 per cent of the cost of forms and supplies. Savings of 15 to 30 per cent are so common as to be almost the rule; all that is needed is intelligent attention to the five factors just mentioned.

Selection involves a consideration of the purpose for which a stationery item is to be used, in addition to tests to determine which of several samples is the best for the purpose. The purchase of supplies should be based upon detailed specifications, prepared as a result of the investigation accompanying the selection and stating precisely what is desired. Quantities required should be based on what experience shows the usual consumption to be, in addition to the factors set forth in the preceding chapter on forms; much waste of stationery is caused by overbuying.

Careless stockkeeping accounts for a considerable loss in four directions.

1. *Deterioration.* First is the loss caused by the deterioration of material because of careless handling and lack of regard for the effects of sunlight, heat, and moisture upon stationery supplies; paper stock dries out very quickly when stored next to or on top of steam pipes or where the sun will beat upon it. Catalogue envelopes, for instance, can become worthless in no time at all if not stored properly.

2. *Disorderly Arrangement.* Second is the loss caused by disorderly arrangement. Supplies piled haphazardly may not be found when

wanted, which often results in the unnecessary purchase of items, an ample stock of which is on hand if it could only be located.

3. *Defective Storeskeeping.* A common result of a defective storeskeeping system is the running short of certain stock items which may hold up important work, not to mention the cost of placing rush orders which an adequate stock-control system would make unnecessary. Also, supplies may be issued without a record showing either that they were issued or to whom. The correction of such slipshod methods is definitely a responsibility of the office manager.

4. *Careless Use.* Last is the waste of supplies through careless or thoughtless use by the employees using them. Who has not seen expensive letterheads used for scratch paper; pencils and erasers discarded before half used; brass clips thrown in the wastebasket instead of saved and returned to stock; and so on? Careful use is tied up with careful issue, as we shall see.

ARE THESE WASTES REALLY IMPORTANT?

The problem of stationery and office supplies varies with the size of the office; in one of 20 people, it is obviously not of such absolute importance as in one of 500, though it is the same problem in kind if not in degree. In an office of 200 people there may be a stock of from \$20,000 to \$50,000 worth of expensive material which, if not properly handled, may in very large part become expensive junk. The problem varies also according to the type of office, for the cost of stationery is much greater, in proportion, in the office of a bank or an insurance company than it would be in a factory office. The general methods have also an effect upon its importance; in the office of an advertising business, where much advertising material is stored in the same room as the office stationery, it is obvious that the problem is quite important.

THE ELEMENTS OF COST

The first cost is the space occupied by the stock room, including its lighting, heating, and ventilation. This space, though not necessarily as choice as that occupied by the clerks, usually costs just as much for rent.

Next comes the depreciation of the storage equipment, the first cost of which is, of course, a capital investment. But this equipment can depreciate very rapidly in value if it is selected without sufficient thought or roughly handled.

STANDARD PURCHASE SPECIFICATIONS

The use of standard specifications in getting quotations and placing purchase orders assures more uniformity than can be obtained by simply saying "1,000 like attached copy." Observe how clearly the following purchase specification covers every point:

Standard Specifications for Form 955

Print, perforate, punch, and bind 1,000 "Sales Contracts," Form 955, copy attached. Size 8 1/2 x 14. Print in purple copying ink on Yellow National Bank Bond, basis 17 x 28-25 1/2. Perforate 1/2 inch from the top of the form so that the contract and receipt will be 13 1/2 inches long after being torn at perforation. Perforate 2 1/2 inches from the bottom of the form so that the contract will measure about 11 inches long after being torn at perforation. Punch two 3/8-inch round holes at top of form, 5 inches center to center. Bind at top without covers or backing, using side wire stitch, 25 sheets to a pad. Printer will furnish stock.

Where handling equipment is used, such as trucks, elevators, ladders, and similar apparatus, their depreciation must be considered.

The interest on the capital tied up in stationery stock may be comparatively light or heavy, according to the efficiency of the stockkeeping methods.

The labor cost of keeping stock also depends on the efficiency of the methods used, as does the labor of issuing and distributing the stock; in proportion to the cost of materials, labor cost is a heavy item.

Then there is the possible loss of materials through faulty stockkeeping methods, as well as the cost of clerical time lost through the same faulty methods.

WHAT A GOOD STOCK RECORD SHOULD SHOW

1. What is the stock number of each item, and where is it located in the stock room?
2. Which materials are overstocked, and which should be re-ordered?
3. What goods are on order, from whom ordered, and when will the goods be received?
4. How long will the present supply last?
5. With whom should the reorder be placed?

ADVANTAGES OF CENTRALIZED STOCKKEEPING

In many offices the stockkeeping is almost completely decentralized, though the undoubted tendency is toward centralization. The chief advantages of centralized stockkeeping are the better control and more economical use of space, equipment, stock, and labor. One office which had two stationery stock rooms, one on each floor of its office, saved a valuable area of floor space and the labor of one stock clerk by centralization.

Centralization gives better utilization of storage equipment. When stationery is stored in a department, a better appearing and consequently more expensive set of shelving must be provided; also, there is almost certain to be some space wasted on each shelf, a waste that in the aggregate is not inconsiderable. With a central stock room, less valuable space can be provided with cheaper, though equally useful, equipment, which can be built as high as desired, within the limits of the ceiling and with due regard to the sprinkler system if there is one; in addition, every part of these shelves can be kept full, thus making for a real economy of space.

Still another advantage of centralized stockkeeping is that it permits a better utilization of the stock. Items which are used in common by a number of departments can be carried in smaller amounts in a central room than would be prudent with decentralized stockkeeping. Supervision and stock control are also made simpler.

There is one disadvantage of centralization, although it applies only to offices that cover a large area—the distance for delivery may be too great to be economical. Yet even in an office spread over a large area, such as those often connected with factories, this slight disadvantage is

HOW ONE OFFICE MANAGER CONTROLS STATIONERY

The first step in stationery control is to establish a central stationery storeroom, in which all items are received, counted, and stored. The central storeskeeper should be responsible for stationery received, and nothing should be disbursed except upon properly signed requisitions. There is no objection to, and there is occasionally some advantage in, having small local supplies of stationery, especially in very large offices, but these local supplies should be kept to a minimum of a week's requirements, not only to keep down the investment in supplies, but also on account of space, to say nothing of deterioration.

Storeskeeping should require a minimum of details. There are firms which require a perpetual inventory of certain items, but there are few, if any, offices which need a perpetual inventory of all stationery items, provided minimum quantities have been established and are maintained. The simplest method of establishing a minimum stock is to determine from previous experience the quantity needed from the time the order is placed until the new supply is received. That is, if it takes two weeks to get the new supply, and 1,000 items a week are used, obviously the minimum stock would be 2,000 items. Some office managers do not like the term "minimum," preferring "order point," and for "maximum," the term "amount to order." The meaning is much clearer.

When the order point has been established, set aside this quantity and label it RESERVE. When the first reserve package is broken into, a new order is placed at once.

Maximums or amounts to order depend upon a number of facts. First is the quantity used daily, weekly, or monthly. Experience and an examination of stock requisitions will show what this is. Second is the policy of the company—whether purchases shall be made on a basis of 30, 60, or 90 days, or 6 months, or annually. This policy is determined by the condition of the market and the financing policy of the company, both of which change from time to time. Ordinarily, purchases of many items may be made on an annual basis, resulting in pretty fair savings. This is particularly true of standard and staple items used by several branches or departments, such as order forms, envelopes, letterheads, and so forth. Quite often an order can be placed for an entire year's supply and arrangements made for weekly or monthly deliveries, thus saving storage space, which is sometimes costly.

usually more than offset by the advantages. When desirable, substations may be established to advantage.

WHAT A SATISFACTORY STOCKKEEPING SYSTEM REQUIRES

1. *Minimum but Adequate Inventories.* As little stock as possible should be kept on hand, in order to save the cost of space, depreciation, interest on capital, and the labor of handling. This quantity must, however, be planned with respect to each item so that no danger of loss through delaying the work of clerks in the office will arise because of the lack of stock on hand. The plan must also provide for a sufficient amount of each item to make economical purchases possible.

2. *Correct Storeskeeping Methods.* Material should be stored in such a manner as to save space, time, and energy and to avoid deterioration or loss, or possible destruction, while in stock. Stationery depreciates very rapidly upon exposure; it curls, gets dirty and discolored and crumples easily, becoming practically worthless. Some forms are by no means inexpensive, and the loss of only a few such items will make an appreciable difference in the total expense.

3. *An Issuing System That Controls.* The issuing system should be planned so as to save time, energy, and material. To issue a supply intended to last for a week takes no longer than to issue a supply for one day. To issue stock at any old time, without periodicity, greatly increases the labor of issuing. The stockkeeper should be informed of the quantity that is likely to be used of each item over a definite period of time and of the amount he is authorized to issue, so that he can do his part intelligently in checking wasteful consumption. The requisitioning system should be the product of careful thought and planning, so as to check wasteful consumption at its source whenever possible.

THE MAIN FACTORS OF THE STORESKEEPING PROBLEM

The following principal factors in the problem of handling stationery are applicable to even the smallest office: location of the stock room, physical arrangement of the stock, classification of the stock and location system, issuance of stock, control of quantity on hand, and control of consumption. These will be discussed in order.

1. *Location of the Stock Room.* The stock room should be located in space that is less adapted for clerical use than any other space in the office. If possible, it should have daylight; otherwise, it will be necessary to burn a large volume of artificial light. The location should, if pos-

sible, be central, that is, within easy reach of all departments using stock.

a. Amount of stock to be stored. If it can be avoided, the stock should not be divided into several rooms, but should be concentrated in one room to save space, travel, and labor and to facilitate supervision and control.

b. The number and location of points to which stock is to be issued. It is advantageous to have the stock room located as centrally as possible, to save time, labor, and transportation.

c. The amount to be distributed and the frequency and method of delivery. These factors are more important in some offices than in others, but they are present in all.

d. The method of receiving supplies and the facilities for their reception and transportation to the stock room. Unnecessary handling and trucking can be avoided by locating the stock room near the company's receiving room and freight-elevator service. Particularly is this true when branch-office stationery requirements are supplied from the home office, necessitating packing and shipping.

Other factors affecting the location of the stock room concern the means of theft prevention, the avoidance of all fire hazards, however slight, and the facilitation of supervision.

2. Equipment and Physical Arrangement of Stock. This is a major factor. Stock which is well arranged is not likely to suffer loss. If the arrangement is poor, if some bins are crowded and others are empty, if stock is piled on the tops of the shelves, in the aisles, and in other inconvenient places, there is a loss not only of energy in reaching it, but of the material itself because it will not be so carefully handled.

a. Cabinets. In small offices where the stock must be stored in the main office room, cabinets with doors should be provided; but in all enclosed stock rooms separated from the office, open shelves should be used, for they are less expensive, more readily accessible, and can be constructed to utilize far more of the cubical space than a cabinet.

b. Adjustable steel shelving. Under all circumstances, the shelving should be adjustable, the most convenient for office use being that type with which adjustments are possible over a distance of 1 or 2 inches. If the shelves are all of the same size and nonadjustable, there will be much waste of space on items of which the regular stock is small.

Steel shelving is better than wood and much cheaper when the possibility of moving is considered, for it will be necessary either to abandon or destroy wood shelving in moving, or to spend more than it is worth to move it and set it up in the new location. The equipment used should

PRINCIPLES OF STORAGE APPLICABLE TO SUPPLIES

1. Definite space, marked, reserved exclusively for
 - a. Moving; aisles should be straight and wide enough for requirements
 - b. Storing
 - c. Receiving: when necessary to hold materials awaiting disposition
 - d. Assembling: when necessary to hold material awaiting receipt of additional items
 - e. Shipping: when necessary to hold material awaiting shipment
2. Identification, clear and complete, of every item
3. Location of an item governed by
 - a. Difficulty of handling
 - b. Quantity to be carried
 - c. Frequency of use
 - d. Special considerations, such as sensitiveness or peculiar similarity to other items
4. Immediate accessibility of each lot of every item. This means
 - a. Goods will be stowed in issuable units
 - b. Each item (and each lot where practicable) will be kept distinct
A unit of one item or one lot will not be stowed on top of or in front of a different item or lot.
5. Defined methods, covered by written instructions, of placing and removing various classes of items
 - a. Uniformity: always piling the same things the same way
 - b. Distinct separation of each lot, so old lot may be used first
6. Flexibility in arrangement, secured by having storage spaces rectangular, and in area whole multiples of a standard rectangular unit. Shelves, bins, platforms, and floor spaces will then be interchangeable.

(Courtesy of Morris L. Cooke.)

be in standard units, so that later, if necessary, the arrangement can be changed.

c. Wide aisles. In every stock room, space should be provided for the reception and unpacking of stationery coming in. Ample aisles should be provided, with good light. If a truck is used for issuing and delivering stock to departments, space should be provided for it in the stock room. If the aisles are wide enough for its passage, it can be pushed through them and loaded with little labor.

d. Good housekeeping. No broken or partly unwrapped packages should be left on the shelves. Each new package opened should be completely unwrapped and the wrapping discarded, thus making for neatness in the stock room. Packages received with broken wrappers should

be used first, or, if there are too many of them, should be rewrapped. The packages should be piled so as to make it easy to count the quantity of any particular item; that is, assuming that there are three piles of packages, and the limit of piling height is five, it would be incorrect to put five packages in one pile, three in the next, and two in the third. The correct method would be to form two piles of five each, leaving empty space for the third; a single glance would then give the count. Piling on a shelf should begin at the back left-hand corner; if there are two rows, front and back, complete the back one first, then the front one. When taking from the pile take from the front first.

e. Contents plainly marked. The quantity contained in the package should be clearly and plainly marked on one end, so placed that the mark is visible when the packages are piled.

f. Reserve stock. All stock should be kept in the original package, and only enough for current use should be unpacked. For this reason,

<h1>RESERVE!!!</h1> <p>This package contains _____ M Form No. _____</p> <p>Name of Form _____</p> <p>DO NOT open this package until all regular supply is exhausted. As soon as you open this reserve package,</p> <p>Be Sure To Re-Order At Once</p>

the order to the printer, as mentioned elsewhere, should specify the size of the package desired, so that it will never be necessary to have more than a small quantity unwrapped. The last package or packages should be specially marked, since they contain the minimum quantity—the point at which a new order should be placed. Some offices provide a red card or sticker, which is placed under the string or tape of the package containing the minimum. It reads somewhat as follows:

THIS IS THE LAST PACKAGE
MAKE REQUISITION FOR NEW SUPPLY BEFORE OPENING

3. *Classification of Stock, and Location System.* Stock should be classified by some logical system, not merely treated as a lot of miscellaneous supply items. A location system should be devised which is easily learned and which will quickly and unerringly enable anyone

WHY IT IS POSSIBLE TO FILL REGULAR STATIONERY ORDERS ON TUESDAYS AND FRIDAYS ONLY

You may not realize that the stationery stock department has to fill a very large number of orders from the branches. It takes time to fill these orders, and of course the branches are in just as much hurry to get their stationery as you are to get yours.

In order to be fair to everybody, therefore, we have set aside Tuesday and Friday for filling General Office stationery orders, and the rest of the week for filling branch orders.

If, therefore, you want to be sure that you will not run out of stationery, make it a point to run over your supply every Tuesday and Friday and order enough to carry you through the week, or at least until the next regular stationery day.

If you do not do this, and if you run out of stationery before the next Tuesday or Friday comes around, we shall have to ask you to go to the trouble of having your stationery orders made out in duplicate, marked "Emergency," signed by your department head personally, and approved by the Office Manager before we can fill your order.

You understand, we are sure, just why this rule has been made and why it is impossible to make any exceptions. Won't you, therefore, please do your part and help us by getting in your stationery orders on Tuesdays and Fridays only? It will save you lots of extra work and will enable us to do our work more effectively also.

Stationery Stock Department

NOTE: This is how one office "sold" its employees on the semiweekly stock-requisition plan.

having the location number to find any particular item. This can be arranged easily, whether the stock comprises a single row of shelves or occupies an acre of storerooms. Figure 46 will suggest several possibilities.

4. *Issuance of Stock.* In any office having more than a dozen persons, stationery stock should be issued only upon written requisition. This requisition should be signed only by specified persons and otherwise not honored. Under no circumstances should stock be issued at the request of any comer.

The issue of stock should take place at specified times only—for example, weekly. If issued at any time requested, the labor involved in handling will be excessive. Stock should preferably be delivered to the person making the requisition rather than requiring him to call for it.

5. *Control of Quantity on Hand.* Unless this is carefully planned and

maintained, there is considerable likelihood of overstocking or a very positive danger of running short of certain indispensable items at inconvenient times.

Although the reserve plan described above will automatically prevent running out of any item, except in unusual circumstances, some office managers may desire to keep a perpetual inventory of stationery and office supplies. There are two aspects of this which should be considered before a decision is made. First is the clerical expense, which may or may not be justified; second is the recognized fact that a perpetual inventory is of no value whatever unless kept right up to date. This means entering receipts and withdrawals every day without fail; to let this important task slide just once during an extra-rush period may mean that the time and trouble expended in making all the previous entries have been wasted.

If it is decided to keep a perpetual inventory of all stationery on hand, the quantity on hand may be verified by an actual count of each item in the following manner:

- a. By an occasional count at an unspecified time and comparison with the card entry.
- b. By a periodical—say, a quarterly—count.
- c. By counting the material on hand when it has reached its low limit and an order to purchase is issued by the stockkeeper.

Periodically, say, quarterly, the stockkeeper should prepare a list of all inactive items and present a report, accompanied by specimens, to the office manager, stating the last occasion when the item was used. This will enable the office manager to check the ordering of new sup-

The control of office supplies by the office manager includes three things: quality, quantity, and cost. Quality is secured through standard specifications, tests, and inspection of the material received. Only experience can determine what quantities are best to order and what quantities to set as order points. Requisitions should be used for getting any item from stock, bearing in mind that it is a matter not of creating red tape, but of discouraging the waste of the company's property. It may cost more to put through a requisition for a pencil than the pencil is worth, but if the requisition were not required, remember that half a dozen or a dozen pencils might be taken. The cost of material is up to the purchasing department, which should be checked from time to time to make sure we are getting as favorable prices as can be expected.

plies of the inactive item, thus keeping the amount of "frozen assets" down to a minimum.

The maximum and minimum limits of each item should be standardized. When the first reorder of the item comes up, the limits should be reconsidered. It may be found that the figures originally decided on as the amount to order (the maximum) were either too large or too small, or that the order point (the minimum) allowed was too much or too little; or it may happen that changes have taken place in the use of the item which will require that the order be increased, decreased, or perhaps not placed at all. In addition to this, an annual review of maximum and minimum limits may be found of value.

6. *Control of Consumption.* With certain kinds of stationery there is little danger of overconsumption, but with many items there is a possibility of the clerks overstocking their desks, and sometimes there is a constant temptation to stock up the "home office." Pencils, erasers, typewriter ribbons, rulers, pins, clips, and other small utilities have in several cases found their way out of the office and into the homes of the employees.

A recent investigation of the actual uses to which paper clips are put in the average office disclosed the following:

Of 100,000 clips, there are used for:

Lingerie clasps	7,160
Bobbed-hair holders	10,801
Pipe cleaners	3,163
Emergency garter clasps	802
Ear reamers	5,534
Lamp-shade holders	192
Shirt-sleeve adjusters	4,183
Ford repair parts	5,308
Toothpicks	9,021
Bachelor buttons	7,200
Cuff links	5,302
Poker chips	19,413
Eversharp pencil repair kit	7,324
Toys to use while telephoning	14,163
Holding papers together	28
Total	100,000

(Courtesy of the Office Economist.)

NOTE: If the above figures are true, offices can save a lot of clips by not providing them! You may find other items misused, also.

Economy in paper and pencils to the disregard of economy in time is one extreme in the handling of office supplies. The other is that of a discharged clerk whose desk the head of a small business recently had cleared. In it he found a six months' supply of his grade "A" stationery, pen points enough for half the office force, a drawer full of assorted scratch pads, and four boxes of rubber bands which were brittle with age.

When an office manager inventoried the contents of the desk of a division head who had died suddenly, the list covered five single-spaced typewritten pages and included 2 medicine droppers, 12 new red pencils, 7 miscellaneous rulers, 4 blank postal cards, 3 boxes of gummed stars, 2 jars of paste, 8 paperweights, 6 blank books, 3 empty ring binders, and 153 other items, more than two-thirds of them obsolete.

What would an inventory of the desks in your office reveal?

materials are often found in desks. If an inventory were taken of the stationery and office supplies in the desks of unstandardized offices, it would be found that many hundreds of dollars of capital were being thus needlessly wasted, or at best tied up.

c. Dispense small items in small packages. Pins, clips, staples, paper fasteners, eyelets, rubber bands, and other such small supplies are usually subject to great waste. A plan that has been successful in cutting down this waste is to dispense small items in small envelopes, each containing a specified number of the article. When rubber bands are requisitioned, let us say, the requisition will be for one or two envelopes of a particular kind. If desired, these envelopes can be printed with some such inscription as the following:

This envelope contains
50 RUBBER BANDS
which are provided in this
manner to caution you against
waste in their use.

The words "50 RUBBER BANDS" should be printed with a rubber stamp, as should the description of the contents of any other such envelope containing small supplies.

Although this method would work better, perhaps, in a large office rather than a small one, it has been demonstrated that the envelope-package plan reduces the quantity of such small supplies issued.

d. Use mechanical pencils and fountain pens. These should be used in the office wherever possible, as they are easier to write with and for most other purposes are equally good. It has been demonstrated that the mechanical pencil is an economy, even where the company supplies the holders, though it may be well to set a price on them and charge employees for new ones at cost. Not more than one-third of the lead in the average wooden pencil is ever used; of this a considerable amount is wasted in sharpening. Pencils are of varying degrees of hardness, and while it is not economy to use a very hard lead in general office work, it is more economical to use a medium hard than a very soft, the work is also neater in appearance.

Fountain pens can also be used economically on many kinds of office entry work, as compared with the steel pen and inkwell. Wherever this is true, they should be furnished by the company, on the same basis as recommended above for mechanical pencils. If the clerk is accustomed to the use of the rigid fine pen point, the use of blotters will be made almost unnecessary.

e. Select typewriter ribbons carefully. The difference in wearing qualities of ribbons of different makes is considerable, and a wear-down test should be made of each kind offered by using a short section of each ribbon on the machine in the regular way, and keeping records of its life and behavior during the wearing-out process. Since one quarter of a ribbon should last only one quarter of the time of a full ribbon, the time element can be compressed by this test.

Two-color ribbons have been popular, but are not economical, for on black and red ribbons the black half is used a hundred times to once of the red, with the result that the black half is worn out long before the red.

Two other points concerning typewriter ribbons should be kept in mind, the wearing qualities of the ribbon fabric and the heaviness of the inking. Many good-quality ribbons will begin to write light long before the fabric is worn out. On the other hand, a heavier inked ribbon will not give sharp, clear-cut impressions, especially with the smaller, elite type. The medium-inked ribbon is intended for use with the large, pica type, just as a light-inked ribbon is for elite. For heavier billing and accounting machines a specially woven, heavier fabric ribbon is required for average durability. A number of devices are on the market for renewing typewriter ribbons that are not worn out, but whose ink has dried out or been used up.

Some offices require employees to turn in the used ribbon with the

requisition for a new one. Some large companies have the company's mechanic change the ribbon when necessary, thereby maintaining control and saving the typist a trip to the washroom.

f. Choose carbon paper suited to the work. All carbon paper is simply a special-quality tissue paper which has been coated with a colored ink that rubs off when pressure is applied. Every manufacturer of carbon paper has a long list of kinds or grades, from which may be selected the particular kind or grade that will do the required work better than any other. The problem is to choose the grade suitable to the work expected of it.

Two characteristics of carbon paper are the weight and the finish. Generally speaking, satisfactory results with carbon paper depend upon selecting the weight and finish most nearly suitable to the work expected of it. Most manufacturers offer at least five regular weights and whatever special weights may be desired. The usual regular weights are:

- 4 pounds, light weight
- 5½ pounds, intermediate weight
- 7½ pounds, standard weight
- 10 pounds, billing weight (12-pound weight for heavy machines)
- 15 pounds, heavy weight

The choice of weights depends upon the number of copies to be made. Lightweight carbon is used where many copies are to be made at one writing and when extra sharp copies are desired. However, it will not wear so well as the heavier weights. The intermediate weight is the best for all average work and possesses reasonably satisfactory durability.

The degree of inking used results in five finishes, as follows:

Extra hard

for use on heavy bond paper
makes sharp, legible copies, nonrubbing, nonsmutting

Hard

for use on medium-weight paper
makes four sharp copies at one writing

Medium hard

for use on most papers in common use
gives a deep impression on 1 to 8 copies

Medium

makes 8 to 15 good copies on reasonably thin paper
should not be used on heavy paper

Intense

makes 15 to 25 copies on manifolding tissue
gives best results for noiseless typewriters

INK ATE UP HISTORY

Some old New York city ink seller, who did an extensive business between 1690 and 1750, was blamed for having been the cause of destroying many valuable records of historical interest.

The black ink with a brownish tinge sold by the firm made the records perfectly legible, but it was so strong it has eaten the pages into picture puzzles with many pieces lost or misplaced.

In some places the ink was diluted, but its use has been traced in towns up the Hudson River to Albany, along the shore line of Connecticut and through the towns on the main highways of the period and then south through New Jersey, Maryland, Virginia, and the Carolinas. The destructive work of the ink in Virginia records was abetted by the activities of bookworms. (*Courtesy of American Stationer.*)

Pencil carbon paper is made especially for use with pen or pencil and gives more satisfactory results than carbon intended for use in typewriters.

Tests made by the Tennessee Valley Authority of 90 weights and finishes, in 15 different brands, based on the five factors of sharpness of writing, cleanliness, intensity of color, legibility, and durability, showed that it was possible to standardize on one brand of carbon paper in six grades, where a dozen grades had previously been used.¹ To remove any possibility of brand influence, the manufacturer agreed to pack the carbon paper in special cartons bearing only the grade number and the initials "TVA."

Unless an office is well equipped to test carbon papers, it is best to select a reliable manufacturer and take the problem to him, specifying not only the weight and finish of carbon desired, but stating also the number of manifold copies usually made on a particular kind of paper, specimens of which should also be submitted to the manufacturer.

Not more than a week's supply of carbon paper should be issued to any individual.

g. Standardize on ink, glue, paste, and mucilage. The manufacture of ink has been so thoroughly standardized that almost any standard make is satisfactory for use. Large users of ink can well afford to have laboratory tests made of the various makes of ink before standardizing upon its purchase. Buy only one brand.

¹ For a detailed description of these tests and a copy of the final results, see *NOMA Forum*, Vol. XI, Nos. 2 and 3, p. 36.

Paste, mucilage, and glue have considerable use in the office, but this use is in most cases intermittent; therefore, receptacles should be provided to prevent these supplies from drying out. If a slow-drying paste is used to attach papers, it may be spread upon a flat piece of slate or glass, and the edges tipped with paste very rapidly, a practice that is much better than using clips to fasten papers which are to be filed and kept permanently together. The need for pasting, however, is not general; it should be used with caution, and only on cases specifically ordered by the office manager, for papers once pasted together are not easily detached.

The method of dispensing paste can be improved in most offices. Where it seems desirable to furnish certain workers with jars of liquid paste, for instance, a not uncommon practice is to buy the paste in small jars with a brush or spreader; when the paste in the jar is used up (or dried up, as frequently happens when a full jar is given out), the jar and brush are tossed in the nearest wastebasket and a new full jar is requisitioned. This waste is unjustified and quite unnecessary.

A better practice is to supply a brush and jar with not more than an inch of paste in it. The paste will ordinarily be used up before it has dried out and can be replenished, so that the worker always has usable paste available. Even then, the jar is likely to be thrown away when empty; this waste can be minimized by putting a sticker on the jar cautioning the worker not to throw away the empty jar, but to return it to the stock room for refilling. Instead of buying small jars of paste to replace those otherwise thrown away, paste may be bought in bulk, from pint containers to 5-gallon kegs, and dispensed into desk jars therefrom. Less money will be spent for paste and none for jars after the initial batch.

In some offices the messengers or porters are assigned the responsibility of checking paste jars and inkwells frequently enough to keep the supply fresh and usable. It should be kept in mind that one of the substantial benefits of this procedure is to save the worker's time and patience, enabling him to give his whole energy and attention to the job, not to the problem of seeing that his working "tools" are ready for use. The same principle extends to sharpening pencils.

What has been said about paste applies with equal or even greater force to rubber cement. When rubber cement is used for fastening papers together, or tipping in items such as photographs, clippings, and so on, the material will not wrinkle. The cement can be applied much faster and spread more evenly than paste. But it dries so fast that unless the worker moves quickly, he will have to repeat the opera-

tion, thus losing any advantage of speed. Also, if the cap is left off the jar, the volatile solvent quickly evaporates, leaving an unusable jellylike substance. Here again, provide a squat container with a brush and a tight screw cap, replenishing it as in the case of paste, and similarly labeling the jar. Incidentally, most rubber cements can be restored to working consistency by adding a highly volatile solvent like benzol, for instance, and agitating the mixture. Benzol is extremely inflammable and should be used with unusual care; most fire laws are very strict about this.

h. Save money on scratch-pads. Every office has more or less frequent use for scratch-pads for figuring, memos, and so on. To buy the usual scratch pads offered by stationery stores is extravagant. Usually such pads are made up of trimmings from fine-quality bonds and are offered at ridiculously low prices for that quality paper. Nevertheless, such pads are too expensive even if they are given away. In the first place, the heavy-weight paper reduces the number of sheets to the pound. In the second place, the rough surface wears down the lead of the pencil and is likely to smudge easily.

For most scratch-pad purposes an inexpensive flat writing paper is probably the best and cheapest. It takes pen or pencil well and costs little. Furthermore, such pads can usually be cut from obsolete forms which would otherwise be discarded or burned. As suggested in the chapter on forms, when a form is killed, the office manager should determine the disposition of the remaining supply. Cutting up into scratch-pads of various sizes is the customary plan.

Right here a word of caution may be in order. One problem which arises in connection with the use of old forms for scratch-pads is the possibility of confusing the old form with the new one, and of misusing old forms unless they are cut so as to prevent that possibility. One company, for instance, had several thousand expensive letterheads on hand when a change took place which necessitated junking the supply. The letterheads were cut in half, *from left to right*, padded, and dispensed to everybody. The result was in effect the passing out of perfectly good half-size company letterheads, with unlimited possibilities for misuse. What should have been done, of course, was to cut the letterhead into four parts instead of two, or else cut the lower half as a half sheet and the upper half into quarters, thus effectively preventing its misuse as a letterhead.

In some cases, especially when forms are to be used wholly within the office, the reverse side of old forms can be used for other forms; this at least saves the cost of the paper. If this practice is followed,

care should be taken to see that the obsolete form is not confused with the new one, lest the saving in paper cost be offset by the delays in handling the routine of which the new form is a part. The nature of the obsolete form should also be considered: it would not be desirable, for instance, to have obsolete checks or old letterheads floating about the office; the chances for misuse are too many.

Many additional suggestions for making appreciable savings on stationery and office supplies will be found in Chap. XXVII on Keeping Office Expense Down.

QUESTIONS FOR DISCUSSION

1. How much of a reduction is possible in the stationery costs of the average office?
2. In what four directions may careless stockkeeping cause a loss?
3. Why is there usually a serious waste in the handling of office stationery?
4. Name seven elements of cost in handling office stationery, and comment on each.
5. What is meant by centralized stockkeeping? What are its advantages and disadvantages?
6. Name three requirements of a satisfactory stockkeeping system and give your reasons for each requirement.
7. Explain "minimum but adequate" inventories.
8. Name six factors in the problem of storing stationery and comment on each factor.
9. What four factors should be considered in determining where the stationery stock room should be located?
10. Comment on equipment for a stationery stock room.
11. How should stock be arranged? Why?
12. What features indicate good housekeeping in a stock room?
13. List M. L. Cooke's six principles of storage applicable to supplies and comment briefly on each.
14. What is reserve stock, and how should it be handled?
15. How should stock be classified and located?
16. What restrictions should be placed upon the issuance of stock?
17. Why is a requisition system for supplies advisable?
18. If branch-office supplies are furnished from the home office, what adjustment of hours should be made for the stock room to be open? Why?
19. How may the amount of stock on hand be controlled?

20. What should a good stock record show?
21. What is the purpose of keeping a perpetual inventory of all stationery on hand? Do you believe that purpose is a justifiable one? Why or why not?
22. How may a perpetual inventory plan be checked for accuracy?
23. How may the consumption of stationery be controlled?
24. What results may be expected from the lack of control of stationery consumption?
25. How may small items, such as pins, clips, and rubber bands, be handled to advantage in disbursing? What is the advantage of such handling?
26. Comment on the selection and use of pencils and fountain pens.
27. Comment on the selection of typewriter ribbons.
28. Why are two-color typewriter ribbons usually not economical?
29. Comment on the selection and use of carbon paper.
30. Comment on the selection and use of ink, paste, glue, mucilage.
31. Should obsolete forms be destroyed? If so, why? If not, what should be done with them?
32. Describe a complete plan of stationery control.
33. What is the value of standard specifications for stationery and supplies?

PROBLEM

In the office of the National Graphite Company there are 7 departments and 110 persons. In each department there is a supply cabinet from which clerks replenish their desk stocks. There is a central supply room on the floor below, the key to which is kept by the office manager. When additional supplies are needed, the office boy is sent to the storeroom for them.

Is there anything wrong with this arrangement? Explain.

"Surround each worker with the equipment and materials required for the comfortable performance of the work."—A. H. STRICKER.

XII

OFFICE DESKS AND DESK SYSTEMS

Since most office work is handled on a desk, over a desk, through a desk, or with the help of one, any steps that will improve the handling of deskwork or that will make the desk work more effectively for the employee using it are certainly worth considering. The primary function of any desk is to provide a suitable surface for writing, checking, sorting, examining, and conferring; for these purposes a table top is just as good as a desk top; tables also have other advantages over desks. All other functions of desks are subordinate to this primary function. The first principle underlying all organized deskwork, therefore, is to have nothing on the desk top except what is being worked on at the moment, plus the "tools" being used at the time. Keeping this fundamental rule clearly in mind at all times will help greatly, even when it may have to be modified temporarily to meet existing circumstances.

Desks and tables are also used to lay things on. Judging by some of the desks we see, that function may sometimes seem to be of equal or greater importance than the other. However, anything on a desk or table which does not contribute directly to the better performance of the work being done distracts attention and makes concentration on the task in hand more difficult.

A third use to which desks are put is to furnish more or less permanent storage space, not only for tools and supplies needed by the occupant, but also for records, reports, and sources of information with which the user works. It is well to keep to a minimum the use of a desk for storage.

Finally, the desk is often used as a temporary storage place for the papers being worked on. This use may be wise or unwise, depending

on circumstances and the nature of the papers. A better method is mentioned later on.

In view of the foregoing considerations, it follows that, to be most effective, a desk should be of proper height for the comfort of the person using it, and of a proper length and width for the work that flows across it.

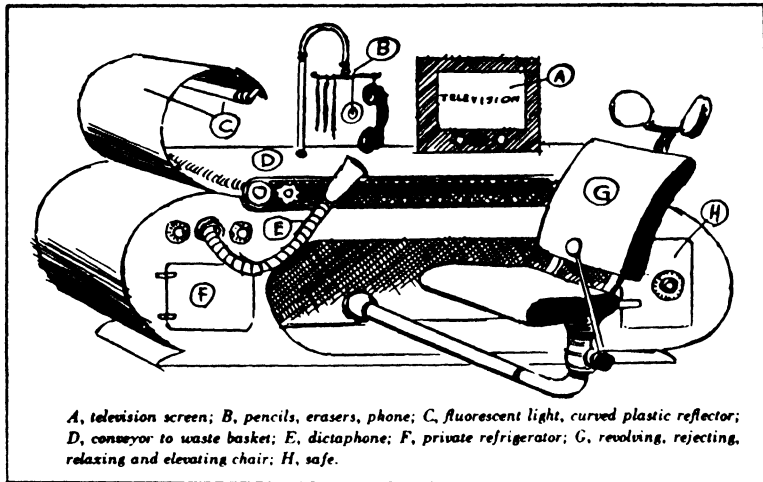
THE FACTORS OF THE DESK PROBLEM

As a workbench—for that's what a desk really is—an office desk should be of a size and design suitable to the operations that are to be performed on it. It is not sufficient to furnish a flat writing surface of a standard height for all kinds of work, for not all office work is alike, nor are all office workers of the same stature. A desk or table should be adjustable, so as to fit the physical characteristics of the worker, almost regardless of the nature of his work. It is too much to expect that a sorting clerk, a card-entry clerk, a bookkeeper, a comptometer operator, and an executive can each do his work in the best manner on working surfaces identically alike in every feature.

Nor should one expect all office workers to use a desk of the same kind to equal advantage, though this does not mean that there should be a different size for each worker. It does mean that certain operations require a larger desk than others. The usual method of meeting this condition is to provide every clerk with a desk large enough for the clerk who seems to require the most space.

The storage space should be of the right amount—too much may be worse than too little. Practically every desk on the market has three times as much storage space as is necessary for the average clerk, a condition which, while it costs the maker something for material and labor, is a constant annoyance to the office manager. Usually, only the most expensive desks are provided with special and adequate receptacles for pencils, rubber bands, clips, and so forth, supplies which are constantly used by most office workers. The drawers of the ordinary desk do not often fit the standard sizes of papers used, and the middle drawer in most desks is more of a nuisance than a help.

The desk or table should be of a size to fit the available floor space. It might be asserted that the reverse is true: the space should fit the desks; but the first statement is correct. Office work should be done in as small a space as is consistent with freedom of movement, for space itself not only costs money but is the medium through which



Courtesy of Brown-Marr

FIG. 48. Many a wise word is spoken in jest. Not all of these ideas are as crazy as they might appear at first glance.

all work and workers must move; moving any object through space costs money also.

The cost of the space which the desk is to occupy is a pressing factor in offices located in large cities. A desk 36 inches wide and 72 inches long occupies 18 square feet; the clerk sitting at it takes up 15 square feet (30 by 72 inches), totaling 33 square feet for the desk and occupant. A desk 30 by 48 inches requires only 20 square feet, allowing the same clearance as for the occupant of the larger desk. At a rent of only \$5 a square foot, the larger desk will cost, for rental alone, \$65 a year more than the smaller one. The money thus wasted by using unnecessarily large desks could be put to more useful purposes.

A desk should be of good appearance. Most new desks are satisfactory in this respect, since appearance is generally considered at the expense of other things equally important.

It should be so constructed that the floor underneath it can be readily cleaned. The so-called "sanitary" desk is one of the outstanding features in desk improvement, but there are many others in use.

A desk should be easy to move. Many desks are so constructed that moving them frequently soon develops structural weakness; this is especially true of the larger desks.

The cost of the desk is another factor. Most office furniture is expensive, mainly because it is purchased with insufficient constructive,

In an office of 150 clerks, each clerk used a full-sized desk, although in most cases the work did not require it. Tables were recommended, and a special clerical table was designed which occupied less floor space. Instead of buying a standard table of expensive wood, highly finished, the company had a manufacturer of kitchen furniture make up a substantial table covered with a linoleum top and painted green. The saving on the 150 tables was \$30 each, a total of \$4,500—at the peak of furniture prices. Furthermore, the new layout took up only 20 per cent of the space formerly occupied, with standard allowances for aisles, clerk room, and so forth.

analytical thought. For most purposes an expensive desk is not necessary; as a matter of fact, there are few operations in the average office where a simple table would not be more satisfactory than a desk. If tables are substituted for desks, where their use is practical, a great economy will result.

STANDARDIZING THE DESK AND TABLE

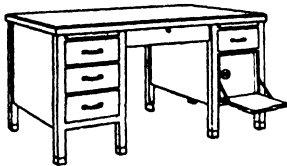
To find the best workbench for each type of work done in the office, it is of course first necessary to distinguish between these various types, not along the lines of the various operations, but in accordance with the various kinds of materials worked with or upon.

Writing at a desk is commonly done on three types of material: books, cards, and loose sheets. The desk worker who uses books may use them in either of two ways—he may consult them as reference books, or he may make entries in them. In posting, he consults one book and makes entries in another, which means that he must be provided with room for at least two books.

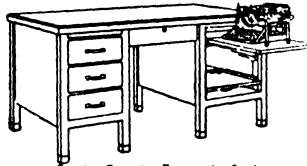
A desk used by a clerk who writes upon cards need not be large so far as writing space is concerned, but it is usually more convenient to provide space upon it for the storage of cards, as in the tub desk. To use both a full-sized desk and a card cabinet, when writing upon cards is the only activity executed, results in much waste of energy and reduction of output. Rotary card-index equipment increases the speed of locating cards and posting entries.

The desk used by clerks who write upon sheets of paper by hand usually requires space for incoming work and finished material as well as actual writing space, but little beyond this.

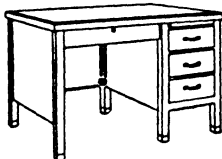
When a desk is used as a support for a machine, the conditions naturally vary with the sort of machine it must accommodate. The use of an ordinary table as a support for a small calculating machine elevates



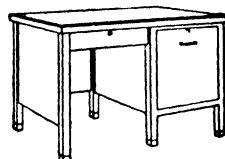
Double Pedestal Desk w/CA Concealed Safe



Double Pedestal Typewriter Desk



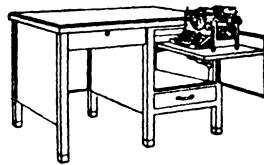
Single Pedestal Flat Top Desk



Single Pedestal Typewriter Desk
Closed View



Double Pedestal Drop Head Desk



Secretary Desk w/CA Extra Drawer



Single Pedestal Drop Head Desk
Closed View



Office Table

FIG. 49. These are some of the common types of office desks. They are available with legs, as shown here, or with the so-called "island base," of which there are several styles. Desks with legs are much less costly.

the machine above the comfortable working position, unless there is a depression or tub arrangement in it, so as to bring the tops of the keys at about the same level as the top of the desk. This improvement is found in modern tables used for this purpose.

With standardization of desks used for particular kinds of work, interchangeability will be possible, which often proves a great advantage. If certain types of desks are all of one make, interchangeability of drawers will be found to be of considerable advantage at times. This feature applies also to any other equipment which is extensively used for one kind of work.

A better and more harmonious appearance is easily obtained when desks are standardized. The arrangement is also facilitated, it being

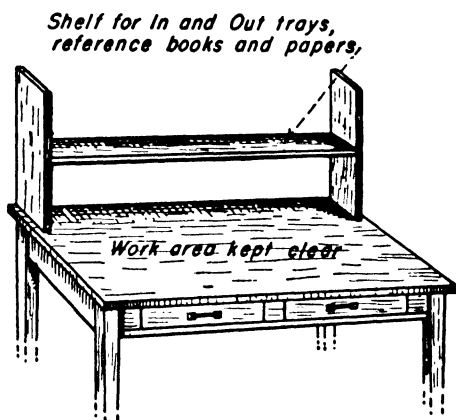


FIG. 50. This easily constructed shelf, placed at the back of the desk or table, keeps the top of the desk clear for working, yet places reference material within easy reach.

much more simple to obtain an economical layout with standardized desks than when desks are of all sorts and sizes.

For the use of most clerks, a table is much to be preferred to a desk of any kind, besides being much more economical. It should have one or two small drawers, which will be sufficient for most purposes of the occupant. For the storage of material worked upon, unfinished work at the end of the day, it is good practice to supply a tray or basket which can be stored in a vault, if there is one, or in a fire-resisting cabinet; the tray should be labeled with the clerk's name. It takes but a few seconds at the beginning and end of each working day to get out or put away work; should a fire occur in the night, valuable papers would be preserved. Another advantage of this practice is that when a clerk is absent, the box remains in the vault or cabinet, where the department chief can quickly determine whether it contains work of enough pressing importance to require attention by someone else.



FIG. 51. A desk top like this may be used in two ways: as an auxiliary surface for working papers or reference material, and as a conference table around which several persons may sit in comfort. (*Art Metal Construction Company.*)

A clerk whose work requires consulting records or books of reference stored in the desk must of course be supplied with a desk for that purpose. Even here, however, a table may be used instead of a desk by placing at the back of the table a shelf resting on two upright end supports, as shown in Fig. 50. Reference material kept on this shelf is within easy reach and off the working space of the desk. "In" and "out" baskets may also be kept on the shelf. Figure 51 shows another possibility.

HOW TO MAKE THE PRELIMINARY STUDY

The office manager approaching the problem of standardization of desks and tables for use in his office will first divide the operations performed therein into the types previously outlined, and will then study the work as it is being performed. In this study he should watch for any unnecessary motions made by the clerk, such as twisting, bending, reaching, stooping, getting up, or standing. He will observe carefully what supplies are most frequently used by the clerk, and where they are located; the location on the desk surface of the material worked upon; and whether or not it is a convenient working arrangement. As a result of these observations much valuable information will be gathered, not only as to the needs of the clerks, but as to the inefficient manner in which many of them work, even with the best of facilities; he will finally see that the problem of providing the one best workbench

FEATURES A GOOD DESK SHOULD POSSESS

1. A desk should be simple, of good lines, and light in color. It should not have a highly polished surface, for such surfaces add glare, always an undesirable feature. Dark desks absorb light and cause the white paper laid upon them to appear conspicuously bright, thus inducing eye fatigue.

2. It is not necessary to have many drawers—they are not wanted by the office manager. Those which are necessary should fit the standard sizes of paper. Drawers intended to be adaptable for the use of small card cabinets should be designed to fit a standard-sized card placed in a card-filing box; a partition only is not sufficient for card-filing purposes. If a special drawer is intended for letter files, it should be provided with a workable follow block or attachment. If a middle drawer seems necessary, it should not be simply a large shallow receptacle; provide at the front of it a contrivance for the storage of pencils, pens, clips, and other desk tools; back of that provide slots and partitions, so that the user of the desk, if he so desires, can divide it into two compartments, which are more usable than one large one unless he handles a number of large charts.

3. Design interchangeable drawers so that drawers of a different type may be used, when desirable.

4. Furnish a linoleum top—it may perhaps be a trifle more expensive than veneer, but it will be much more serviceable.

5. The top should be three or four feet long, according to the work to be done. For every foot of top added beyond this, the company has to pay rent on five square feet of useless space. (*From specifications drawn by W. H. Leffingwell in 1924.*)

for each type of operation is one that calls for considerable mental ingenuity.

Such a study will also disclose the fact that there are certain operations so different from the ordinary ones that they require specially built desks or tables. Special tables can often be designed to advantage for such work as sorting operations, mailing, parcel-post wrapping tables, and similar work, which is usually a combination of duties.

THE CONVERTIBLE DESK

In October, 1940, there was exhibited in New York a new desk designed by W. E. Tarr, General Office Manager, and Charles I. Center, Office Service Manager, of the Studebaker Corporation, for use in the company's offices. Because of the improved features of the desk, its

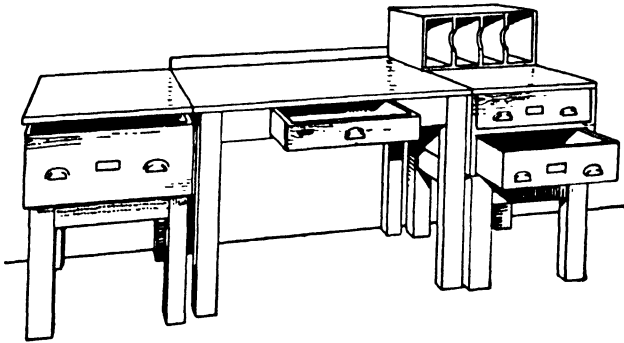


FIG. 52. A desk that fits the worker. Here is a desk made up of three interchangeable units. The drawers are accessible for convenient filing, and the stationery racks are handy. With equipment like this the office manager can fit the desk to the clerk, instead of fitting the clerk to the desk, and at the same time secure a desirable uniform appearance. Almost any desired combination can be obtained with little effort.

manufacture and general distribution have been undertaken by Butler Brothers, Chicago.

The four objectives which led to the development of this desk are:

1. Reduce space occupied by desks.
2. Develop desks readily adaptable to changing requirements.
3. Provide standardization with beauty of design and greater comfort for employees.
4. Reduce costs.

As a result of the research, the following features have been realized:

Starting with only two bases (one for a desk and the other for a table) and three sizes of tops, all of which fit on the standard-size bases, it is possible to provide three sizes of desks and tables by simply changing the tops. For equipping the desk base, there are available completely interchangeable units for desk drawers and typewriter platforms. With the above standard parts, a few minutes are all that is necessary to change the size of a desk or table top, completely rearrange or interchange all desk drawers, place the typewriter platform unit in any drawer position, or convert a secretarial or typist's desk from right to left or from left to right.

These completely interchangeable features make it necessary to carry only extra tops and extra typewriter platforms in surplus equipment stock, instead of complete desks, to meet changing conditions in either branch, factory, or home offices.

In line with the trend toward reducing the height of fixed-height desks, the Studebaker desk is 28½ inches high, which its designers believe is the most comfortable height for the greatest number of people.

MARIA BERGSON AND HER WORK

Miss Maria Bergson of Rockefeller Plaza, New York City, has gone directly to fundamentals by using standard interchangeable units in building up functional desk equipment for her clients, as shown in Fig. 53.¹

OFFICE CHAIRS

If the office manager will make a round of his office, paying particular attention to the postures of the clerks, he will note many signs of fatigue. If he especially notices the position of the feet, he will observe that many are entwined around the chair legs, and that their owners twist about and change their positions constantly. He will find clerks humped over their work because either the chair or the desk is not the right height—perhaps both; he will find clerks slumped down on their chairs, sitting on the base of their spines. All such positions are not due to carelessness or slovenliness of posture, but are a direct result of defective seating.

The height of an office chair should be adjustable to the stature of the person using it. He should be able to rest his feet squarely on the floor without discomfort.

Office chairs would often be more comfortable and far less fatiguing in most operations, if made so as to revolve, for many clerical operations require some twisting of the body, a movement that is accomplished with much less fatigue if the chair can revolve.

Few office chairs support the back at more than a small number of points when the clerk sits upright. The back support should be adjustable and rigid enough to maintain the worker in an upright position. The chair should be nontilting.

A flat, hard seat is uncomfortable; the best form of seat is what is known as the "saddle seat."

While the subject of correct seating has received little attention in the past, it is now recognized as a matter of high importance in its

¹ For additional illustrations of Miss Bergson's work, reference may be made to *American Business* for December, 1947; *Architectural Forum* for February, 1948; *Fortune* for March, 1948; and *Life* for Apr. 26, 1948.

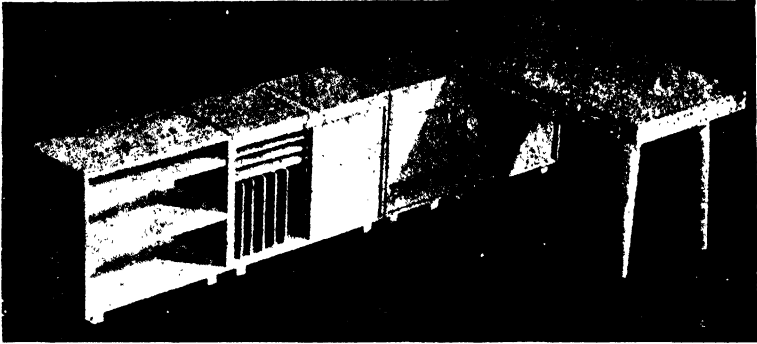


FIG. 53. Here is shown the very latest method of fitting the desk to the work and to the worker. At the top are shown some of the units. In the center Miss Bergson is assembling a combination from miniature models. At the bottom is a secretarial unit. Study carefully each feature of this equipment and compare it with the illustrations of Mr. Leffingwell's unit equipment shown in Fig. 52. (Courtesy of Marva Bergson. By Life photographer Bernard Hoffman. Copyrighted by Time, Inc.)



demonstrated effect on the quantity and quality of output. For a long time only typists had a comfortable chair—at least it was called a “typist’s chair,” adjustable for height and back support. Now the same chair, in improved form, is being used by more and more clerks other than typists.

DESK SYSTEM AND EFFICIENCY

The need for standardization of desk system will be perceived when it is recognized that every motion in the handling of office work has a bearing on the final result. It is the combination of working motions that differentiates the good from the poor worker, the trained from the untrained, the efficient from the inefficient. If work is to be handled without waste motion and waste effort, the standardization of desk system is imperative.

Standardized desk system is needed to provide the proper location for all material which is at the moment not being worked upon or with; this includes all work in process, unfinished work, supplies, and data required to carry on the work.

The office manager can then keep in touch with all work in process throughout the office and will be able to locate any particular piece of paper or other material wanted (no matter in which desk it is located) without waste of time, should the occupant of that desk be temporarily absent. All these things are of vital importance to the effective and economical conduct of the business.

NO UNIVERSAL DESK SYSTEM

Office managers have for years recognized the need of some kind of desk system, and many attempts have been made to devise a satisfactory one; in a certain sense these are attempts at standardization. Some have solved the problem in a fairly satisfactory manner, while others have endeavored to solve it by establishing one rule for all desk workers, a procedure which is manifestly wrong.

A clerk’s desk system will certainly not suit an executive; the operations performed by a clerk on the surface of his desk are altogether different from those performed by an executive. The top of the executive’s desk should be as free as possible from papers; its interior will, besides supplies, contain only papers under consideration, with perhaps some data that are almost constantly used, and possibly a very small amount of unfinished work at certain times.

The activities of a clerk are concerned with routine work which arrives at and leaves his desk with regularity. Whatever portion of it remains on his desk at the close of the working day is merely the work that came to it on that day which time did not allow him to complete.

A stenographer handling routine stenographic work will operate under different work conditions from a secretary-stenographer, who, besides writing letters, acts as an assistant to the executive and requires miscellaneous equipment and places for much special data.

In like manner, special clerks, such as bookkeeping-machine operators, file, mail-opening, sorting, and card-entry clerks, will require not only special supplies but special work conditions on the tops of the desks they use.

THE DESK AS A WORKPLACE

Regarding the desk as a workplace, let us glance at the various conditions to be considered.

The top, or surface, of the desk is usually the place where the work is actually performed. Observation in an unstandardized office will show that there is very little desk system or order; clerks will be observed making many false or wasted motions in searching for materials with which to work; they will be exerting much more effort on each cycle of operations than is necessary. Clerks handling books will have them located in most inconvenient places and will be doing much unnecessary walking, twisting, stooping, bending, and stretching. On the other hand, some clerks may not appear to be exerting any notice-

Frank B. Gilbreth analyzed deskwork by dividing a typical desk top into a number of visible squares, attaching lights to the head and hands of the worker, and then taking a still photograph of the worker at work, leaving the lens open. The result showed a somewhat confused series of lines over the top surface of the desk, but it was very easy to trace the number of times the hands reached out to the distant squares. It is quite evident that as any particular body travels through space, whether the space be great or small, the distance traveled affects the time occupied in traveling; but few untrained workers will naturally choose the shortest path for each motion made. Mr. Gilbreth's photographs demonstrated that fact without question.



FIG. 54. An easy-to-use type of desk tray.

able effort, yet they are accomplishing as much as those who are constantly under a physical strain; still closer observation will usually discover that they are really accomplishing more.

The secret of this apparently perplexing difference will be found, upon analysis, not to reside in the work itself as a whole, but in its minute subdivisions. If the efficient worker is closely observed, it will be found that the tools and materials he uses constantly are always placed in the most accessible position for immediate grasping, while those less often required are in the next best location, and the objects that are seldom used will be relegated to the most remote places on the desk top.

The drawers of the desk or table are generally used for the accommodation of tools, materials, supplies, and equipment. A study of the arrangement of these receptacles will invariably show a wide variation of conditions; very seldom will it be found that there is behind the arrangement of the contents any deliberate reason or thought, unless the worker happens to be exceptionally orderly and efficient.²

SOME GENERAL HELPS FOR ALL TYPES OF DESKS

There are many devices and adjuncts which aid efficient deskwork and which are applicable to most of the workers in an office.

The office messenger system will require at each desk a special place

² "The Manual of Desk Drawer Layout," published by the Art Metal Construction Company, Jamestown, N. Y., illustrates helpfully several ways of organizing desk drawers for different workers.

for "in" and "out" papers, that is, those coming to the desk by messenger, and those leaving it for some other destination.

Clerks who use a telephone should be provided with one of the several types of telephone holders or arms in order that the instrument, when not in use, may be lifted from the desk top, so that it does not occupy or interfere with the working space there. Some types of these holders are made so that one telephone can be used by two clerks, seated adjacent to each other. A calendar should be prominently displayed in every room, and desks in private offices should always be provided with desk calendars.

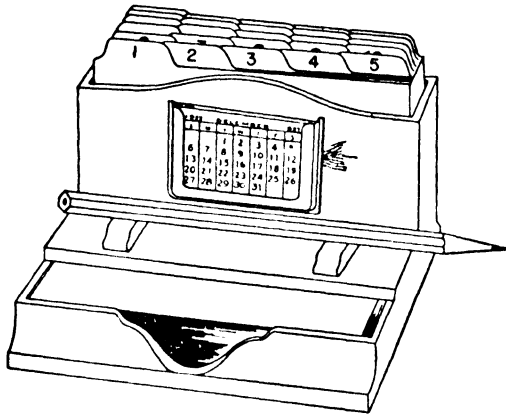


FIG. 55. This container serves two purposes: it places blank memo sheets near the user, and it provides a convenient pocket for tickler use.

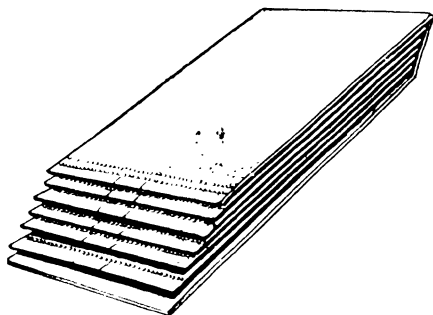
Convenient devices for holding memorandum sheets may be found useful in some cases. Some of these are provided with a small compartment for 3- by 5-inch guide cards in which are placed guides for the months, and figures running from 1 to 31, for the days. This device serves as a tickler system for memorandums which are not of sufficient importance for the central tickler system. The chief value of this arrangement, however, in addition to making blank memorandum slips easily available, is that it provides a place for holding memorandums which have been written.

A small desk "work organizer" is frequently of value to many clerks and most executives. It is nothing more than a few filing folders fastened together, with the guide tabs visible; into it papers of various kinds can be sorted. There are various types of this device; for those workers who receive a miscellaneous collection of papers, it provides a convenient method of keeping the papers separate.

ANALYSIS OF THE DESK-SYSTEM PROBLEM

The work of each different type of clerk or executive must be considered separately. It will not be necessary to study each worker in a group of stenographers or bookkeepers, for example, though after the type has been studied, ideas may be obtained by observing separate individuals in the group.

In the study of the type, the first consideration is to determine in what respects the work of the employee selected as typical of the group is similar to the work of all the others composing it. It will usually be found that these similarities are few, but, however few they may be, they should be the first to receive careful study, for here we are dealing



with a considerable number of clerks, and we can afford to spend more money for improvements which will affect a large number than for those which affect a smaller number.

Next comes the consideration of the manner in which the work of the particular clerk or executive being studied differs from that of others in the same group whose work is similar, a study which will indicate what will be required in the way of special equipment or system. In order to be able to describe the operation in terms of motions made, do not take time at this juncture to criticize the effectiveness of such motions.

The "tools" required for the work should be listed, and the order and frequency with which they are used should be noted. In some cases it will be found—as in the case of the typist's eraser, for example—that certain tools are used more by some clerks than by others; figure the average instead of exceptional cases. Tools which are used in a certain order should be arranged in a convenient position, those most frequently used being placed most conveniently.

A list of the various supplies used should be made; the order in which they are used and the frequency of use should be noted. For instance, a typist, in writing a letter, first selects a letterhead, then a sheet of

carbon paper, and then a sheet for the carbon copy (usually called "second sheet"), and places them in the typewriter. Sometimes a letter runs to two pages, when a "second page" will be required; but on the average the letterhead and the second sheet will be required more frequently than a second page. Again, at times, different letterheads must be used; place those most frequently used in the most convenient position.

Different kinds of data stored and used for reference purposes should also be listed and the frequency of their use noted. A clerk checking for prices, terms, shipping directions, and so forth, will need a price list placed in a position where it can be instantly referred to. Yet, the references needed for credit terms do not involve such frequent use, in ordinary cases, as they are easily learned and remembered; only in exceptional cases will they have to be consulted.

Finally, a list of the different kinds of work done by each type of worker should be made, and the conditions under which he works noted.

If the person making the survey has had some office experience, he will have made notes of a large number of conveniences that he knows of; this should be supplemented by a study of office magazines, catalogues of makers, and a search through the establishments of stationery and office-equipment dealers.³ In many cases, improvement can be

STANDARD DESK EQUIPMENT

2 desk trays	1 Ace stapler
1 desk calendar	1 tray for clips
1 15-inch ruler	1 tray for pins
6 Gillott pens #1160	1 tray for rubber bands
2 Eagle Crown #1 penholders	3 Van Buren binders
5 pencils: Dixon's 1, 2, 3	1 band dater
Mongol 4H, 5H	1 stamp pad—black ink
1 colored pencil, each color	1 pad stationery requisitions
1 RubKleen eraser	1 sheaf scratch paper
6 small blotters	1 sheaf 8½ by 11 plain second sheets
1 pair shears	

In one office the equipment needed for each type of work is standardized and a list like this prepared. Before a new employee starts work, his desk is checked to see that all required material is there.

³ The *Proceedings of the National Office Management Association* should be combed for "gadgets" announced at the annual conferences; so should the NOMA publication, *Manual of Practical Office Shortcuts*, McGraw-Hill Book Company, Inc., New York, 1947.

made without the purchase of any special equipment, merely by changing the arrangement; where that is possible, it should of course be done.

After a survey of this kind has been completed, it will be possible to standardize and put into effect special desk arrangements and desk systems for special clerks and executives and at the same time improve the working conditions of all clerical employees.

A "desk directory" should be prepared in the form of a card list of the contents of the desk and their location in and on the desks. This directory should also specify a definite place in all desks where certain tools, materials, and supplies are to be kept. The first section of the directory should contain a list of the articles or supplies common to all clerks or to a large number of them, and the second section a list of the supplies, data, or kind of work peculiar to the type of worker. Sometimes a so-called "desk map" is helpful. This is a front elevation of each desk, showing the drawers and the top. In each appropriate space are typed the items located there.

A periodical inspection should be made by each department head to see that all desks are maintained in the prescribed arrangement; the results of such inspection should be reported to the office manager.

Such an analysis will uncover many weak spots and conditions in need of improvement. Standardization will make the training more simple. The work will run more smoothly, and many annoyances will be removed.

DESK SYSTEM FOR EXECUTIVES

The term "executive" is used somewhat loosely, to include practically all persons who cannot be described as clerks, from the grade of section manager to the general manager or chief executive. Naturally, executives of different types will require different desk systems. As no attempt will be made here to differentiate, some of the remarks and suggestions given may not be equally applicable to all.

Unfortunately, too many persons in the executive class, especially those who have been promoted from clerical positions, retain the habit of performing the detail work of a clerk rather than the supervisory work of an executive. With this work we are not concerned at this time; if those executives who persist in doing it cannot or will not break themselves of the habit, but continue unconsciously to act as clerks, the principles applicable to clerical work will naturally fit their cases.

The desk top of every executive should be wholly or largely clear of papers not in immediate use, though a certain number of reference books

may be stacked thereon if necessary. If a larger quantity of papers comes to the desk than can be acted upon at once, space and equipment should be provided for sorting these out and keeping them in group order.

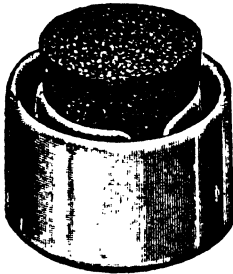


FIG. 57. No chance of overflow water running over the desk with this type of sponge cup.

If the executive calls his own numbers on the telephone, it would be well for him to have one or more of the various types of telephone indexes, on which the most frequently used numbers can be written. If a general telephone directory is needed, a special position should be provided for it, located with regard to the frequency of its use.

Some executives reserve one desk drawer—often the right-hand top drawer—exclusively for unfinished work or papers that are to be held for a day or so. In no other part of the desk is current work ever placed; therefore, it is always known that, if such work is wanted, it will be either in that drawer or not in the desk at all.

At times the work of an executive may require a special desk file, in which are placed reports and other data needed in his work. This file should not be used for correspondence except in rare cases.

Miscellaneous supplies, such as rubber bands, pins, clips, pencils, pens, rulers, and so forth, can be placed in the middle top drawer, if provision has been made for them by the desk manufacturer; if not, special compartments can be procured from dealers in office equipment.

Such supplies as are needed—envelopes, letterheads, cards, and so forth—can be placed in the top left-hand drawer.

If a typewritten catalogue of the quantity of each kind of supply that is supposed to be in the desk of each executive is located in some specified place in the desk, the task of keeping it supplied can be delegated to a junior clerk or to the private secretary of the executive if he has one.

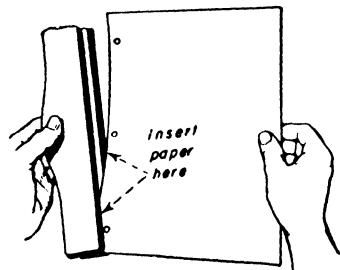


FIG. 58. An inexpensive device for punching holes accurately and quickly in one or two sheets intended for a standard ring binder.

DESK SYSTEM FOR GENERAL CLERKS

The detailed analysis previously described will show just what supplies and what arrangement of material and work in process should be prescribed for the various types of general clerks. In every desk there

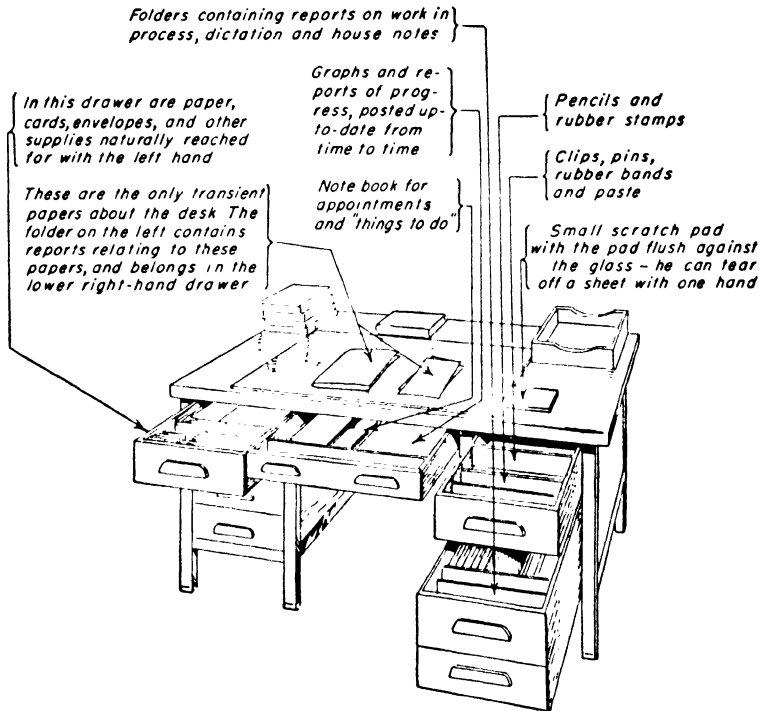


FIG. 56. The executive who uses this desk has arranged it so that his "working tools" can be easily reached. The kind of work one does will govern the arrangement of the desk. But no matter what the work is, the object always is to have an efficient arrangement and stick to it.

should be one particular place for current work; this location should be standardized throughout the office. The department head or office manager should have access to and knowledge of the location of all current papers at all times; he should never be compelled to waste time in an extended search for them.

Every desk in the office, including those of executives, should have a desk directory, kept strictly up to date and located in a particular specified place in the desk, together with a desk map of the desk itself.

SPECIAL DESKS FOR SPECIAL CLERKS

Mail-opening tables, specially devised for the particular needs of the work, with a minimum of construction, will often be found much better suited to the purpose than the common table. If mail is to be sorted into many divisions, this need should be provided for, and the partitions should be fixed, not movable. Pins, clips, cash envelopes, and the like should be located permanently in the most convenient places, so that not only is access to them easy, but the movement of reaching toward them becomes so habitual as to be practically automatic.

Special sorting tables may be devised which will speed up the sorting of some kinds of material, though sorting devices like *Sortergraf* and *Multisort* are often superior. In case such apparatus is used, a place will have to be provided for it.

Where much circularizing is to be done, a special table with a front shelf on which the worker may pile finished work has been demonstrated to be of considerable value as a time and labor saver.

Instead of placing calculating machines on top of a desk, thus raising them above the convenient working height, special tub desks allow the machine to be set in, thus bringing the keys of the machine to the correct working height, as previously described in this chapter.

STENOGRAPHERS' AND TYPISTS' DESKS

It has been previously stated that the typing height of many typists' and stenographers' desks is too low for comfortable working position

To be certain that all contents have been removed from envelopes opened at the mail desk, some offices make a practice of tearing each envelope open on three sides, thus leading to the discovery of checks and other papers which were at first overlooked. A simple device for eliminating this operation is to have an opening cut in the mail table, covered with a sanded glass plate set flush with the top of the table. Underneath the glass is placed an electric light bulb. By passing all supposedly empty envelopes rapidly over this opening, the strong light beneath shows up any enclosures that might have been overlooked.

and effective control of the keyboard. Champion typists use machines 30 inches from the floor instead of the usual 26 inches. In any case the table or desk should be high enough so that the slope of the operator's forearms coincides with the slope of the keyboard. A box frame like that shown on page 173 may be placed under the typewriter to raise it to the correct height. The height of the chair may also need adjusting to attain the relative positions above indicated.

Provision for the proper storage of the necessary supplies is an extremely important consideration; as stated before, these items should be located with relation to the frequency of their use. At its Nela Park offices in Cleveland, the General Electric Company provides for each desk worker an individual supply cabinet attached to the wall, so that she can reach it without moving from her desk. It is kept supplied by a clerk designated for the purpose.⁴

Provision should be made for finished and unfinished work. Notebook holders should be provided for stenographers, or one of the adjustable copyholders which can be placed immediately behind the typewriter. These devices make typing much less fatiguing.

SECRETARIAL DESKS

The stenographer who is also a secretary will have some needs that require special consideration. In some cases a special desk is provided that satisfies those needs fairly well. In others a regular desk with a typewriter stand, either separate or fastened to the desk, is provided; some of these types push back into the desk when work is over for the day, a recent model of this type being instantly adjustable to positions from 26¾ inches to 31½ inches from the floor. The Maria Bergson arrangement described in this chapter is an excellent one for secretaries.

The secretary's desk will usually require a special place for data which are occasionally used by her superior, as well as a definite location for work in process, unfinished work, and especially unfiled work. Perhaps nothing is more annoying to an executive, in the absence of his secretary, than to be unable to locate a particular paper which he remembers having given to her.

SPECIAL EQUIPMENT FOR FILE CLERKS

Employees who work on the files use only a limited amount of supplies, but they need considerable space for work in process. They also

⁴ For other interesting details about this arrangement, see A. H. Stricker, *Seven Steps toward Simplified Office Procedure*, McGraw-Hill Book Company, Inc., New York, 1943.

require special sorting equipment for sorting the material which is to be filed into rough alphabetical arrangement. The Sortergraf and Multi-sort, previously mentioned, will speed up sorting operations measurably; they can also be used for holding the rough-sorted material mentioned in the following paragraph.

It is particularly necessary in every filing department to have a specified place for unfiled material so as to make it available for immediate use. It frequently happens that an unfiled letter is wanted—in fact, the unfiled material is sometimes called for as often as that which is filed. Therefore, it should be established as a working rule in every filing department that, as soon as papers are received, they shall be rough-sorted alphabetically and put in some specified available space for quick reference in case they are needed; in most offices much time is wasted in searching through a large pile of unsorted mail for a particular letter or paper.

QUESTIONS FOR DISCUSSION

1. What are the purposes of a desk? Which of these purposes are the most important? Why?
2. State several factors involved in the desk problem and comment on them briefly.
3. Comment on the three types of material commonly used in writing at a desk.
4. How may the problem of standardization of desks and tables be approached?
5. What preliminary study of the desk problem should the office manager make?
6. What features should a good desk possess?
7. What features of the convertible desk recommend its use in offices?
8. What are the main differences between Maria Bergson's unit equipment and that of W. H. Leffingwell?
9. What are the reasons for the postures assumed by office clerks at desks? How may the situation be remedied?
10. What are other common faults of desk chairs?
11. Why do some desk workers appear to work more efficiently than others?
12. What is desk system, and why should desk systems be standardized?
13. Explain in detail how you would analyze the problem of desk system.

14. Should all desks have the same desk system? Why or why not?
15. How did Mr. Gilbreth analyze deskwork?
16. Comment on the desk as a workplace
17. What general efficiency helps would you recommend for all types of desks? Why?
18. What is a desk directory, and what is its purpose?
19. What does a "desk map" show?
20. Comment on desk systems for executives.
21. What papers should an executive keep in his desk, if any?
22. What papers should an executive have on his desk, if any?
23. How may the supplies for an executive's desk be replenished?
24. Comment on special desks for special clerks.
25. How should supplies in a typist's desk be stored? Why?
26. Comment on secretarial desks.
27. What special requirements do filing clerks have?
28. Why should the department head or office manager have access to and knowledge of all current papers at all times? Explain how this may be accomplished.

PROBLEM

Assume that you have been assigned to the problem of furnishing the proposed new office of the Iroquois Knitting Company. How would you proceed to determine just what kind of furniture should be provided? What special features would you specify? Various and sundry details of the company will be found at the ends of Chaps. XIV, XV, and XVI.

“Every office executive realizes that the weight of his job is lessened by having adequate equipment in his office.”—JOHN S. WILTSE.

XIII

OFFICE MACHINES

The ingenuity of inventors and the persistence of office-machine salesmen have brought about a condition in which the present-day office manager is not asking himself whether or not his office needs a machine of some kind, but rather what machine he shall choose from among the multitude offered. The purchase of office machines has in fact been dominated to some extent by the demands of fashion—the necessity of appearing modern and up to date—and there is no doubt whatever that most offices now have more machines than they actually need. It is, however, very doubtful if every office has the right kind of machine in the right place.

WHEN SHOULD OFFICE MACHINES BE USED?

1. *To Save Labor.* Generally, an office machine should be used wherever and whenever it will save labor. This does not mean that a machine should merely do the work faster than it can be done by hand, for most machines will do this; it means that the labor saved by the machine is a payroll saving. It is easily possible to save time and still waste it; there is no profit in saving an hour of time through a machine operation and then permitting the clerk to waste that hour by stretching it over the remainder of her work; in such case nothing is saved. A pertinent question would be, “What will be done with the time and labor saved?” Will it be spent on useful work, or not?

If a machine saves labor, it should be possible to turn out more work in a given time than before the machine was used. Consider the automatic typewriter, for instance. One girl can keep six of these machines in operation at the same time; to do the same amount of work would re-

quire six typists. There is a distinct saving here of five typists, provided, of course, that there is enough of this kind of typing to keep six typists busy. Another example is the sorting machine, which enables one file clerk to sort as fast as three clerks using the traditional method. One is reminded of the house painter who was painting a fence with a 1-inch brush. A passerby suggested that he could paint three times as much with a 3-inch brush. To which the painter replied, "But I haven't got three times as much painting to do." The moral should be obvious to the prospective purchaser of a "laborsaving" device.

When a machine is purchased to save labor, the total payroll saving should be sufficient to pay for the machine in one year, even if the life of the machine is longer than that period, for either the operation or the machine itself may change or be superseded in that length of time. It should be remembered that the obsolescence factor on office machines is very high because of the rapid changes that are constantly being made. For this reason it is not at all unusual to find that either an operation or the use of a machine has been abandoned, and no other use for the machine can be found.

2. *To Save Time.* Office machines should be used wherever it is important to save time; the value of some types of machines lies in that feature alone. Where this is the case, it is necessary to place a value upon the time saved or to be saved, if the office manager wishes to be in position to be able to demonstrate the actual saving resulting from the machine.

3. *To Promote Accuracy.* Office machines may be of special value in promoting accuracy; on some types of office operation, accuracy is the feature specially desired. The machine gives a mechanical accuracy and saves much labor time in checking back, as well as the possible annoyances caused by errors.

4. *To Relieve Monotony.* Finally, some kinds of work are so monotonous as to constitute drudgery. In those cases office machines have a special value in helping to eliminate distasteful work, for such work is rarely satisfactory in either quantity or quality.

Many of the economies usually attributed to machines are due to changes in method made when the machines are introduced. Now we try to change the method first and use a new machine only when essential. (*Courtesy of Henry E. Niles and the American Management Association.*)

IDLE MACHINES ARE IDLE CAPITAL

It should be borne in mind that money expended in the purchase of a machine is a capital investment in a very unstable asset, one which depreciates quickly in time and very quickly in value—much more rapidly, in fact, than is indicated by the Internal Revenue's average allowance of 8 years for the depreciation of office machines. An idle office machine is a real, though hidden, expense. The office manager who keeps his machines earning money—and they can earn money only when they are busy—is saving, just as certainly as is a factory superintendent who does the same thing. In the factory, this point is readily perceived to be of some extreme importance, for when the machines are not working, they are not producing goods, a condition which at once shows up in the output. But inasmuch as office operations do not show up on the production records, or anywhere else, except as burden, this idle capital invariably passes unnoticed, though it is exactly as real as in the factory. In one large office, \$25,000 worth of office machines was found standing idle about 90 per cent of the time and depreciating greatly each month, though there was little or no realization of what the condition actually meant.

SURPLUS EQUIPMENT

In nearly every office of any size there will be found one or more pieces of equipment, furniture or machines, which are not being used. If the office manager knows the location of this surplus equipment—for that's what it is—he may be able to transfer it to a section needing it. In any case, it should be understood that no department has a strangle hold on its equipment. One of the main reasons that many department heads are reluctant to release equipment, even though idle, is that they are not sure of getting replacements when needed, a fear that is often justified by their experience. Also, if the custom is to charge the cost of equipment to the department for which it is ordered, the department head naturally feels that he has a lien on it; after all, since he paid for it, why should he donate it to some other department? Assurance that his department will be properly credited will do away with this objection.

HOW TO DETERMINE WHAT MACHINE TO BUY

1. *Is a Machine Needed for This Operation? Why or Why Not?*
Whether or not a machine is needed for the particular operation in mind

can be ascertained only by obtaining a thorough knowledge of how the work is now being done. Before taking any steps toward the purchase of a machine, there should be a complete and exhaustive examination, the questions to be answered taking somewhat the following form:

- a. Is the work now being done satisfactorily? If not, why not?
- b. In what particular respect is the performance of the work unsatisfactory?
- c. Is the difficulty due to some defect in the workers, or is it inherent in the operation?
- d. Do the workers object to the work? If so, what is their objection? Is it a valid one?
- e. What does the factor of time mean in this operation? Is it important to reduce the over-all time? Why?
- f. What does it cost to do the work now?
- g. Can the work be done more cheaply by hand, by improving the operation?

2. *Will Labor, Time, or Drudgery Be Saved by a Machine?* Determine what advantage is gained by having the work done by a machine. Will it save labor, time, or drudgery? On these points, certainty should be assured before going further. How much labor or time will be saved? What is the money value of this saving? Over how long a period? What will be done with the time and labor saved? Will the benefits justify the cost? How do you know? What factor or factors cause the drudgery?

3. *Is There a Machine for Performing This Operation?* If so, is it perfected? Have we a machine on hand, not now being used, which will do the work satisfactorily? If so, why shouldn't it be so used?

4. *What Is the Right Machine for This Work?* The traditional way of deciding 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. 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 absence of facts, the management finally makes a decision based upon an insecure foundation.

To find the right machine to do the work, it will be necessary to investigate all machines available for such work, for there are, in most lines, competing machines. Some will be found which will do the work and other things besides; because of this additional utility, these ma-

The test of a machine is not is it producing what it was bought to produce, but what is it producing in comparison with other machines obtainable now?

The following test was made of four bookkeeping machines considered for the work of a department store. The salesman estimated that 18 machines would be required, costing \$22,000. As a result of the test, it was found that only 9 machines were necessary. The test lasted six weeks and made possible a saving of \$20,000 for the first year.

CONDITIONS OF TESTS OF BOOKKEEPING MACHINES

For.....Company.

1. The test will be made at.....Company's premises.
2. The plan to be tested will be the unit plan, using a continuous itemized ledger.
3. The copies to be made will be: (a) the bill; (b) the ledger.
4. The information to be shown will be that given on the present bill plus the payments and the daily balances on both statement and ledger.
5. A number of sales checks, credits, and payments will be provided, sufficient to take an operator about one week to post.
6. You will furnish the machine and the trays or other equipment needed in connection with the work.
7. You will furnish the stationery to be used, and bill
Company for it.
8. Two runs will be made, one by an operator furnished by you, the other by aCompany operator trained by you.
9. As much time as is needed will be allowed for training the
Company operator, but not to exceed two weeks. The length of time required, however, will be one of the elements entering into the test.
10. The training of theCompany operator is to be done on theCompany premises.
11. The checking of the work will be done by clerks furnished by theCompany.
12. Operator will head up both statements and ledgers.
13. The sale checks, credits, and payments will be so selected as to give a test of posting several items to an account, and for several months.
14. Each operator will be required to locate her own errors when out of balance, and to make her own corrections.
15. During the operation of the test, no salesman will be present. The demonstrator, however, may be present to straighten out any difficulties that may arise.
16. You will furnish us with an estimate of the cost of stationery and equipment needed with your machines in the event of their being selected.
17. During the tests our engineers will make unit time studies of all the operations performed.
18. You will give us an estimate of the salary that must be paid to secure new operators.

(From W. H. Leffingwell, "The Application of the Principles of Scientific Management to the Office," *Bulletin of the Taylor Society*, Vol. VII, No. 1.)

chines will necessarily cost more than others which will not do so many things. It will be necessary to decide whether these added features can also be used. If not, the cheaper machine—if of equal quality otherwise—will of course be preferable.

5. *Can a Satisfactorily Conclusive Test Be Arranged?* Having decided which machines are to be considered, arrangements should be made for a scientific test to show their relative differences and suitability for our purposes.

A scientific examination of the mechanical features is not usually practicable, unless there is connected with the office organization a mechanical engineer who can do this work, or unless access to a testing laboratory is readily available. However, since most machines have been designed by mechanical engineers, they may be assumed to be correctly designed from the mechanical standpoint. To test the strength of the material used would also, under ordinary circumstances, be impracticable, unless the proposed purchase was large enough to make it profitable to demolish one machine for this purpose.

A practical test of the machine in use, made in a scientific manner, is, however, within the reach of every office manager. The requirements of a test of the practical working of a particular machine are about the same as those of any other scientific test, described in detail in the chapter on Scientific Analysis.

The advantages of each machine, its capacity, cost, upkeep, and the supplies required, should be recorded, as well as the disadvantages. These should be listed side by side, in columnar form. All advantages and disadvantages should, wherever possible, be determined by test; where advantages are merely claimed that cannot be tested, it should be clearly noted that such claim is made by the maker of the machine.

In addition to the test, satisfactory answers should be obtained to the following questions about each machine considered:

- a. Is this machine suited to the purpose for which we are considering it?
 - (1) If not, why not?
- b. What kind and grade of work will this machine do? How do you know?
- c. Is this machine difficult to operate, or relatively simple?
- d. Can our present help be readily trained to operate this machine?
 - (1) If not, are trained competent, operators available?
 - (2) How much more will such operators cost than we are now paying?
 - (3) Is the difference in cost a real factor? If not, why not?
- e. Can an operator run this machine with the least amount of lost motion and fatiguing movements? How do you know?
- f. What is the normal output of this machine? How do you know?
 - (1) Will that take care of our normal volume?
 - (2) Is that in excess of our normal requirements?

- (3) If so, can the machine be used on other work to advantage? What, for instance?
- g. Is this machine arranged most conveniently for quick and economical feeding of work, or will it require handling devices and labor?
- h. Is this machine dependable, or is it "temperamental"? How do you know?
- i. Does this machine fit into our general plan, or will modifications have to be made? That is, are we fitting the machine to our routines, or are we modifying the routines to fit the machine?
- j. Is the machine well balanced and coordinated in all its parts and units? Is it mechanically pleasing? Does it look as if it could stand the pace?
- k. What about maintenance?
- (1) Will this machine be easy to keep up?
 - (2) What parts are likely to go first? Are they get-at-able?
 - (3) Are repair parts standard or special?
 - (4) Are service men readily available? Or will there be delays?
 - (5) What are the usual service charges?
- l. Is this machine a lasting type, or is it likely to become obsolete?
- m. Is this machine compact in working room, thus requiring a minimum of space charges?
- n. Is the low first cost a real inducement, in view of the answers to the foregoing questions? Why or why not?

After studying the results of the tests and the answers to the foregoing questions, the office manager will be in a position to select the machine that will perform the work more quickly, more accurately, and at less cost than any of the others, regardless of what the experts think. There are cases on record of the purchase of a \$400 calculating machine when a simple slide rule at \$10 or so would have served the purpose just as well or better.

TYPEWRITERS

One difficulty that confronts the office manager is to decide what make of typewriter to standardize on. There is, of course, an advantage in standardizing, but few know how to go about it.

It may be taken as a fact that, mechanically speaking, there is little to choose between several of the best makes of typewriters now offered. This being the case, the next best thing is to standardize on operators. A typewriter may, as a machine, be superexcellent, but, if the operators assume an antagonistic attitude toward it and will not use it except upon compulsion, that machine will soon become idle equipment. Of course, it would be folly to attempt to satisfy the personal preference of each operator—that would be the reverse of standardization—therefore, the machine to standardize on is the one for which it is most easy

to get operators. A survey of the employment agencies, the schools, and business schools of a neighborhood will show which machine is being used most by operators; if the office manager will then choose this machine as a standard, he will find that the labor market is much easier.

Four types of machines are available: standard, portable, noiseless, and electric. For regular office work the portable typewriter need not be considered seriously; it is too light and is not built for nor intended to stand up under the heavy day-by-day punishment received in business offices.

The noiseless typewriter has been perfected to the point where it competes with standard machines. The three-bank keyboard of the original noiseless typewriter has given way to the standard four-bank. The standard typewriter manufacturers, two of whom manufacture noiseless typewriters, are also trying to noise-proof their standard machines as much as they can.

The electric typewriter has gone through a period of development and is apparently now here to stay. Two companies manufacture a machine which features only the electric carriage return, useful particularly in simple billing. A third company, which likewise manufactures a standard typewriter, developed an all-electric typewriter in which every part was electrically operated except the tabulator. After some halfhearted attempts to market the machine, the manufacturers sold the rights to a fourth company, which proceeded to redesign the machine. Its present models are all electric and may be equipped with a choice of printing-type faces instead of the familiar standard typewriter type, with equal spacing for all characters. Meanwhile, three companies manufacturing standard models have brought out all-electric typewriters which bear slight resemblance to the others.

The two main advantages of electric typewriters are the speed of operation and the lessening of fatigue of the operator. Practically no effort is required to operate the machine—the slightest touch actuates the mechanism; a typist can quickly become accustomed to the difference in touch. In two fields the electric typewriter is unexcelled, cutting mimeograph stencils and transcribing machine dictation. The impression is absolutely uniform, resulting in fine-appearing mimeograph stencils. In transcribing-machine dictation, the earphones muffle the noise of the keys, which sometimes resembles the rapid fire of a machine gun. The world's typing record has been made on an electric typewriter, transcribing from machine dictation. For manifold work, the heaviness of the impression may be regulated according to the number of copies to be made. One manufacturer offers a billing model which will type up

to 20 perfectly clear, legible copies, using, of course, extremely thin paper and carbon.

DICTATING MACHINES

Dictating and transcribing machines, though a thoroughly demonstrated success and on the market for years, are still not so extensively used as they should be. With the continued development of improved instruments and the stiffening of competition among the manufacturers of this equipment, we may expect to see an increasing use of dictating machines, as well as further improvement.

The two main advantages that machine dictation has over shorthand are economy and convenience. Consider economy first. When a correspondent or executive is dictating to a stenographer, the time of two people is being consumed. When correspondence is being dictated to a machine, only one person's time is being consumed—the dictator's; all of the transcriber's time may be devoted to transcription, since it is no longer necessary for her to spend any time taking dictation. That time is saved, as is also the time formerly spent in sitting idly by while the dictator composed his thoughts, talked over the telephone, interviewed a clerk, or engaged in conversation entirely unconnected with the business in hand. The saving of this time enables the transcriber to increase her output at least 50 per cent or more, considering the fact that the operator's speed increases with good dictation, because the dictator can and should dictate at conversational speed; conversation is much easier to understand when tonal inflections are heard than when expressionless word signs are read. Theoretically, two girls transcribing all day long can turn out as much work as three stenographers, each of whom spends one-third of her time taking dictation.

From the standpoint of convenience, the dictating machine does not tie the dictator to a schedule: he may dictate at any time, at almost any place, and at nearly any pace that suits him, since the machine has no physical limitations—fast or slow dictation is all the same—the machine gets it all, requiring only clear enunciation. If the dictator works late at night, his machine is ready. If he travels a great deal, he may take his dictating machine with him and mail back the records for transcription. Or he can arrange with the manufacturers to send a loan machine to his hotel in any city where they have a branch office.

An important development in the use of dictating-machine equipment is the devices by which both sides of a telephone conversation may be recorded and preserved for reproduction or transcribed to provide a

verbatim report on the conversation. There is no physical connection with the telephone instrument, which simply rests, in one case, on a small flat panel; the recording is entirely automatic. The Federal government has ruled that every instrument equipped to record telephone conversations must provide an intermittent signal to warn the parties that the conversation is being recorded.

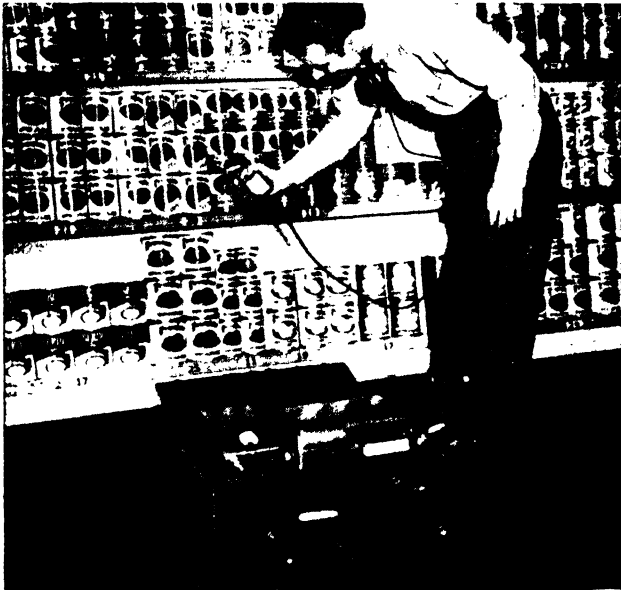


FIG. 59. This combination of chest microphone and flashlight with hand-grip control makes it possible to take inventory orally by simply passing up one aisle and down the next, calling out the number of units and the unit price of each item into the microphone slung around the neck. The recorded memobelts are transcribed and calculated by girls in the office and may then be filed for future reference, if desired. (*Dictaphone Corporation.*)

The use of a portable microphone with this device makes possible the permanent recording of a conference of several people. Once placed in any location in the conference room, usually at one side, out of the way, the microphone is not moved; it picks up the conversation from all parts of the room. In a hall filled with people participating, it is necessary only to have a number of microphones strategically placed in order to record everything that is said.

Some executives, instead of having the dictating machine at their

desks, have simply the microphone. Their dictation is recorded on the machine at the desk of the secretary, who may be in another room. A logical application of this arrangement is to have only microphones on the desks of all dictators and place the recording instruments in the central transcribing department. Another logical application is to equip the transcribers with head sets to type dictation as it is given, comparable to wire dictation described in Chap. VIII.

DUPLICATING PROCESSES

Since numerous operations in office work require duplicating some particular piece of work, it will be worth while to consider the common methods of duplication in use in the office, aside from printing.

1. *Carbon Copies.* The most common method of making from one to six copies is by the use of carbon paper inserted between the sheets of paper before placing them in the typewriter. Good typed carbon copies depend upon the thinness of the copy paper, the quality of the carbon paper, and the touch of the operator. Special carbon paper may be obtained for use with pen, pencil, and certain machines. A hard-wax carbon paper gives the sharpest copies.¹ Carbon paper for order writing, billing, and bookkeeping machines is available in rolls, which make its insertion more or less automatic after the first setup.

2. *Blueprinting.* This method of duplicating, though well known, is not so commonly used in the office as are other methods. It is a semi-photographic process and requires a translucent sheet, upon one side of which is written the matter to be copied. It is then placed in a printing frame, in contact with a sheet of specially coated paper, is printed by exposure to sunlight or strong artificial light, later developed by being soaked in three or four changes of solution, and then dried. This method can be used to copy material which is written or printed on only one side of the sheet. It is quite inexpensive. Ozalid, a division of General Aniline & Film Corporation, is making available a similar process for use with office forms and routines, using translucent paper and cards, which promises interesting possibilities in quick, inexpensive, yet entirely satisfactory duplication and reproduction in black or colors and on different materials if desired. Many cities have concerns providing both blueprinting and Ozalid service to customers.

3. *Photocopying.* This method, commonly called photostat, takes a

¹ For more complete data on carbon paper, see Chap. XI on Stationery and Office Supplies.

direct photograph of any record or document upon photographic paper, without the use of plates or films; both negatives and positives may be made, in that order. One advantage this process has over blueprint or Ozalid is that the direct reproduction may be larger or smaller than the original, if desired; also, matter on the opposite side of the original does not affect the result. Very large offices often find constant use for this machine. Smaller offices can usually get this service from local photocopying companies. Portable outfits have been developed which make size-for-size contact prints from any desired material.

4. *Lithoprint*. This is a photolithographic process, which is not too well known in office work, but which has many uses. There are two methods; in one a print is made on flat steel by direct contact with a transparent or translucent copy, and in the other a photographic reduction is made of the copy on the steel. This reproduction is coated with a greasy ink, and the paper, which may be of any kind of thickness, is placed in contact with it and copies taken off. The basis of lithography is the well-known antagonism of grease and water. A chemically pure surface having been secured on some substance that has equal affinity for both grease and water, the parts to be printed are covered with an unctuous composition and the rest of the surface is moistened, so that, when a greasy ink roller is applied, the portion that is wet resists the grease and that in which an affinity for grease is present readily accepts it. From a surface thus treated, it is an easy matter to secure an impression on paper or other material by applying suitable pressure.

5. *Photolithography*. The basis of photolithography is the fact that light on gelatin which has been impregnated with potassium bichromate causes that portion of the gelatin to become insoluble, and also incapable of absorbing water. A positive is printed from this negative upon a sheet of gelatinized paper, so prepared that the image, having been previously covered with greasy printer's ink, can be transferred to stone or zinc. The impression is developed by washing away the soluble matter with hot water, which leaves the ink on lines of the material to be copied. One advantage of photolithography is that the copy may be enlarged or reduced from the original.

This process is fast and relatively inexpensive for reproducing any drawing, writing, typing, or photograph in any quantity, large or small. Copies are usually printed on high-speed offset presses. There are firms in every large city which make a specialty of this work, which has many uses in the office. Recently there has been perfected a machine for doing this work right in the office, with excellent results at reasonable cost.

6. *Printing from Type through Inked Ribbons.* This method of duplication is frequently used in office work, especially where facsimile typewritten work is desired. This same machine may be used to print with printer's ink and printing-type faces.

7. *Mimeograph.* Duplicating from stencils of various sorts is also an old and well-known process, whereby a stencil is cut on a typewriter or by hand with a stylus and then run off on a machine which presses ink through the stencil onto the paper. The modern stencil is easily and quickly prepared; up to several thousand copies may be printed in a relatively short time. Furthermore, the stencil may be preserved and used again at any desired time.

8. *Hectograph.* A master is prepared by writing upon paper with water-soluble ink, or typing through a special hectograph typewriter ribbon or carbon. When this master is placed on a gelatin surface, the ink is absorbed and may then be transferred to a clean, dry sheet of paper laid on the surface. There are several different hectograph processes, but the principle of all is the same. Both flat-bed and rotary machines are available. Up to 25 or 50 good copies can usually be made; with favorable conditions and special paper, 200 copies can be run off.

9. *Liquid Duplicator.* Duplication by the direct or spirit process is a relatively recent development, whereby copies are made direct from the master rather than through a medium such as the hectograph or stencil. The preparation of masters is very simple, by writing or typing on the master sheet, against the back of which has been placed the carbon side of a sheet of heavy carbon paper supplied especially for the purpose. Best results are obtained by using paper, carbon, and liquid of the same brand. Up to 500 copies may be quickly made under favorable conditions. The master may be preserved and used again, up to the limit of the stated number of copies.

WHICH METHOD IS BEST FOR EACH KIND OF DUPLICATING WORK?

Although many different types of duplicating work and many different methods for performing it exist in the office, it must not be supposed that each method is exclusively adapted to one type of work. The various methods overlap each other somewhat, but, in a general way, each is adapted to certain kinds of work only.

1. *Form Letters.* The very best method for form letters, when it is desired to give the letter the appearance of being typewritten, is the automatic typewriter. A letter prepared in this way is, in fact, a type-

written letter, and no deception of any kind is involved, any more than would be the case if a typist wrote each letter individually. The only difference is that a machine, instead of a typist, actuates the keys.

In the next best method the letter is printed from type through a ribbon and matched by a typewritten address; since it is always difficult to make an exact match, many users of type-and-ribbon duplicators abandon any attempt to deceive and omit the address altogether from the letter. The result has the appearance of a typewritten letter; the recipient usually knows that it is not, but as it is in letter form he usually reads it with his other mail, which accomplishes the desired result.

The mimeograph may also be used for form letters, although the result is not quite the same as when the letters are printed through a ribbon.

2. *Forms.* Forms of various kinds may be duplicated by the type, stencil, hectograph, spirit, or photolithographic duplicator, according to their use or the quantity desired. Office instructions are more cheaply produced on the spirit or hectograph duplicator, although if a large number of copies is required, the mimeograph stencil method is to be preferred.

3. *Bulletins.* These may be produced by the type, stencil, hectograph, spirit, or photolithographic duplicators.

4. *Charts and Diagrams.* These may be reproduced by the stencil, spirit, hectograph, or photolithographic process, according to the number required. If but a few copies are needed, or if they are to be reduced in size, probably the photocopying process is best.

5. *Reports.* When but a few copies are needed, these are best made on the hectograph or spirit duplicator.

6. *Multicopies for Order and Other Routines.* Where several copies of the same writing are desired on differently worded forms, either the carbon method or the registering hectograph may be used, according to the number of copies required. Although the carbon method is often used, it is not recommended where more than six copies are to be made, as in such case especially thin paper must be used. Such copies are best made on the hectograph; some firms use the mimeograph.

7. *Miscellaneous.* Copies of statistical tables, special articles from magazines, and matter which in general is difficult to copy are easily made by the photocopying process.²

² For an excellent comprehensive discussion and exposition of duplicating services, see *Appraisal and Control of Duplicating Services*, published by the Superintendent of Documents, of Washington, D.C., 1949.

WHAT YOU CAN DO WITH MICROFILM

You can record papers and documents—no matter how complicated or detailed—with photographic accuracy and completeness. Every detail appears sharp and clear when enlarged on the reading screen.

You can put 7,000 letters on a 100-foot roll of 16-millimeter microfilm, each letter less than one-fourth the size of a postage stamp.

You can record them fast—from 60 a minute with hand feeding to 125 a minute with automatic feeding.

You can record them economically—1,000 letter-sized documents on less than 60 cents' worth of film. (*Courtesy of Eastman Recordak.*)

MICROFILM

For several years banks have been photographing checks on motion-picture film. As each check passes through the routine, both sides of the check are photographed in miniature, thus providing a complete record. By means of a special projector, the negative of any desired check may be examined full size, or larger, if need be.

The possibilities of microphotographing records and archives have been thoroughly explored. Such a method is now routine in many libraries and institutions, having been expedited by the danger of war destruction. Since the camera can take two identical pictures of the record simultaneously, on separate reels, one reel may be stored where it will be safe from destruction, while the other is used for current reference. The life of microfilm is claimed to be from 250 to 300 years, if properly processed. One of the advantages claimed is that the space required by the reels of negatives is a mere fraction—about 3 per cent—of that taken up by the original records. One United States government office reported that its files of documents and letters, taking up 4,800 square feet of floor space, was reduced to 40 square feet by microfilming. Inactive files may thus be condensed so that bulky original documents may be destroyed.

Still further applications of the microfilm methods have suggested the substitution of the negative for the ledger. This is accomplished by photographing the sales slip, invoice, or statement before mailing it to the customer. This is now the practice in a number of concerns.

Microfilm equipment may be either rented or purchased outright. In addition, very large cities and many smaller ones have firms which make a specialty of microphotography, offering a complete service, from ex-

ADMISSIBILITY OF COPIES IN EVIDENCE

The laws of each state should be consulted to determine the extent to which copies of documents are admissible in evidence. In 1949 the Massachusetts legislature enacted the following statute (G.L.233:79D):

"Copies of any newspaper, or part thereof made by the photographic or microphotographic process deposited in any public library or a library of any college or university located in the commonwealth, shall, when duly certified by the person in charge thereof, be admitted in evidence equally with the originals.

"A print, whether enlarged or not, from any photographic film, including any photographic plate, microphotographic film, photostatic negative or reproduction of any original record, document, instrument, plan, book or paper destroyed, lost, or for any reason unavailable after such film was taken, shall be admissible in evidence in all instances that the original record, document, instrument, plan, book or paper might have been admitted in evidence, and shall have the full force and effect of said original if it is proved that

"(a) such reproduction was made in the regular course of any business and that it was the regular course of such business to make such reproductions;

"(b) said photographic film, microphotographic, photostatic or similar reproduction was taken in order to keep a permanent record of the original; and

"(c) the said original was subsequently destroyed, lost or is unavailable."

posing the film on the customer's premises, if desired, to supplying the developed negative and a projector, and making prints of any negatives whenever desired.

One problem which microfilming presents is that of locating the negative of a desired record. Where the records are photographed in chronological order, there is no problem if the date is known; a mark on the container identifies the dates on the films within. One suggestion has been to use the principle of V-mail to reduce records to about one-fourth size, thus retaining the same legibility as V-mail, without a projector, and occupying only 25 per cent of the filing space. A recent promising development, the Rapid Selector, using coded light patterns, scans microfilm at 180 documents a second, to locate any desired negative.

TELEVISIONING THE CENTRAL FILES

With the Vericon equipment of Remington Rand, any paper or document in the central files may be transmitted by wired television instantly

to any point in the building, making it unnecessary to remove the desired paper from the central filing department.

Three portable units make up the system: a camera, a master viewer, and a power unit, which may be plugged into any 110-volt, 60-cycle outlet. If desired, as many as ten extension viewers may be attached, duplicating the picture shown on the master viewer.



File clerk **places** document before the Vericon Camera which juts from her desk, flashing a clear image of the page to an executive—or as many as ten executives—at distant points throughout the office. The horizontal viewing screen on her desk top enables her to make sure the picture is in focus.

Although the images are carried by wire instead of through the air, the present limit of distance is around 1,000 feet for the master viewer and an additional 3,000 feet for the extension viewers. By means of special power units, however, the distance may be extended indefinitely. Thus a central filing or records department may be located some distance away and yet make immediately available for inspection any desired document or record.

If desired, a special desk may be used, with a drawer at one side to hold the camera in position to scan a document placed in front of it.

The focus is adjustable and may be checked by a viewer placed in the top of the desk, flush with the surface. This is not a standard catalogue item.

The Vericon may not be rented but is sold and installed by the manufacturers.

ADDRESSING MACHINES

Addressing machines are merely developments of duplicating machines, designed to duplicate a number of separate imprints once or twice, instead of the same imprint many times. They are of two general types: (1) printing from fiber stencils or tissue and (2) from type or plates. The first address stencils were cut on paper with pin-point type-writer type, the paper being later replaced by wax and still later by tissue. The first addressing machines that printed from type used movable rubber type, which was later superseded by a thin embossed-metal plate.

These machines have a wide variety of application in office work. Their original use gave the name "addressing," as they were used for imprinting names and addresses on magazine wrappers or on envelopes for circularizing.

In sales work, not only has the addressing machine been used for addressing the envelopes, but certain types are well adapted for filling in the names and addresses on form letters.

In some offices the addressing machine is used for imprinting other data than the name and address, such, for example, as the description of an article purchased, which can be imprinted on an invoice, and the entire invoice made on the addressing machine. This, of course, would only be in cases where the same item was repeated many times, as in mail-order specialty work. The same information may at the same time be imprinted on office records.

Shipping tags, labels, checks, time cards, pay envelopes, and so forth, can also be addressed quickly.

Route sheets, payrolls, and similar records can be quickly made on an addressing machine.

Heading up and dating statements, bills, and notices is still another application; this work is often done in connection with a machine-book-keeping system.

One insurance company uses a modified addressing machine to imprint certain clauses in its otherwise standard policies.

Some of these machines are equipped with selector devices which work

either automatically or visually, by means of which certain addresses may be omitted in addressing a list. For example, if the entire list contains the names of wholesale and retail dealers, arranged alphabetically or geographically, either class may be addressed separately without disturbing the order of arrangement.

FOLDING MACHINES

Where there is considerable folding of circulars to be done, machine folding will be found cheaper than handwork. If such work is done only occasionally, it is best to arrange to have it done by a printer or binder equipped to do this sort of work. If circularizing is a regular office operation, it is more satisfactory to have a machine equipped for doing this work right in the office. There are various types of folding machines on the market, some handling as many as 10,000 to 20,000 folds an hour.

STAMPING AND MAILING MACHINES

Where there is only a small quantity of letters to be mailed, they are usually stamped by hand. For even small users, however, it is sometimes an economy to use the hand stamp affixer, a device carrying a roll of stamps which are moistened and affixed automatically by a downstroke of a plunger similar to the action of a self-inking rubber stamp. The preferred types are equipped with a counter showing the number of stamps used. For handling large volumes of mail there are machines that seal the envelopes and stamp them at one operation, running at high speed.

Many offices use sealing machines that print indicia in the upper right-hand corner of the envelope, instead of affixing stamps. These indicia are either metered or nonmetered. The postage for metered mail is paid for in advance by the use of a meter which is set by the post-office clerks to print any amount of postage desired. Nonmetered mail cannot be deposited in letter boxes, as can metered mail; it must be paid for when it is taken to the post office, or a prior money deposit may be made, if desired. The indicia-printing machine does away with the handling of large quantities of stamps, with the accompanying risk of theft and mutilation in the stamping machine. One additional advantage of the indicia-printing machine is that since the letters do not have to pass through the canceling operation in the post office, that time

is saved. Even more time may be saved with indicia-printed mail if the letters are faced and sorted before being taken to the post office. This saving of time in the post office may amount to hours in some cases and at some times.

SORTING DEVICES

To expedite the sorting of letters preliminary to filing, or of sales slips before posting, for example, many offices use a very effective device, like the *Sortergraf*, *Multisort*, or *Sortofile*, the essential details of which are a set of tabbed, overlapping leaves or pockets on a sliding carriage. Sorting is very fast. Furthermore, where any papers need to be kept in some definite order until they are ready for filing, these devices will be found quite helpful.

PEGBOARD

This device, a detachable metal strip with metal pegs extending across the top of a board, facilitates the rapid combination, comparison, and recapitulation of columns of figures by fanning or shingling strips of paper on the pegs in an overlapping manner, thus lining up any desired classifications side by side. One company, instead of copying the figures after they are thus classified, simply photostats the setup.

MACHINES FOR FIGURING

In every office where there is figuring of any kind, a study should be made of all the operations into which the figuring enters, following the procedure outlined at the beginning of this chapter. This study should be complete and should cover the kind of figuring done, its volume, and the extent of the difficulties occasioned by it. All this should be recorded, and, when the record is completed, the operations should be classified. Consideration can then be given to the best method to use for each kind of figuring.

It must not be assumed that figuring is always more rapid by machine than by any other method, for in many cases this is by no means true. For example, tables of various sorts often give the result of a calculation much more speedily than a machine; indeed, slide rules may at times be found to give the desired result more quickly than

either, and with much less effort besides. The cost is infinitesimal in comparison.

Having decided that a machine or machines are really needed to do the figuring work, it should next be determined how they are to be used: whether the work performed on them should be part of the duty of a clerk engaged on other operations connected with the figuring, or whether the figuring should be functionalized, that is, made the sole duty of a single person or a group of persons. Ordinarily, the usual practice is at first to make it a part of the duty of a clerk performing other operations. A clerk may be doing work which requires figuring only a part of the time; because it is perceived that a machine can do this work much more quickly, often one is purchased regardless of the fact that it may stand idle the greater part of the day. Calculating machines are expensive, and it is neither good management nor profitable business to have the capital invested in them lying idle, as is the case in hundreds of offices.

TYPES OF FIGURING

The most common figuring found in office work is addition, there being a number of operations where it is necessary. In some offices the additions are so short and simple that it is ridiculous to use a machine for the purpose, especially if there is but little of such addition to be done at one time. Adding and listing machines are particularly useful, however, when lengthy columns of figures must be added; where that is necessary, a machine is always to be preferred. An adding and listing machine may also be profitably used where resultant figures are needed for checking the accuracy, or where they are wanted for future reference.

The need for multiplication appears in all extension work and in many statistical operations.

Subtraction, as an isolated operation, is seldom needed.

In some offices, division is a frequently performed operation, while in others it is almost unknown.

In many figuring operations a combination of one or more of the above kinds will be found; thus, for example, addition and subtraction are very common operations on bookkeeping machines.

We shall consider the following machines commonly used for figuring, in this order: adding and listing, nonlisting, billing, bookkeeping or posting, statistical, calculating tables, slide rule, and calculators.

ADDING AND LISTING MACHINES

These make a printed record of the items added, a valuable feature when it can be used as a control figure. These machines are also helpful in many bookkeeping operations. Some models of listing machines also have a subtracting mechanism. One extremely fast model will add, subtract, multiply, and divide, without puzzling complications, printing both the process and the result.

In general, there are two types of adding and listing machines—the full-bank type and the 10-key type. The full-bank type has a complete set of numeral keys from 1 to 9 in each column, so that a 12-column machine has 12 sets of numeral keys, 108 in all. To add any number, the operator depresses the corresponding numeral keys and pulls a crank or touches a motor key. Until the crank is pulled or the motor key touched, the number is shown on the keyboard by the numeral keys depressed, thus showing the operator whether she has depressed the right keys. An expert operator pays little attention to that point, since she operates the machine by the touch method, keeping her eyes on the copy and seldom looking at the machine.

The main advantage of the 10-key machine is that the operator has only 10 numeral keys, numbered from 0 to 9, instead of a full bank of 108 keys (for a 12-column machine). The operator's hand does not move over the keyboard as with the full-bank machine, but remains in one position over the 10 keys, thus speeding up the depressing of the keys. Touch operation is quickly learned on the 10-key machine.

Between the two types of machine there is little to choose, except that the 10-key one is more compact and takes less room than the full-bank machine. A comparative disadvantage of the 10-key machine is that each digit in a number must be depressed in consecutive order before the crank is pulled or the motor bar touched. On the full-bank machine all the numeral keys of a number may be depressed at one time, together with the motor key, if the machine is electrically operated.

NONLISTING ADDING MACHINES

Not all addition requires a printed list or a control figure; in such cases the nonlisting machine may be cheaper and serve the purpose equally well. Besides, for many types of calculation, this type of machine performs the work more rapidly than the listing machine.

Most nonlisting machines used for adding are key-driven; that is, depressing a numbered key adds that number.

BILLING MACHINES

These machines are used to make out invoices or "bills" for goods sold. The invoice may be made out at the time of shipment or shortly thereafter, or it may be made out at the same time the order is typed up, in which case it is a copy of the order or some part of it. Billing machines are, therefore, used for typing orders, invoices, bills of lading, and so on. Where little or no figuring is involved, the machine used for billing may be a typewriter with or without a device for threading the carbon between the copies. In some offices a duplicating machine is used for billing and order writing, as described earlier. Where more or less figuring is required, as in extensions, totals, discounts, and so on, a billing machine may be used for both typing and figuring, in one operation. It may be used, also, when necessary, for control purposes, to keep the totals arrived at. Thus, the total sales figure will control the volume of money represented on the invoices; by making this control, the bookkeeper may be certain that all invoices have been duly made. The computing-billing machine will not be profitable, however, unless the volume of work is sufficient to keep an operator busy a reasonable proportion of the time.

BOOKKEEPING MACHINES

In its simplest form, the bookkeeping machine is in essence a typewriter with an adding and subtracting mechanism. Its value lies in its ability to add and subtract items to and from a given figure, producing a balance figure which is mechanically accurate, provided the work was correctly done; most bookkeeping machines have proof keys which cannot be depressed unless and until the work is accurate, thus providing an immediate checkup after each entry.

All any bookkeeping machine can do is to make an entry on some record, usually a ledger of some kind, in such a way that the record shows what took place, as well as the result of the transaction. Making these entries is called "posting," and may be easily illustrated by reference to an Accounts Receivable Ledger, for example.

The Accounts Receivable Ledger contains a ledger sheet or card for each of the firm's charge customers. When a customer makes a charge

purchase, the charge sales slip (or duplicate invoice, as the case may be) is sent to the bookkeeper, who locates the customer's ledger card or sheet, places it in the bookkeeping machine, and posts the transaction. This she does by first typing in the old balance shown on the ledger sheet or card; then she types the amount of the purchase, which is mechanically added to the old balance figure, the total showing in a dial on the machine. This total she now types in the new balance column. Thus the customer's ledger sheet or card always shows what the customer has bought, paid for, or returned for credit, and, in addition, the balance owing at any time.

In reality, therefore, the bookkeeping machine is a posting machine and is of the greatest value where the original entry is a sales slip, an invoice copy, a voucher, or some other single item. It can of course be used for posting from the original journal entry if desired, in which case it would be necessary to make the postings to two different accounts, the debit and the credit. As a rule, however, the machine is used where a control figure of some kind can be set up, with the individual postings made against this control.

On some machines the customer's statement may be typed at the same time the ledger entry is being made. This plan of making the posting and the statement in one operation is, in the majority of cases, the most economical. Since the daily proof of postings can be taken and the books kept in balance, the likelihood of posting to the wrong account can be disregarded.

Another plan of posting, called the "dual plan," consists of doing the postings in one operation, and making the statements to customers in another. When the statements, before being sent out, are compared with the ledger cards, it is assumed that any errors that have been made by posting to the wrong account will be discovered. While this assumption is undoubtedly correct, provided the comparing is carefully done, experience shows that such errors seldom occur and that the expense of duplicate posting is therefore unnecessary.

In the operation of bookkeeping machines, it is customary—bank bookkeeping excepted—to post debits and credits in separate runs; that is, all debit postings will be made at one time, and all credit postings made at another. It will be understood, of course, that in machine bookkeeping, only one entry—either a debit or a credit—is ordinarily posted on the machine, the contra entry being a collective control figure. All the sales tickets in a department store, for instance, will be totaled, and this total credited in one posting, which gives the control figure;

then the individual charges will be posted to the individual accounts; the total of these should equal the total sales to charge customers. The credits are handled in the same way.

TYPES OF BOOKKEEPING MACHINES

There are three general types of bookkeeping machines:

1. *The Combination Typewriter, Adding, and Subtracting Machine.* This type allows the explanation of the entry to be written in words (a very important feature of customers' statements), and performs the adding and subtracting operations on the entries. There are four kinds of these machines: (1) individual-column registers, (2) individual-column registers and a cross-computing register, (3) single main totalizer, and (4) duplex main totalizers.

2. *Adding and Subtracting Machine with Either Direct or Complementary Subtracting.*

3. *Adding, Subtracting, and Multiplying Machines.* Machines which are capable of accumulating or subtracting amounts as they are posted at different positions across a form are called "cross computing" or "cross footing." Those which have individual registers to add or subtract amounts posted in vertical-column formation are known as "vertical computing."

Bookkeeping machines should be used in all cases where the volume of work is sufficient to keep an operator busy, as one operator can make more postings on a machine than a bookkeeper can by hand, in addition to performing other operations at the same time. These machines should also be used when a statement and ledger posting can be made at one operation. If it is desired to have the ledger show an itemized posting, the bookkeeping machine is advisable; it should also be used wherever card or loose-leaf ledgers are permissible, always provided, of course, that the volume of work is sufficient to justify their use. When balances are frequently wanted on comparatively active accounts, much time is saved by a bookkeeping machine.

STATISTICAL OR TABULATING MACHINES

These are a combination of adding machines and sorting devices, the first of the type being invented for use in the United States Census Bureau. On the basis of this invention various other statistical machines have been produced.

The amount of work accomplished by these machines is so enormous

as to appear marvelous, but the principle upon which they are based is exceedingly simple, being merely the perception that the preparation of statistics by hand involves but two operations, (*a*) sorting information into classes and (*b*) adding up the totals for each class. The old method of doing this work in the Census Bureau was to write the information on separate slips, which were afterward sorted into various classifications by hand.

The inventor of the original statistical machine, Dr. Herman Hollerith, utilized the principle of the separate slip, replacing it with a card punched with holes. This card consists of 45 columns of figures, numbering from the top, from 0 to 9. The machine provides for 12 numbers, of which 10 are used for calculations, that figure being the base number of the decimal system employed. The two extra numbers are used for sorting. Certain groups of these columns are termed "fields," and a field may contain as many columns as desired within the limits of the card. These fields serve the double purpose of classification and the provision of the figures to be totaled. For the former purpose, the facts are represented by code numbers, and the numbers appear only on the card.

Let us assume, for example, that one field, consisting of three columns of digits, is set aside for model numbers. When the machine is set to operate in this field, the first step is to sort the cards into the different model numbers, which is done by placing all the cards for all of the different model numbers in a promiscuously sorted pile in the machine, from which they are rapidly passed over a surface having a row of pins corresponding exactly with the number of spacings on the card. As the card passes, the pin corresponding with the hole punched in the card passes through the hole, and this operates a mechanism which opens a gate, through which the card falls into a compartment corresponding to that particular gate. By running the cards through once, they are sorted into 10 divisions; by shifting the mechanism to the next column, they are again sorted into 10 divisions, and with the next shift to the third column, the third sorting will put all the cards in numerical order up to 999. If so desired, the machine can be arranged to pick out cards of one specified number in a field and sort all the remainder into a separate pile, a sorting operation that is performed at the almost lightning speed of 250 cards a minute—more than 4 cards a second.

When the cards have been sorted, the next operation is to tabulate the information, which is accomplished by putting the cards through another machine, and, in this, the punched holes actuate an adding-

machine mechanism, which very quickly gives the totals in each class. The cards are fed into a hopper, as before, in lots of four or five hundred. The tabulating machines are made in varying sizes, those in general use having five different counters, capable of handling simultaneously 40 columns of figures on the cards, which pass through the tabulating machines at the rate of about 100 a minute.

The cards are punched daily, as the items occur, by a special punching machine, but they may be used for sorting or tabulating at any time and will pass through the machine an indefinite number of times without wearing out. In one type of punching machine, a small machine is used with 10 punches, each operated by one of the keys, numbered from 0 to 9 on the keyboard and an additional punch and key marked "X" for the purpose of skipping any given fields which are frequently omitted. The card is inserted in the rack and pushed to the right, until the first column of the desired field is directly under the punches. After a numeral has been punched, the machine automatically feeds the cards forward to the next column. These cards can be punched by an experienced operator at the rate of approximately 2,000 a day. "Gang" punches are provided for use where the figures of a certain field are repeated many times; with these 10 cards can be punched at one operation.

In another type of punching machine there is a keyboard with which all the information it is desired to punch on the card can be set up and checked before the latter is punched.

Some tabulators are equipped to print as well as to tabulate; in this case, either each card can be printed or the subtotals of certain groups can be printed on a large sheet, similar to the printing on an adding machine. There are two general types of tabulating machines; in one the cards are sorted mechanically and in the other by electrical contacts. These statistical machines are usually rented, not sold outright.

MASS SCREENING OF FACTS

To classify 4,000 chemical compounds in an endeavor to discover efficacious ones which may be anticancer, a colossal 80-column punch-card machine with automatic collating sorters and tabulators was used to gather the information on 80 master sheets, one for each characteristic to be appraised. Chemical, physical, and biological properties were grouped in a score of different ways. (*Courtesy of The New York Times.*)

Automatic tabulating and sorting machines are especially adapted to cases in which there is a large amount of information to be handled daily. They should, however, never be used unless there is a sufficient volume of work to keep them reasonably busy, for they are a source of constant expense for rental. When two or more sortings are necessary, when original records are repeatedly referred to for the compilation of other groupings of information for statistical purposes, and when this work is of sufficient volume, the use of these machines is justifiable. Where there is but a small volume of work, it is more economical to list the information on slips, then hand-sort, and take totals on an adding machine.

KEYSORT

Another card-sorting device is the Keysort, by which cards may be readily sorted into groups in order to ascertain quickly any desired information. The same card is used for both the original record and the sorting, without further copying. The only other equipment needed is a hand slotting punch for small installations or a key-operated slotting punch for larger ones, and one or more hand "tumblers" (long needles), or a gang sorter for large installations. The equipment is sold outright, not rented.

In its operation, Keysort is quite simple. Suppose the record is an application blank. Around the four edges of the record card are small holes punched by the manufacturer during the printing of the card. Each of these holes is numbered to correspond with one item of information on the card. The applicant fills out the card, writing in the information called for. A clerk notes the code number opposite each item of information recorded and with a slotting punch slots the hole bearing the same number, so that what was a hole is now a notch in the edge of the card. When the clerk has finished slotting, there will be one notch for each item recorded on the card.

Suppose it is desired to locate all applicants who are college graduates. The cards are jogged and the needle passed through the numbered hole indicating "college graduate." Lifting the cards on the needle allows all cards of college graduates to drop down. If now it is desired to locate all college graduates with three years' experience, the needle is passed through the numbered hole indicating three years' experience; lifting the needle allows the cards desired to drop. To get the information desired as described here required two sortings; if two needles had been used on the first sorting, the only cards to drop down would have

been college graduates with three years' experience, making a second sorting unnecessary.

An ingenious code number makes possible the rapid sorting back into the original order; the needle or tumbler does it, using the coded holes (or, rather, notches) on the edge of the cards.

CALCULATING TABLES

In many cases, simple tables of calculation can be substituted for machines to real advantage. No calculating machine can figure interest as rapidly as these figures can be transcribed from a modern interest table. Although interest tables are in use in almost every office in the country, relatively few office men have perceived the possibility of using the same principle for making tables of calculation for other purposes, although such tables could readily be constructed.

For instance, a company may handle a range of merchandise at regular prices, of which there are, say, one hundred different rates, the quantities usually bought varying from one to one gross. It would be a simple matter to construct a table showing all the different calculations that could possibly be used and to paste copies of the table on convenient cards.

Calculating tables may also be employed where the variety of figures used is limited, as in pricing merchandise, making extensions, and figuring payrolls, and where there are complicated decimals or fractions to be dealt with, for figuring percentage, discounts, premiums, and so forth. Tables are not necessarily limited to plain examples in multiplication—they can be used for division, or even for equations, provided they represent regular gradations and are constant in their nature. Engineers have for years used tables of various sorts in their work, and logarithmic tables have been used for centuries; yet comparatively few office men ever seem to have conceived of their possibilities for office use. Before purchasing or using a calculating machine for any repeated operation it might be profitable to consider the possibility of using a table for the purpose

THE SLIDE RULE

Another valuable computing instrument, which could profitably be used in offices for problems involving multiplication or division or any combination of both, is the slide rule. It cannot be used for either

addition or subtraction. Among various applications of everyday occurrence in the office where rapid calculation is possible on the slide rule are the following: estimating, discounts, simple and compound interest, converting feet into meters, pounds into kilograms, and foreign money into United States currency, the taking of a series of discounts from list prices, and adding profits to costs.

With the 5-, 8-, or 10-inch slide rule, results can be obtained to two, three, and sometimes four, significant figures. Results are correct to four or five figures with the 20-inch rule, and to five or six figures with the Thatcher cylindrical slide rule.

There is a slide rule on the market especially adapted for the use of the business office, in which the scales for computation of square and cube roots, powers, sines, tangents, and other problems necessary for the engineer or technical man have been eliminated; in their stead, several scales have been added which simplify problems confined to multiplication and division.

Anyone who has a knowledge of decimal fractions can learn to use the slide rule, and the simplest operations can be learned in a few minutes. The gradations on the slide rule are not measures of length but represent figures, and the beginner must first learn to read the digits. This is not difficult once the point is firmly grasped that all gradations on the scales are multiples or fractions of 10.

CALCULATORS

These are nonlisting machines especially designed for rapid computations. They will add and subtract, but they are intended primarily for fast multiplication and division. Incidentally, it may be observed that multiplication is repeated addition, while division is repeated subtraction.

The calculators are either key-driven or crank-driven. On a key-driven calculator, depressing a numbered key adds that number, the sum total of figures added appearing in the dial at the bottom of the keyboard. Since there is no printing mechanism, there is no way to check a computation except by repeating it. Operation is fast, since only one key needs to be depressed to add that figure.

Crank-driven calculators have two, and sometimes three, dials which register the figures used in a computation, both before computing and afterward, thus providing a check on the work.

The crank-driven calculators may be operated by hand or equipped with a motor for extremely rapid electrical operation; on some auto-

matic models it is necessary only to set up the two factors of a problem in multiplication or division, whereupon the machine does the rest automatically. While the machine is engaged in computing a multiplication, the operator may set up the next multiplier; in a division computation, he can write down the quotient as it is being produced, digit by digit. Makers of calculating machines have worked out numerous and ingenious short cuts, which are usually explained in their instruction books.

Although many computations are quite simple to perform mentally, few clerks can do this mental figuring work steadily all day long without making mistakes, a sure sign of fatigue; the machine is invariably accurate, if operated correctly. In fact, calculators can be used profitably wherever the fatigue of continuous mental figuring is too great, as well as on all computations which cannot be performed as rapidly by the mental-manual method. Where the computation involves fractions and decimals, the machine is to be preferred to the mental-manual process.

Calculators can also be used for addition where it is not necessary to list the figures added, for control or checking purposes. On key-driven, nonlisting calculators, additions can be made twice in less time than they can be set up on a listing machine; if the same answer is secured both times, it may reasonably be assumed that the right figures were put into the machine. Where division or subtraction follows multiplication or addition, as in many computations, the work is usually done more rapidly and accurately on the key-driven calculator.

GETTING A LARGE OUTPUT

The first requisite to securing a large output of calculating work is to select and procure the proper equipment to be used. Although it will probably not be possible to use one type of figuring machine for all the various kinds of work, it is likely that two or three will answer all purposes.

With the proper equipment, the next step is to secure or train operators. The difference between trained and untrained operators on this work is very great, almost equivalent to the difference between a typist using the touch system and one employing the "hunt-and-punch" method. Therefore, it is an unwarranted waste of time to purchase a machine without having a trained employee to operate it. There is sometimes considerable difficulty in getting trained operators, for as a rule these persons, merely because they are trained, will demand a

higher wage than the work can afford; consequently, many companies prefer to train their own operators. If this training is given under the direction of the manufacturer of the machine, the cost will not be excessive.

Machine operators on figuring work should understand the computations sufficiently to be able to perform them by the mental-manual process; it is folly to place on one of these machines a young person who has forgotten most of her arithmetic, or who perhaps was never very proficient in it. A person who can do the calculations with pencil and paper, and who has a liking for arithmetic, should, with the proper training, develop into a competent operator.

It is important to measure the output of the calculating machines, keeping daily work records and submitting to the office manager weekly reports of each operator's work. These comparative records are not only valuable as indicating the relative ability of the workers, but they also serve as control records of the amount of work to be done and help the office manager keep the work flowing evenly.

The payment of bonus for a standard amount of figuring work is a strong incentive to high output; wherever the work can be measured, that plan should be used.

As mentioned earlier in this chapter, there should be enough volume of figuring work to justify the use of a machine and keep it reasonably busy, whatever method may be selected. It is equally imperative to regulate the flow of the work so that the operator will have an even volume throughout the day. The reports referred to above will assist in securing this flow.

CENTRAL COMPUTING SECTION

Some companies have organized central computing sections equipped with all the necessary machinery and with expert operators, on very much the same plan as that on which central stenographic or typing sections are formed. Since a trained calculating-machine operator can do several times the work of an untrained one, it follows that a grouping of these experts into such a section is an economical procedure, if it is at all possible.

A central service section is, however, not advisable if it merely means that work is taken away from other clerks and given to the section without at the same time making possible an arrangement of the work on a more economical or effective basis. If, for example, a half hour of computing work performed daily by a clerk is transferred to the

computing section, that half hour should be utilized in some manner that will advance the work of the department in which he is engaged; if it is not, nothing is gained by giving that clerk half an hour of leisure. In most cases, however, when the figuring work of a department is given to the central service station, it will be possible to realign the department's work in a way that will result in an eventual saving.

The study referred to earlier in this chapter should furnish sufficient data to determine whether or not a central section would be economical. In any case, it is certainly better to have a few well-trained operators than a large number of untrained or partially trained ones, to say nothing of the saving in the number of machines.

The central computing section, if established, should be located in the department having the largest amount of calculating work to be done and placed under the control of that department head. Thus, if the bookkeeping section has the greatest need of calculating machines of various sorts, the control of this special service should be located there. In some large offices there will be enough work to keep a group of 15 to 20 operators busy, with its own supervisor.

To facilitate supervision, the work should be brought to the section wherever possible; it is thoroughly feasible, however, to send an operator from the section to another location, just as a stenographer is sent out to a correspondent to take dictation or a file clerk to do the filing of a department. This is particularly true where the nature of the work is such that it should not leave the room in which it originates.

The central computing section should be organized with specialists—trained experts on a particular machine. An expert on a key-operated calculator should not be expected to shift to a listing or bookkeeping machine; that is, the work should be functionalized. It is also necessary to keep an even and steady flow of work, lest there be so much idle time as to wipe out most of the saving made.

While a central computing section can be of great service and accomplish much more work than an equal number of clerks scattered throughout the organization, there is also a danger that it may be loaded down with work that in itself represents no saving to the organization; this condition should be carefully guarded against.

QUESTIONS FOR DISCUSSION

1. "Most offices have more machines than they actually need." Comment on this statement and the reasoning involved.

2. "In general, machines should be used wherever and whenever they will save labor." Interpret this statement.
3. How much labor should a machine save? Why?
4. What else should a machine save besides labor? Comment.
5. Comment on idle machines.
6. What is the problem of surplus equipment, and how may it be handled?
7. What is the first consideration in determining whether to buy a machine for a particular operation? What facts should be obtained for such consideration?
8. What other points should be considered?
9. What six factors should be considered in choosing an office machine?
10. Comment on the desirability of a scientific examination of the mechanical features of a machine being considered.
11. In considering any particular machine, what questions should you ask about it?
12. Would you recommend the test of a machine under practical operating conditions? Why or why not?
13. How would such a test be conducted, and what would it show?
14. Comment on the advantages of standardizing on typewriters in any given office.
15. What are the advantages of electric typewriters?
16. What are the advantages of dictating and transcribing machines? Can you think of any disadvantages?
17. How may conferences and telephone conversations be permanently recorded?
18. List nine methods of duplication and describe each briefly, stating the advantages and disadvantages of each for office use.
19. What is the best method of duplicating sales form letters? Why?
20. Which kind of duplicating device is best for duplicating each of the following items: office forms, instructions, bulletins, charts, diagrams, reports, statistical tables, special articles from magazines, and multicopies of sales and production orders? Give your reason in each case.
21. What is the microfilm method of recording, and what are its advantages and disadvantages? Comment.
22. What work may be done on addressing machines, and how is it done?
23. What are the two types of addressing machines?
24. Describe some special features used with addressing machines.

25. Comment briefly on the use of folding machines in the office.
26. Comment on stamping and mailing machines.
27. How may the sorting of papers be speeded up?
28. What is the advantage of using a pegboard in comparing or recapitulating columns of figures?
29. Comment on the desirability of using machines for figuring.
30. How would you make a preliminary analysis of the figuring requirements of an office?
31. Is machine figuring always more rapid than any other method? Explain.
32. What types of figuring are found in offices?
33. List nine types of figuring equipment used in offices.
34. When should each of the various types of calculating machines be used?
35. What does a billing machine do? What advantages are there in using a machine for that purpose?
36. Describe briefly three general types of bookkeeping machines.
37. Do bookkeeping machines keep books? Explain.
38. How is a posting made on a bookkeeping machine? Explain.
39. What is the dual plan of posting, and why is it so called?
40. Is it feasible, in Accounts Receivable Ledger bookkeeping, to make the customer's statement and the ledger posting in one operation? Why or why not?
41. What is a "run" in machine bookkeeping?
42. Why are debits and credits posted in separate runs? Illustrate your answer.
43. Explain the *use* of statistical machines.
44. When should statistical machines be used? On what basis may they be obtained?
45. What are the features of Keysort? Of what advantage are these features? Can you think of any disadvantages?
46. Under what circumstances might calculating tables be more efficient than machines?
47. How could the slide rule be used to advantage in offices?
48. What is the difference between an adding machine and a calculating machine?
49. Why are calculating machines helpful in office work?
50. How may the office manager control the output of calculating machines?
51. "It is an unwarranted waste of time to purchase a calculating machine without having a trained employee to operate it." Explain.

52. Is a knowledge of arithmetic necessary to the proper operation of a calculating machine? Why or why not?

53. Comment fully on the organization, operation, and supervision of a central computing section.

54. "The work of a central computing section should be functionalized." What does that statement mean?

55. What possible danger is there in having a central computing section? How may the office manager guard against that danger?

PROBLEM I

What is the best method of making the duplicate copies required by the McLean Button Company (mentioned in the problem at the end of Chap. X)?

PROBLEM II

The following quotation is from *Social Work Administration* by Elwood Street, Harper & Brothers, New York, 1931.

"Part of the problem of bookkeeping for a social agency which has to collect funds from subscribers is to keep an account of amounts due for the current year and from previous years, so that statements may be easily and correctly made out and credit for payment given promptly and accurately.

"The system which is used by the Community Chest of Washington, D. C., may be helpful. Subscribers receive statements when payments are due, and each month thereafter until payments are made. The statement, which fits in an ordinary 6¾-inch envelope, is perforated down the middle. To the right of the perforation is a coupon showing the amount of the subscription, the amount paid and the balance due; and this the subscriber is asked to keep as a record. On the left of it appear his name and address, and the amount of his payment. He is asked to return this part of the statement with his payment, but if he fails to do so, his name and address, verified if necessary by reference to his pledge card, are written out on a blank statement and attached to the payment. The statements and payments are arranged alphabetically by a check sorter which has a little partition for each letter of the alphabet, and the cash and statements are then separated. Each statement is placed in turn in a remittance register which records on the face of the statement, and on a sheet locked into the register, the serial number and the amount of the payment and the ledger to which it be-

longs. A deposit slip is made up from the payment by another employee than the one who recorded the statement on the register, and the total on this slip must agree with that recorded on the register; if it does not, they are carefully checked for the error. When they prove, the deposit slip and the cash are taken to the bank.

"The files of addressing-machine plates, which also serve as ledger cards, are divided into four approximately equal parts with a typist in charge of each section; and she is responsible for all the work in that section. Each of these section clerks posts, from her particular group of statements, the date and amount of payment to the subscribers' records, which are cards set in the upper halves of the addressing-machine plates. On the top of each plate is a "switch" tab, which is then turned to the "skip" position so that no bill will be sent until the next due date. As long as the skip tab is in its first or unpaid position, bills will be made from that plate each month. At the beginning of each quarterly billing period, all the skip tabs are turned back to the billing position so that the addressing machine will select all of them, imprint addresses on the bills, and fill in the amount of the subscription. If the subscriber does not pay for several months, the skip tab indicates this until payment is finally made. When the time comes for billing, those plates which show payments due are imprinted on bills printed in strips of six for speed in running through the addressing machine and typewriter. These strips of bills, together with the drawers of addressing-machine plates, are then given to the typist clerk responsible for that section of the plates and she types in the amount due. If a person owes more than one payment, the typist computes the amount of the total payment due and enters it in the proper place on the bill."

This method has been improved. How would you do it?

PROBLEM III

The Old Colony Rope Company has 75 clerical employees and 50 calculating machines. Naturally, these machines are not in constant use. When the office manager's attention was called to the situation, he claimed that the interest at 6 per cent for 1 year on \$500 was but \$30, and that each worker saved more than \$30 worth of time annually by the use of a calculating machine.

Is there a fallacy in this reasoning?

"Many offices just grow, without any directing influence or thoughtful planning."—GEORGE D. WOOD.

XIV

PROVIDING OFFICE SPACE

Although changing conditions in a locality may be beyond the control of the designer of an office building, they are not always beyond the ability of a thoughtful planner to predict.

Mistakes in the actual design of a building, however, are almost always entirely avoidable by the owner, if he will devote enough thought to the problem and insist that his requirements be met in the designing. Since it was found that many architects either could not or would not design a factory building that would be efficient, modern factory buildings are now constructed by architects *and* engineers working together, the engineers furnishing the technical knowledge needed to plan the building so that the various processes can be carried on with the smallest loss of energy.

In like manner it is now recognized that the proper construction of an office building requires technical knowledge of office procedure and office needs; architects are either bringing in technical office experts to cooperate with them, or are having them brought in by wise executives, who perceive that such special knowledge is indispensable to the erection of an effective office building.

LOCATING IN AN OFFICE BUILDING IN A LARGE CITY

In choosing an office location in a large city—where, as a fact, most offices are—there are many adverse conditions encountered, some of which constitute utterly insurmountable obstacles. As a rule, the space is very expensive, and the tenant has to put up with many inconveniences which would be quite unusual in a small town.

The general character of the neighborhood should be the first consideration. Light should be next. Daylight is not free in a large city; on the contrary, it commands a premium, but no office manager should

for that reason choose a dark location; for while the rent is usually "all the traffic will bear," it is rarely more. Since office work means constant use of the eyes, inefficiency due to poor light will cost more than the rent of the best lighted office space. The next consideration should be the elevator service and other traffic conditions in and out of the building. There are many other desirable features, but these three are paramount and can usually be secured if the search is thorough.

Under ordinary circumstances it is not advisable for a small company to erect a building in a large city for its own use even if it owns the ground, for generally the lot is a narrow one, necessitating the erection of a narrow edifice—a most inefficient type for office work. In addition, all future expansion must be upward, and, unless the building is more than four stories high, the growth of the neighborhood will make the use of the space for a small building comparatively expensive. If such an extremely narrow structure is higher than four stories, it becomes fit only for small offices occupying not more than one floor, as the energy wasted in traveling up and down many stories is more expensive than the distinction of owning one's building is worth.

PROVIDING FOR EXPANSION

Most companies give little more than cursory attention and superficial thought to the probability of growth requiring more space for office

CHOOSING AN OFFICE LOCATION

Since the main purpose of an office is to facilitate the conduct of the business, its proper location depends primarily upon where it can be of most benefit to the business. There are five choices:

1. When all the functions of the business are carried on in one location, the office can best serve the business by being in that location also.
2. Which function of the business does the office serve most? If financial, then the office would best be near the financial head.
3. If the office serves the sales function most, then it should be located near the sales headquarters.
4. If the office serves the production or manufacturing function most, it should be located near that function.
5. If the nature of the business does not require the office to be located near any of the main functions of the business, then the decision as to its location may depend upon factors in no way related to the conduct of the business: character of the neighborhood, daylight available, transportation, fresh air, cleanliness, rent.

purposes. It is true in most cases that when a new office is rented, a larger one than is needed is taken, to "allow for expansion," but seldom is scientific reasoning applied.

Where space is scarce and rents high, provision for expansion is admittedly a difficult problem, although there are many ways in which it can be done, such as getting options on space as leases expire, or leasing more space than is needed at the time and subletting it on short leases. Of course, many offices when first established have no data on which to base their probable growth, and often there is little more than a hope that such growth will occur.

Assuming an established company, however, with at least 10 years' business experience to use for purposes of study, estimate, and comparison, it should be possible to make a fairly accurate calculation as to the growth in the coming decade. The following steps should be taken:

1. *Growth.* Calculate and chart the growth of the company from its inception, in some unit more stable than the dollar. Pieces sold, or orders, would be more reliable. If these show a steady growth over a period of 10 years, it should be fair to assume—unless some variable factor intervened—that this growth would continue at about the same rate for the next 10 years.

2. *General Business Conditions.* Compare the growth chart with one showing general business conditions, noting particularly whether the growth or the lack of it during recent years was due to either a general expansion or contraction in general business.

3. *Internal Influences.* Ascertain whether or not any particular policy in force, now or previously, might affect the curve of growth. As an example, suppose that the ten-year history of a company shows that for the first seven years the company practically stood still or had at most a very minor growth. Then a successful merchandising policy was put into effect, resulting in a tenfold growth in the next three years. It is obvious that the average of the entire ten years would not properly reflect the probable future growth of the company, but would be far less than the actual increase that could reasonably be expected.

4. *Special Conditions.* Take into consideration any particular period of prosperity due to special conditions which may or may not be repeated.

If the above four factors are carefully and thoughtfully considered, a curve of probable growth can in most cases be charted with fairly accurate results for the majority of businesses. Many progressive houses constantly carry forward such charts of probable expansion as a general practice of preplanning.

The office manager should remember, however, that an increase of business does not always necessarily require a proportionate increase of clerical help. Some departments expand in a direct ratio to the increase, while others will have but a slight growth or perhaps none. To determine correctly the amount of space needed for expansion, figure the ratio for each department separately and then calculate the expansion for the establishment as a whole.

In selecting a new office, expansion should definitely be allowed for over the next five years. If growth is expected to be rapid, requiring more space than is at present needed, such space can usually be sublet (provided this is arranged for in advance with the landlord) on short-time leases, expiring about the time it is calculated the space will be needed. If possible, options should be secured on additional space at the expiration of the first five years.

FACTORS OF THE LOCATION PROBLEM

In deciding upon a location, the following factors must be considered:

1. *Suitability of the Neighborhood.* Each locality in a large city has particular characteristics, some desirable and others highly undesirable for a specified business. It is usually considered good business practice to locate in a neighborhood where there are others in the same line, although this is not always true. If the general tendency of a certain line of business seems to be to move away from a particular neighborhood, it would be folly to move into it, even if that neighborhood had, at the time, the greatest number of firms in the line under consideration. Tendencies in the shifting of locations can sometimes be predicted long in advance through a study of traffic conditions or proposed lines of transportation. Again, the growth of a certain business in any particular section often threatens to burst through its boundaries in one or more directions. The changing conditions during the past 50 years in the business districts of New York, Chicago, Boston, and other large cities are striking examples of the need for great caution in this respect.

2. *Proximity of the Office to Other Departments of the Business.* The relative importance of the office being available to the (a) factory, (b) warehouse, (c) general public, salesmen, or customers, and (d) general salesroom is a problem that is never satisfactorily solved in a large city, when it is necessary to separate one from the other. To determine which department the office should be nearest requires more than mere executive decision. Record of actual contact should be made over a definite

period of time, and careful study given to the question of relative importance.

3. *The Labor Market for Clerks.* It is not always possible to get adequate clerical help if the location is poor, yet an office cannot be successfully conducted without adequate help. In one case, by no means exceptional, the office had been moved from a downtown location to the factory, in a section where there were several other factories employing many unskilled laborers. For years this company has struggled along with the most inferior type of clerks, being able to keep only that type which was so inefficient that it could not hold jobs elsewhere. This condition constitutes a handicap that has seriously hampered the growth of that company to this day.

4. *The Value of Space.* If an office is combined with another part of the business, the relative value of the space chosen for the office should be considered. Usually, not all areas in a rented location are of equal value, even though the over-all rent may be on a uniform per-square-foot basis. If there is a choice, the department allotted the better space should be charged a higher rate than the department using the less desirable space. If there is no choice, the value of the space occupied by each department should be charged to it at so much per square foot of space occupied by the department, on a relative basis. For example, if the space allotted to the office is 80 by 250 feet, or 20,000 square feet, out of an area of 100,000 square feet at a rent of \$3 a square foot, the relative value of the office space is as 1 to 5, or \$60,000 out of the \$300,000 total rent.

5. *The Employees' Entrance.* In a large office building occupied by many tenants, this is seldom a factor, but occasionally it is a determining consideration. In one case, the location of the employees' entrance made it necessary for the clerks to pass through a very undesirable neighborhood, which had a decided effect in increasing clerical labor turnover. A change of the entrance to the other side of the building corrected this defect.

AVOID DISTURBING FACTORS

Owing to the peculiar character of clerical work and workers, there are a number of disturbing factors that should, if possible, be guarded against.

Street noises are very distracting; for this reason, offices in the higher parts of the building are preferable.

Dirty locations caused by neglected streets and surroundings should

be avoided, as well as unusual volumes of smoke and soot deposit. Chemical fumes, unpleasant odors arising from numerous sources, and similar annoyances are handicaps in office work.

Noise or vibration from factory machinery, above or adjacent to the office, are also disturbing conditions in office work.

ARE VENTILATION AND LIGHTING ADEQUATE?

That an office should be well ventilated is obvious, but many locations are of such character that adequate ventilation is difficult or impossible without special equipment. Low ceilings, few windows, or windows opening on narrow courts are certain to result in poor ventilation and deficient light, as will a location cut up into small rooms. The condition of the outside air should be observed and considered seriously.

A building not over 40 feet wide, with light on two or more sides, will have good natural daylight and ventilation, provided outside conditions are satisfactory; but if possible a building with an eastern or southern exposure should be avoided on account of the excessive glare of the sunlight in summertime.

Buildings with small windows should be avoided. One in which the windows occupy 75 per cent of the surface of the outside wall is ideal, though not too often found in older office buildings. The old-fashioned type of building, in which only about 30 per cent of the wall space is given to windows, is very expensive, no matter how low the rent.

Recently, some office buildings have been constructed without windows. Advantages claimed are better control of temperature, humidity, dust, dirt, noise; uniform lighting regardless of outside weather conditions; full utilization of wall space. Offsetting these are the heavier cost of installing and maintaining adequate lighting and air-conditioning equipment, not to mention the psychological effect on employees of not being able to see outdoors.

If artificial lighting must be used for a considerable period each day, it should be ascertained whether or not there is sufficient wire in the building under consideration to carry the current required to give an evenly diffused light of an intensity of at least 30 foot-candles; 50 would be even better.

SHAPE AND SIZE OF SPACE

In deciding upon the size of space, the actual area in square feet is not the only consideration; the shape is also important. One large rec-

tangular area is much better for general office purposes than a number of smaller rectangular ones. Long, narrow spaces are undesirable if much walking back and forth is required; this also applies to space around a court or well in the center, if the office is to occupy the entire floor. Large offices should, if possible, endeavor to accommodate their force on one floor, though, of course, this choice is limited; an office requiring 40,000 square feet would ordinarily be much better accommodated on two floors than on one. The deciding factor here should be the necessity for contiguity of departments. It is much more economical to travel 15 feet up or down stairs than to travel 200 feet on a level. Space allowances for desks, chairs, aisles, and so forth are given in Chap. XVI on Office Arrangement.

ELECTRICAL CONDUITS

In the construction of every new building for office purposes, provision should be made in advance for floor conduits for telephone, buzzer, power, light, and annunciator wires. The local telephone company will usually provide detailed plans for its service wires.

CLOAKROOMS AND REST ROOMS

Adequate provision should always be made for the proper storage of employees' wraps. The customary practice in small offices is to place costumers around the room; this is not only unsightly, but when the garments are wet—as they will be at times—they give off an unpleasant odor. The practice also wastes space. In some offices, individual lockers are provided; these are expensive and also waste space, for they require 3 square feet for each person, allowing for the standing room in front of the locker. A better plan is to have an enclosed, well-ventilated room, provided with hangers, racks for hats, and a place for overshoes, rubbers, and umbrellas. In some large offices, checking rooms, with attendants, are provided.

Rest rooms for women are a requirement in some states and are an advantage everywhere, as they improve the morale of the organization. These rooms should have a homelike appearance, with easy chairs and cots; a separate room with a cot should be provided, where, in case of necessity, a person can lie down and sleep without disturbance.

Where smoking is not permitted in the office, the provision of a room where employees may at times retire for a smoke will be found to be a decided advantage. In an office where smoking is not allowed, the smell

of smoke can usually be detected in hallways and toilet rooms, an indication that the clerks appropriate time for a smoke notwithstanding the prohibition. It would be much better to allot them a comfortable room where they can indulge openly, for a secret violation of office rules always impairs the morale of the organization, and it is probable that no more time would be consumed in smoking in such a room than is used in the semisecret places mentioned. It appears both illogical and exasperating that executives may smoke in an office while others are forbidden the practice.¹

THE PRIVATE-OFFICE PROBLEM

It has long been recognized that there are certain types of work which require privacy, and certain individuals who desire it. A private office enables some persons to concentrate on their thinking, who without such privacy would be utterly unable to do so. It must not be assumed, however, that all persons require solitude and quiet in order to concentrate, for many persons cannot concentrate when segregated from the sight and hearing of other workers; on the other hand, there are many individuals who can concentrate under any conditions. Of course, under all conditions there must be physical ease—reasonable bodily comfort—but the private office by no means guarantees that. For the executive who must have privacy to concentrate and develop the thinking that is vital to the interests of the business, however, the private office is a necessity.

A private office has the advantage of not distracting the attention of the office workers by visitors who talk loudly or who must enter or pass through the open office at frequent intervals; a private office in which they can be received is undoubtedly an advantage.

Finally, the private office bestows a certain dignity and distinction upon the position of the occupant; this may or may not be considered an advantage. The question is a serious one for any company, as it involves both the position and the occupant; it is not possible to separate clearly the dignity and distinction of the position from that of the person occupying it. It is not always easy to decide what positions or persons in an organization are entitled to such distinction; in all cases it is

¹ For a detailed report on smoking privileges allowed by 836 companies, see *The NOMA Office Customs Survey*, pp. 4-10, published in 1947 by the National Office Management Association. An extract also appears in the *NOMA Handbook for Office Managers*, pp. 810-813, published by The Ronald Press Company, New York, 1947.

best to make the decisions as impersonal as possible, so that the position rather than the person is considered. If a sharp line is not drawn on this subject, it is certain to occasion much jealousy and consequent loss of office morale.

The foregoing considerations fairly sum up all the advantages that may be attributed to the private office, but much can be said upon the other side of the question.

DISADVANTAGES OF THE PRIVATE OFFICE

The necessity for privacy as a factor in the conduct of modern business is frequently overstressed, for it is not easy to separate the purely utilitarian aspect from human desires and ambitions for personal prestige. The tendency, however, is to do just that. The modern metropolitan bank has almost abandoned private offices, and major executives are located in the open on an officers' platform. Granting privacy to individuals who do not need it is not only a wasteful practice in office arrangement but actually lowers the general effectiveness of such individuals.

It is to be understood that the criticisms which follow apply only to private offices which are contemplated in a room already built. It is obvious that in buildings to be erected by and specially designed for a company, the private offices provided are not necessarily subject to the disadvantages enumerated below, but can be designed so as to avoid them, either entirely or in great part.

The private office complicates the ventilation problem to some extent. Usually the only ventilation of such enclosed spaces is afforded by the open windows, which are kept open in hot, but usually closed in cold, weather, when ventilation practically ceases. Under such circumstances concentrated thinking is rendered difficult, and the private office thus defeats its own purpose. The condition described can only be corrected by installing a separate ventilating system for the room.

The private office is difficult to light properly, as the standard lighting arrangement usually provided for an open room or general office space is frequently found to be in the wrong position for illuminating an enclosed room taken from this space. This condition necessitates rewiring and rearrangement of lights.

It is generally difficult to heat, for usually the heating equipment designed for a large room is not suitable for a small enclosure in that room. Radiators may be absent altogether; if present, they are generally of

such size and volume that they furnish far more heat than is necessary to the limited space. The condition can of course be corrected by the installation of new radiators adapted to the size of the room.

From the above it follows that the private office also interferes to some extent with the light, heat, and ventilation of the general office; in many cases this interference may assume the proportions of a serious defect.

The private office wastes space, interferes with flow of work and traffic, and makes supervision more difficult. In some cases these interferences are of minor character; in others they may be defects. It may also be added that some of them are not possible of correction.

A private office is costly to build and equip. The changing of partitions is usually an expensive proposition, for the decision to have private offices nearly always entails the rearrangement of the floor space. Private offices usually require much more expensive furniture than where the occupant is located in the general office. Extra expensive desks, chairs, bookcases, rugs, pictures, and so forth, are usually procured for this purpose. It is also in most cases necessary to provide extra means of communication, such as telephones and buzzer systems.

A PRIVATE OFFICE FOR EVERYONE

A California company provides a private office for every salaried employee, including draftsmen and stenographers. The company president states that privacy and the comfort of pleasant surroundings add 25 per cent to an employee's production—often 50 to 100 per cent.

The standard private office for a draftsman is 8 x 14 feet, plywood paneled from carpeted floor to sound-deadening ceiling. Bookshelves, supply cabinets, and coat closets are recessed in the paneling along one wall. Fluorescent lighting fixtures provide a balanced light, while air conditioning keeps the occupant comfortable.

Stenographers enjoy the same comforts, privacy, and prestige. (*Courtesy of Business Week.*)

NOTE: It would seem obvious that the mere provision of a private office—in and of itself, alone—would not produce the results claimed by this company. Three other factors must be taken into account: the extremely careful selection of employees, their adequate supervision, and the measurement of their output, which involves the setting of standards. Without standards there is no knowledge of what an employee's output should be. Even with careful selection of employees, some mistakes will be made. And to leave employees unsupervised is to "leave one's purse open," as Benjamin Franklin put it many years ago. The more enclosed areas there are, the more difficult is supervision.

In addition, much time is certain to be wasted by clerks, messengers, and others who are sent to see whether the occupant is or is not in his private office. After a general office has been carefully planned, the addition of enclosed spaces rarely makes the plan more harmonious, but usually detracts from the appearance and effectiveness of the entire office by taking light and air from clerks who need it more.

These numerous disadvantages are the cause of the general tendency to reaction against the private office on the part of the most modern companies; on the whole, the disadvantages outweigh the advantages.

The need for private offices can be greatly decreased if the company will provide an adequate number of conference rooms which can be used by those executives who occasionally have a real need of a private room. This occasional use will enable several executives to be served by the same enclosure.

It now remains to discuss the question of the kinds of positions for which private offices *may* be advisable, despite the disadvantages mentioned.

WHEN PRIVATE OFFICES MAY BE ADVISABLE

Major executives, such as the president, secretary, treasurer, general manager, sales manager, production manager, and so forth, hold positions for which private offices may be advisable. Such positions may be assumed to have need of privacy, concentration, avoidance of distraction to others, and dignity and distinction. Although it is usually desirable to provide private offices for these officials, many of them in modern offices are of their own accord deciding to locate in the open office. This is especially true of banks.

Executives or other persons may do work the nature of which requires privacy. These may or may not be high-salaried employees, *the nature of the work determining the need*. Such work may require the handling of large sums of money or securities of great value, or it may be work of a highly confidential character. Positions which involve work of this kind need only privacy; in many cases this can be obtained by providing one or more rooms which may be used in special cases by different persons. A private room or office for this purpose need not be large, nor does it especially require daylight.

Persons who have frequent visitors from outside usually need a private office. It is undesirable and expensive to have visitors received and interviewed within plain sight and hearing of the entire office force. If there is loud talking, everyone must listen, whether he wishes to or

not. The listening causes waste of time, poor work, mistakes, and general inefficiency. It must be remembered that not only does every interruption cause a delay while the interruption continues, but it takes time to get back into the swing of the work. A room for this purpose need be no larger than will accommodate the average number of visitors expected at one time. It does not especially require daylight, but it should be sufficiently soundproof.

Persons whose work requires an unusual amount of concentration, and whose temperament demands privacy for such work, will need a private room where they can concentrate. Persons who are expected to do creative work, and who need privacy for that purpose, should be similarly accommodated. The lighting of such an office should be good, though daylight is not indispensable, and the room, though not necessarily large, should be soundproof to the degree required by the nature of the work.

LOCATION OF PRIVATE OFFICES

A private office may be located alongside a window and occupy space equally divided between windows and adjoining rooms.

It may be located within the general office and away from a window, in which case it will be dependent upon artificial light. Before deciding to allot an inside office away from a window, the efficiency of the occupant should be compared with that of the number of people in the general office who would be wholly or partly deprived of light by such an office. Obviously, the partitions should not be extended to the ceiling, to minimize interference with ventilation.

If a private office may be located in some natural alcove, ell, or side room off the general office, its location will discommode no one.

Sometimes a private office may be located alongside windows in a separate part of the office, so as not to interfere with the light required by the clerical workers. To locate the private offices on one floor and the clerical workers on another is, in many cases, wasteful of space and in all cases wasteful of energy, but it may be the lesser of two evils.

CONSTRUCTION OF PRIVATE OFFICES

Private offices may be constructed of various materials. Tile and plaster are more permanent and more expensive than other kinds; they are largely soundproof but require interior ventilation.

A private office constructed of glass and wood or steel is less expensive to erect, because the partitions may be bought in standard sections. It can also be constructed so as to allow a certain amount of ventilation, but it is not soundproof; in a quiet office, conversation within such a room can be readily heard outside it. If clear glass is used, the passage of some light is admitted. Florentine glass admits still less, but either kind prevents 50 per cent or more light from passing into the general office.

Solid wood construction is very expensive, if paneled with costly veneers; or very cheap, if ceiling lumber is used. Ventilation can be partially obtained by means of transoms, but this construction is not soundproof.

THE RECEPTION ROOM

The reception room, the public entrance to an office, is a feature of vital importance, for it is there that the visitor gets his first impression of the establishment. Factors to be considered include location, size, and lighting.

1. *Location.* The reception room should be easy for callers to find without wandering around. This point may seem obvious; in many cases, however, reception rooms are not readily distinguishable. Whatever signs are necessary should be provided. Furthermore, the receptionist should be located so that he or she will be immediately visible to the caller entering the room.

If possible, the reception room should be located near the private offices to which visitors are most likely to be directed; thus they will be able to reach those offices with the least possible travel through the general office. Indeed, it would be well if the reception room were so placed that visitors cannot see the main office, since the attention of the clerks is often distracted and their work interrupted by the entrance of a caller who is visible to them.

2. *Size.* The room should be large enough to accommodate the largest number of callers who are likely to enter it at any one time. When this number has been estimated, multiply it by 10, which will give in square feet the minimum space to be allowed. When the maximum number of callers is present, the room will be somewhat crowded, to be sure, but this will happen only occasionally; at other times there will be ample room.

If the office is small and there are but few visitors, a minimum allow-

ance of 50 square feet should be made and then the allowance for visitors added.

3. *Lighting.* Inasmuch as there is little work done in the reception room, daylight is of no particular importance, though there should be sufficient light to indicate that the office is open for business. Where reading matter is provided, the light should be sufficient to enable the caller to read comfortably while waiting. Some reception rooms are designed with a lighting arrangement intended to produce some particular impression. If, for example, it is desired to produce a homelike environment, subdued lighting would be used; if, as in some cases, there is an illuminated show window in the reception room, in which merchandise is displayed, the light in the rest of the room should be subordinated to attract attention to the show window.

It is a commendable practice in most cases to supply reading matter for visitors who may have to wait in the reception room until those upon whom they call are ready to receive them. The selection of this reading matter is a question for the judgment of the management. As it may be reasonably assumed that many, if not most, of the callers are interested in some product or service of the company, it is usually customary to provide some literature on these subjects, the best and most attractive being naturally the wisest choice. Care should be taken to minimize the possibility of offending visitors, if the reception room serves more than one class of callers.² A few current magazines and miscellaneous reading matter of other kinds, selected as interesting to the majority of readers, may be introduced to vary the collection. Naturally, no specific rule can be given for this selection, the management being the best judge of its customers' tastes in these matters. In any case, whatever is supplied should be removed or replaced before it becomes dog-eared and soiled from handling.

QUESTIONS FOR DISCUSSION

1. Why does the planning of the proper location and construction of an office building require technical knowledge of office procedure and office needs?
2. What are some of the comparative advantages and disadvantages of locating the office either in a small town or a large city?
3. Is it advisable for a small company to erect an office building for its own use in a large city? Why or why not?

² See *Industrial Relations Magazine*, Vol. 6, No. 4, p. 34, for a striking instance.

4. Why is it inadvisable to erect any office building on a narrow city lot?
5. To which department of a business should the office be located nearest?
6. Before selecting office space, what data should be secured in order to furnish a basis for provision for expansion?
7. "An increase in business does not always mean a proportionate increase in clerical help." Explain.
8. For how long a period should expansion be definitely allowed? Why?
9. In selecting a location, what five factors should be considered, in the order of their importance? Comment on each.
10. Why is a consideration of the neighborhood important?
11. Where should the employees' entrance be located?
12. What disturbing factors should be avoided or guarded against?
13. Comment on desirable lighting and ventilation facilities in renting office space.
14. What is the ideal window space on the outside wall?
15. Who should have daylight, if there is a choice?
16. How far does direct daylight penetrate a window?
17. Comment on the factors affecting the size and shape of the office space.
18. Is it better to locate a large office on one floor? Why or why not? What factors might influence the decision?
19. Where should electrically operated machines be placed? Why?
20. In constructing a new office building, what provision should be made for electric wires?
21. What provision should be made for the proper storage of employees' wraps?
22. What provisions should be made for smoking?
23. Comment on rest rooms.
24. Comment fully on the private office problem and what may be done about it.
25. Are private offices undesirable? Why or why not?
26. When is a private office desirable?
27. Where should necessary private offices be located?
28. What is the best construction for private offices?
29. Comment on the location, size, lighting, arrangement, and administration of the reception room.

PROBLEM

The Iroquois Knitting Company has allowed its office organization to become antiquated. More than 200 clerks are employed, but these are scattered so that no more than 30 are in any one place; clerks are to be found in each of the company's six mills. Working conditions are bad, and proper supervision is impossible.

The management now realizes that something must be done. It feels that it cannot afford to erect a new administration building, but it can assign two floors, totaling about 24,000 square feet, in a fireproof concrete building that was formerly used by one of the manufacturing departments. The sides of this building are practically all windows. Dimensions of each floor, 60 by 200 feet. The floors and ceiling are of monolithic concrete construction, and bays are 20 by 20 feet. There is a woodworking shop on the floor below. The building runs east and west. There are 6 executives and 12 department supervisors.

Is this place suitable for office work? If not, what are its chief disadvantages?

If you were asked to centralize the office in this building, what alterations would you suggest to convert it into a modern office? Give reason and justification for each recommendation, for the company cannot afford to spend money for frills.

How many private offices would you supply, and why? What other partitions would you erect?

"Savings of 20 per cent or more in clerical operating costs can often be achieved by improvement of the physical conditions under which work is performed."—H. A. HOFF.

XV

WORKING CONDITIONS

The efficiency of office employees is directly or indirectly affected by the conditions under which they are required to do their work. Even the most conscientious employee cannot do his best work if he is uncomfortable, whether he is conscious of the discomfort or not. If the light by which he works is inadequate in any respect, both the quantity and the quality of his work are lowered. If the air he breathes is stale or dry, his working pace slows as his senses are dulled. Overheating of the working area is worse than underheating, although both are expensive in terms of decreased output and weakened resistance to respiratory diseases. The distraction and fatigue caused by noise are very real and to a certain extent measurable as well as preventable. Even the distances from desks to drinking fountains and washrooms are as important—though not to the same degree, perhaps—as the internal messenger service in reducing or increasing the amount and frequency of necessary travel and absences from desks while drinking or washing. Any office manager will admit his concern over the time wasted by employees who are away from their desks on personal errands during office hours. One of the easiest ways to improve office performance is to improve working conditions.

THE IMPORTANCE OF LIGHT IN OFFICE WORK

Office lighting should make possible more than merely seeing; it should make it possible for the worker to see what he is doing—clearly, quickly, and accurately. Less than adequate illumination, therefore, results in delays and mistakes: delays, because it takes longer to read in poor light; mistakes, because the visual image is indistinct instead of sharp and clear. In addition, the effort made in trying to adjust the

eyes to inadequate or improper illumination causes eyestrain, fatigue, headaches, and other ailments, which result in further delays, errors, and interruptions to work. One of the responsibilities of the office manager is to provide adequate illumination of the proper type for the work to be done. With the improvements in lighting fixtures and with the instruments and lighting engineers now available for determining what is required, there is no excuse for not providing it. The cost is insignificant compared with the resulting benefits in improved work, quicker work, fewer absences, fewer delays, and—because of these benefits—actually lower over-all costs.

DAYLIGHT

Office lighting may be natural daylight, artificial light, or a combination of both. Daylight is admitted through windows in the walls or roof. As is well known, office buildings are often located where, owing to crowded conditions, it is very difficult to provide natural daylight; yet these very conditions are caused by the fact that there is a pressing demand for space in such neighborhoods. The skyscraper apparently breeds other skyscrapers until the saturation point of traffic facilities is reached; the office manager who seeks a location in an office building already erected in one of these crowded metropolitan areas must do the best possible with the conditions offered.

Until recently, small windows in office buildings were the general rule; even today, with much larger windows and more of them, the most modern office buildings are not so well supplied with natural daylight as are modern factory buildings, the sides of which are practically all window surface. The best types of office buildings now devote to windows about three-quarters of the linear wall space and about three-quarters of the height of the room.

When one- or two-story office buildings are erected they are sometimes equipped with the typical "saw-tooth" roof of the factory building, with windows in the vertical part of the "tooth," which allows a much greater interior width of office floor.

Since daylight will not penetrate in sufficient volume more than 25 or 30 feet, the ideal width of an office building, with windows on both sides, would be from 40 to 60 feet. Such a building should have sufficient light to make work by daylight possible on every portion of the floor space throughout most of the year. The general shape of the structure will of course determine, to a greater or lesser extent, the daylighting

conditions. If the building is a huge square, of, say, 100 feet or more on a side, the center space on each floor will always require artificial light.

In some locations during certain seasons and hours of the day, the sunlight causes excessive glare. This condition is usually corrected by the use of green or some other dark window shades, which cuts down the volume of light so considerably that those working 10 or 15 feet away from the windows must supplement the reduced volume with artificial light. A much better method is to use venetian blinds, which diffuse the light by projecting it to the ceiling. The slats of the blind slant upward from the window, their upper sides being painted white, so that the sunlight is thus reflected upward and reflected in turn from the ceiling, flooding the entire room with a soft, diffused light. With this type of blind, the strongest sunlight can be utilized; there is no glare; in warm weather the windows may be kept open to permit free circulation of air. This arrangement is superior to shades or awnings.

LIGHT-REFLECTING SURFACES

The influence of the various surfaces in an office on the effectiveness of the office lighting must not be overlooked if the illumination is to be satisfactory. These surfaces are the walls, the ceiling, and the furniture and equipment; they either absorb or reflect the greater portion of the light they receive. Dark-colored surfaces absorb light; light-colored ones reflect it. Not only should the walls and ceiling be light colored; so should the furniture and other equipment. Since the intensity of the light falling on any surface varies inversely as the square of the distance from the source, the reflection of light from walls 40 feet apart is of small effect compared with the innumerable dark, absorbing surfaces of the floors, desks, machines, and persons in the room.

The ceilings should be of the highest possible reflecting color, which is white. Ordinary white paint reflects perhaps between 75 and 78 per cent of the light thrown upon it; magnesium carbonate has a reflection factor of approximately 90 to 95 per cent; titanium dioxide also has a high reflection factor. The color of the ceiling should be continued down the walls for a reasonable distance, 3 feet or so, varying with the height of the room. The walls may be of a green or buff shade with a reflection factor of under 70 per cent, and preferably under 50 per cent. If there is a dado, a color should be used with a reflection factor of at least 30 to 35 per cent. Desk tops and other

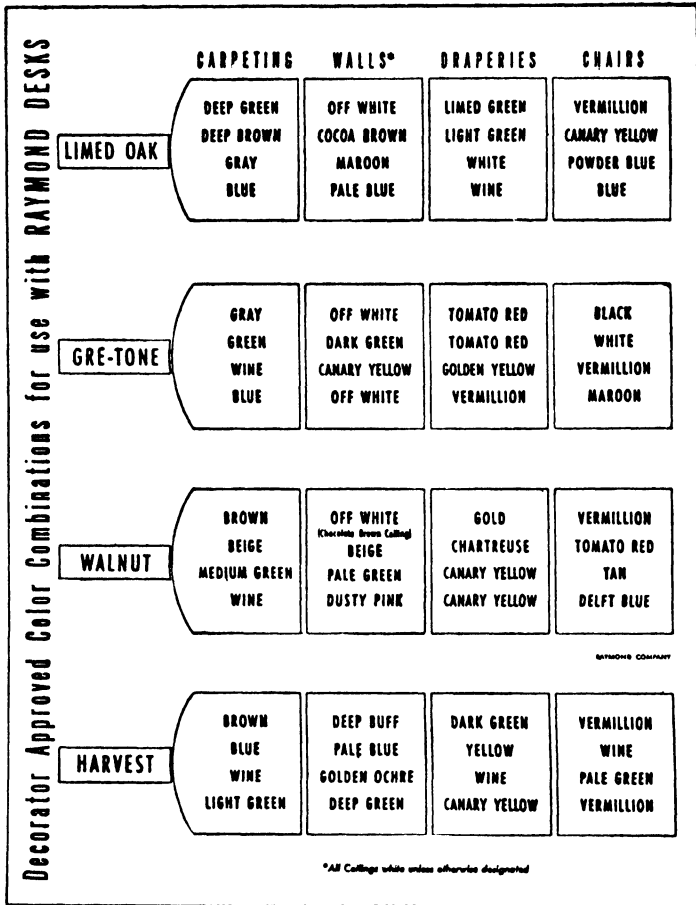


FIG. 60. Balanced color schemes for desks, chairs, walls, floors, and draperies, showing the decorative colors recommended by one manufacturer to accompany his desks in the four finishes shown at the left. Ceilings are white. (Raymond Company and Office Appliances, Chicago.)

furniture should have a reflection factor of about 35 per cent; floors, about 30 per cent. In all cases the finish should be dull, not shiny or glossy.

The reason for using lower reflection values on surfaces other than the ceiling and overhang is purely one of eye comfort. Eyes function most comfortably and efficiently when there is less contrast between

the various brightnesses within the entire field of view or environment. This is particularly true of desk tops and the work being done on them, hence the trend toward lighter desk tops. The use of dark walnut or mahogany partitions in offices, where there is a row of private offices adjoining the main working room, is not to be recommended, as this furnishes another great light-absorbing surface. In many offices, partitions are painted in light colors; such partitions not only give a better reflecting surface but are also cheaper than the expensive veneered partitions.

One great difference between good lighting and poor lighting—a difference that may cause any lighting installation to be praised or condemned—is almost always the effect the lighting has upon the comfort or discomfort of the employees it is supposed to benefit. This point cannot be too strongly emphasized.

AVOID GLARE

Glare may be defined as an intense light that strikes the eye, whether constantly or at intervals. It may be direct or indirect. The source may be a naked light, the direct rays of the sun, or a reflection on a bright metallic surface or on a highly polished surface or glass desk top. Glare causes the pupil of the eye to contract involuntarily when the bright light strikes the retina and to expand when the light is removed or reduced. A moving picture of the pupil of the eye under these circumstances would show alternate contraction and expansion, a continually changing condition which is exceedingly fatiguing to the eye muscles. Since this decreases the acuity of vision, glaring light sources or reflections are never advantageous in office work and should be eliminated in all cases.

ARTIFICIAL LIGHTING

Great strides have been made in artificial lighting during the past generation. From gaslight we have progressed to carbon-filament electric lamps, thence to tungsten, then to tungsten gas-filled "half-watt" lamps (one-half watt to one candle power), and finally to fluorescent lamps.

FACTORS OF ARTIFICIAL LIGHTING

1. *Expense.* Artificial light is an expense, not only for current, but also for installation and maintenance. The estimated expense, how-

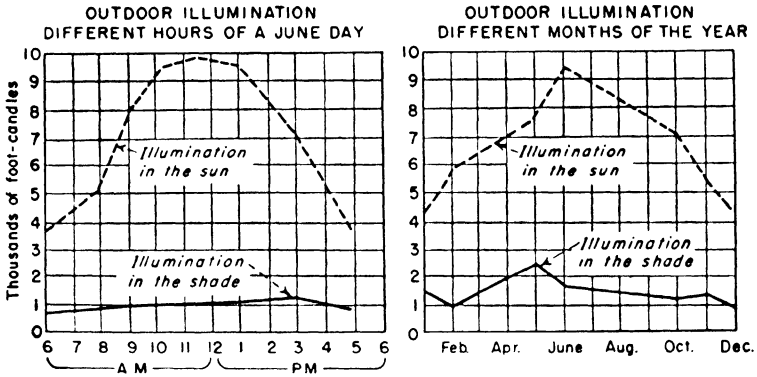


FIG. 61. Charts showing daily and monthly variations in outdoor illumination.

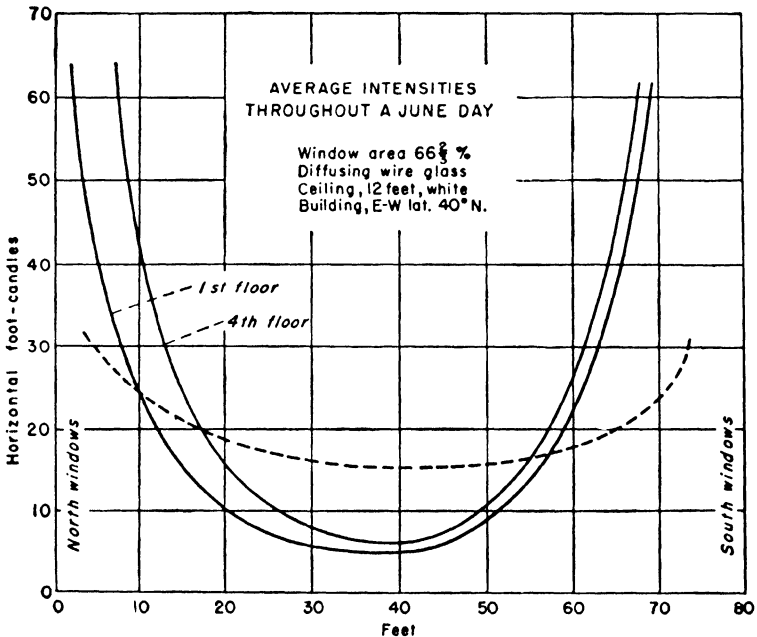


FIG. 62. Variations in interior daylight illumination on first and fourth floors.

ever, must be weighed against the expected results before one can tell whether or not the proposed installation is too costly. The result expected from the purchase of electric current is illumination which, to balance the expense, must be at least sufficient in volume to enable the users of the illumination—the clerks—to perform their work efficiently. Therefore, if clerks can do more and better work with good light than with poor light, it is evident that any money saving made by scrimping on the electric current for lighting will be counterbalanced by the poor work resulting from inadequate lighting.

2. *Eyestrain.* This is the next factor and is placed second instead of first because, in our opinion, and judging from experience, most cases of eyestrain are due either to unduly low intensities or to glare, which result from a badly designed lighting system. Whether eyestrain is ever caused by reflection of light on paper, with very high intensities of artificial light, is a debatable question. As will be seen from Fig. 61, outdoor illumination in the shade usually ranges above 1,000 foot-candles.¹ Many of us are certain that the ideal of comfort is to sit under the shade of a tree, reading a book on a summer day. How long we can read without strain under any conditions, and how long a clerk should be expected to read even under the best conditions of office lighting, and what intensity of light should be used to permit him to read for this length of time are questions which each individual, in the present state of our knowledge, must decide for himself; it certainly seems reasonable to believe, however, that an intensity of 40 to 50 foot-candles, which is the indoor intensity shown in Fig. 62, represents an approximation to a sufficient amount of light.

3. *Heat.* The amount of heat generated and radiated by artificial light is an appreciable factor where high intensities are used, as anyone may demonstrate who attempts to handle a nitrogen-filled lamp which has been burning for a few minutes. Fluorescent lighting, developed commercially only since 1938, makes possible much higher intensities than filament lamps and produces but one-fifth the heat for the same amount of light.

¹ A foot-candle is the standard unit for measuring illumination intensities. A lumen is the quantity of light thrown on 1 square foot by a standard candle 1 foot away. The intensity of 1 lumen is called 1 foot-candle. To calculate the amount of light required for a given intensity covering a given area, multiply the number of square feet to be lighted by the number of foot-candles desired. Thus, to light an area 15 by 30 feet to an average intensity of 10 foot-candles, multiply 450 by 10, which equals 4,500 lumens. Manufacturers of lamps and fixtures usually provide tables showing the performance of their various products at stated distances for given intensities.

4. *Wiring.* The amount of wiring provided in the building sets an absolute limit on the amount of light. In many of the office buildings erected over 30 years ago, it is not possible to get general illumination of a greater intensity than 5 foot-candles; 10 foot-candles is the limit in most of them unless fluorescent lighting is used. Artificial light in the average office will often be found to range between 3 and 5 foot-candles, not considering fluorescent lighting.

Considering all these factors, the practical ideal intensity should be set at 20 to 50 foot-candles, and the basic minimum practice at 10 to 15 foot-candles.

DISADVANTAGES OF DROP AND DESK LIGHTS

An office with many drop lights was a common sight several years ago; there are still several such offices in existence. Drop lights are unsightly, the cost of wiring is high, and there is heavy expense when the outlets are moved to suit changes in locations. Indeed, sometimes the outlets are not even moved, a makeshift being arranged by moving the perpendicular of the cord, tying it with a string to some solid object in the neighborhood, usually a steam pipe or some other metallic projection. This practice is not only still more unsightly, but is contrary to the wiring codes of most cities, as it contains elements of danger from fire.

Desk lights are subject to the same objections as drop lights, with the additional one that the fixtures are expensive. Besides, the local lighting given by desk lamps concentrates a high intensity on one small spot on the desk, while the rest of the room may be lighted at a much lower intensity. This contrast between brightnesses causes an excessive and irritating glare and distinctly affects the acuity of the vision, for light in one small area, of a brilliancy much greater than the surrounding area, has the same general effect upon the eye as glare. This is the same effect experienced when coming from a dark room to a brilliantly lighted one. A candle in an otherwise dark room will cause the sensation of glare.

THE THREE METHODS OF GENERAL LIGHTING

In considering each of the three methods of office lighting in general use, it is well to remember that good, effective illumination—that is, visibility—is the prime objective and that neither the first cost nor the cost of current should be the sole deciding factor in making a choice.

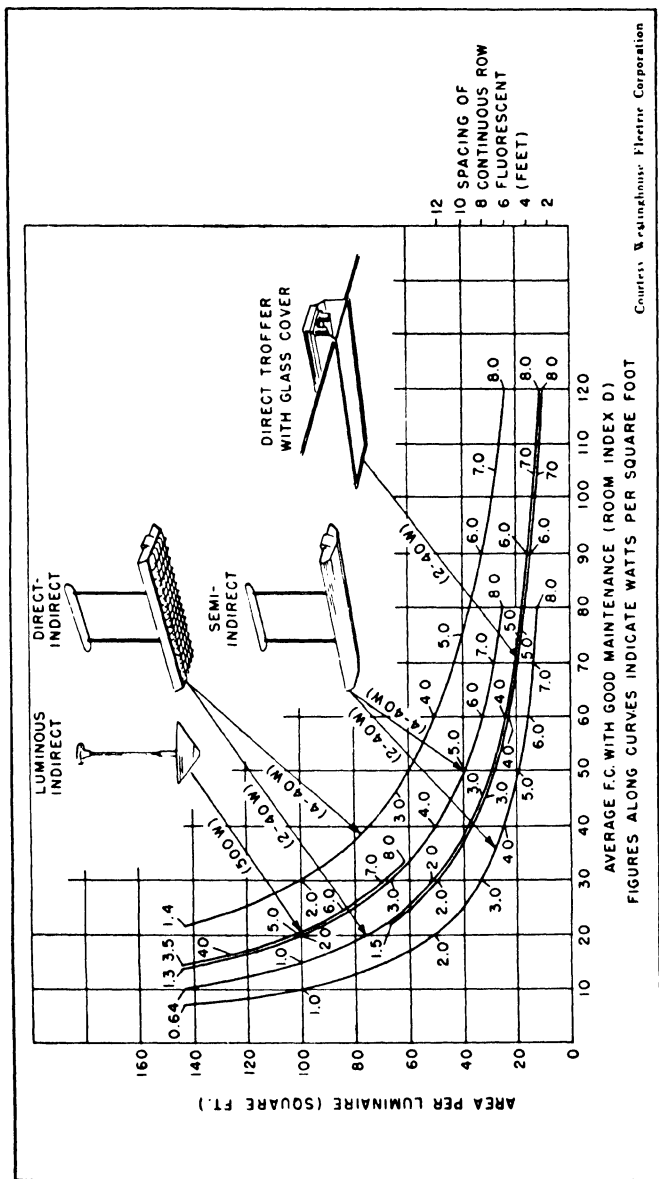


FIG. 63. This chart shows the limiting factors of four types of lighting fixtures. The average maintained illumination from one fixture for a stated area can be obtained from the curve of the fixture. Areas may be converted to spacings between continuous rows of 4-foot fluorescent fixtures by the scale at the right of the curves. (*Westinghouse Electric Corporation.*)

1. *Direct Lighting.* Before the commercial development of fluorescent lighting, direct lighting with filament lamps was the cheapest in current consumption. A reflector placed over the lamp sent the light directly to the desk level, but resulted in glare and reflections and distributed the light unevenly.

With fluorescent fixtures, direct lighting is now not only the cheapest form of lighting in current consumption, but also the most satisfactory from the standpoint of intensity of illumination. A 40-watt white fluorescent lamp has an output of 50 lumens per watt, compared with only 20 lumens per watt for an incandescent filament lamp in a 300-watt size or larger. Furthermore, fluorescent lamps give off but one-fifth the amount of radiant heat for the same amount of light as filament lamps.

2. *Semi-indirect Lighting.* In semi-indirect illumination, a translucent dish, bowl, or reflector is placed under the lamp, projecting part of the light to the ceiling, from there to be deflected downward, but allowing part of the light to be diffused through the glass. This form of lighting is intermediate between direct lighting and totally indirect lighting, described in the next paragraph. It consumes more current than direct lighting. With an improper type of unit, where the light shining through the globe is too intense, glare is produced; but when a well-designed unit is selected and the installation is correctly planned, an even distribution of light results, with soft shadows. Indirect lighting can be made very decorative, if that is considered a desirable object.

3. *Totally Indirect Lighting.* In totally indirect lighting, the unit consists of an opaque reflector under the filament lamp. This reflector projects *all* the light to the ceiling, which is so colored as to give the maximum of reflection. The result is an even diffusion of light and an entire absence of glare. If the installation is effectively arranged, with sufficient intensity, there is a very close approximation to well-diffused daylight. The current cost is higher than either the direct or semi-indirect; so is maintenance cost. But the results are effective.

INTENSITY OF LIGHT REQUIRED

Although the ideal intensity of light—the amount of light which the person of average vision can use in reading, over continuous periods of hours at a time, to be repeated day after day for years, without strain—has not been precisely determined, progress is being made. Some of the obstacles to exact determination are:

1. There are wide variations in human eyes, even among persons of the same age, including not only departures from the normal in vision but differences in sensitivity.

2. The power of vision does not remain stationary; as one develops from youth to maturity and thence to old age, more and more light seems to be required.



FIG. 64. The Luckiesh-Moss visibility meter consists of two colorless photographic filters which may be rotated in front of the eyes while one looks at an object or performs a visual task. It shows relative levels, not absolute ones; that is, if 10 foot-candles is a satisfactory level for normal vision under standard conditions, another and more difficult task may require 100 foot-candles. (Courtesy of Dr. Matthew Luckiesh.)

3. The average eye seems to be adaptable to very wide ranges of light intensity. It is possible to read in the light of 0.05 foot-candle and also in the shaded light of 2,000 foot-candles, which has 40,000 times the intensity of the first.

4. It is not easy to measure accurately eyestrain or eye fatigue.

Because of these difficulties in the way of scientific determination of the problem it has become customary for lighting experts, medical experts, oculists, and others to set an arbitrary figure as to the intensity of light which is *best suited* for office work. Nevertheless, it is possible, with the Luckiesh-Moss visibility meter, to compare one visual task with another and to determine how much more light is required for the more difficult task.

GOOD SEEING CONDITIONS

Seeing involves the task to be performed and the relationships of light and sight. It involves brightness not only of the task but also of the immediate and general surroundings. Furthermore, the seeing conditions should be such that seeing is easy and comfortable not only at the moment, but over long periods of prolonged critical seeing.

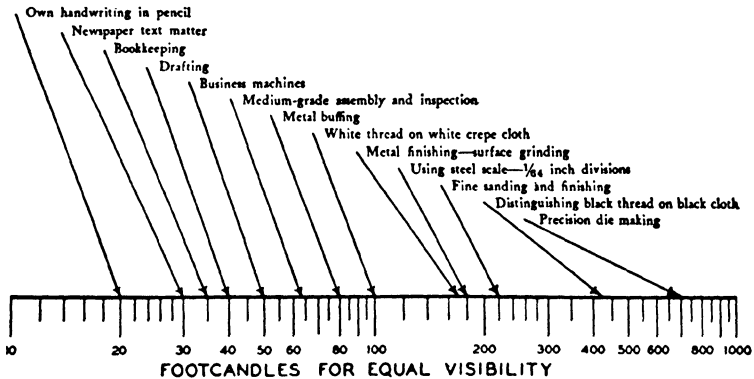


FIG. 65. This diagram shows rational foot-candle specifications for various visual tasks. These are determined by the relative visibility of each visual task and that of a chosen standard visual task. (Courtesy of Matthew Luckiesh and Frank Moss, *Light and Sight*, p. 11.)

The objectives of lighting and seeing conditions are

1. *Maximum visibility* of the object to be seen or of the visual task to be performed.
2. *Maximum comfort* of the worker at all times and, more broadly, maximum ease of seeing when critical seeing is being done.

The term comfort is used here in an extended sense. It means more than the absence of obvious discomfort, for it includes effects of seeing which cannot be appraised introspectively but which combine to produce some degree of ease of seeing.

The minimum requirements that should be fulfilled by a lighting installation are briefly

1. *Sufficient Quantity.* There must be a sufficient quantity of light (foot-candles) on the object to be seen or the task to be performed.
2. *Proper Application.* The light must be applied so that the distribution of brightness in the visual field does not cause unnecessary an-

noyance or discomfort. This involves the elimination of preventable glare from light sources and the proper reflection factors of surfaces obtained by paint or other finishes.

Reduced to fundamentals, comfortable lighting and good seeing conditions depend chiefly upon three factors:

1. *Foot-candles on the Seeing Task.* The requirements in this respect vary enormously for various work-world tasks.

2. *Foot-candles at the Eyes of the Worker.* These should be limited to a fraction of that on the work. Too much light on the eyes compared with that on the work definitely means unnecessary glare. The results are decreased visibility and increased annoyance and discomfort.

3. *Brightness of Light Sources (or Areas) and Brightness Ratios in the Visual Field.*²

MEASUREMENT OF LIGHT

The foot-candle meter is the simplest and least expensive instrument for measuring the intensity of light on the working plane. It has a stationary comparison (standard) lamp and scale, the brightness of the lamp being regulated by a voltmeter and rheostat previously calibrated in a laboratory. When the lamp is held at the proper brightness, the spot on the scale that appears to fade out is receiving an equal amount of illumination from both the comparison lamp and the outside source of illumination, and that point is the value of the latter.

The MacBeth illuminometer is built on the same general plan. The illuminometer is read by focusing it on a test plate made of some white material, such as unglazed porcelain, which has good light-diffusing properties, and which has also a previously known coefficient of light reflection. This plate becomes a secondary source of light. The values on the scale can be read directly when the instrument has been calibrated with the plate.

² LUCKIESH, MATTHEW, "Designing with Fluorescent Lighting," courtesy of the author and *Architectural Record*.

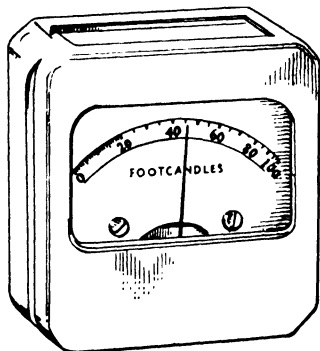


FIG. 66. Foot-candle meter for indicating the number of foot-candles at any given working level and distance from the light source. To measure average illumination, take readings at various locations throughout the room, holding the meter level and at a constant height, 28 to 36 inches above the floor. (*General Electric Company and Westinghouse Electric Corporation.*)

There are other meters on the market, but the two described illustrate the principles involved. They are portable and are accurate to within from $\frac{1}{2}$ of 1 per cent to 10 per cent, in the hands of skilled users.³

MINIMUM RECOMMENDED STANDARDS FOR OFFICE LIGHTING

The following minimum standards for office lighting are recommended:⁴

Foot-candles	Area	Foot-candles	Area
5	Corridors and stairways	30	General correspondence
10	Reception rooms	50	Stenographic work
10	Washrooms and other service areas	50	Mail rooms and sorting
		30	Intermittent desk work
10	Vaults	50	Detailed desk work
30	Private offices	50	Bookkeeping, accounting, auditing
30	Conference rooms		Statistical work
10	Inactive file rooms	50	Drafting
30	Active filing and index references	50	Operating office machines
		50-100	

To indicate the steady increase in recommended levels for office lighting, the following table is of historical interest:

Date	Foot-candles	Date	Foot-candles
1909	2 to 4	1936	10 to 30
1913	3 to 6	1937	20 to 50
1916	4 to 8	1938	20 to 100
1926	8 to 16	1947	30 to 100
1931	6 to 15		

MAINTAINING LIGHTING EFFICIENCY

Whatever lighting equipment is installed, it should not be forgotten that, since deterioration begins at once, the efficiency of the original equipment should be great enough to allow for this deterioration and

³ *Illuminating Engineering*, February, 1943.

⁴ "Recommended Practice of Office Lighting," pp. 8, 25-42, Illuminating Engineering Society, New York, 1947; "Office Light Conditioning," p. 10, General Electric Company, Nela Park, Cleveland, 1939.

still maintain adequate illumination. After satisfactory levels of illumination have once been established, it will be found that those original levels are being reduced by the following four factors:

1. *Lamps Used Too Long.* Lamps have a normal, useful life. Lamp manufacturers rate their lamps at the average number of hours of light the lamp should give—1,000 hours for gas-filled lamps and 2,000 to 6,500 hours for fluorescent lamps. When a lamp has depreciated to within 75 and 80 per cent of its initial rating, it should be replaced and discarded. It is not economical, either in current consumption or in efficiency of clerical work performed, to postpone replacement until the lamp has failed. It is better and more economical in every way to replace lamps according to a planned schedule of replacement and, furthermore, to replace groups of lamps rather than individual ones. Lamps replaced should be discarded; to use them for replacements elsewhere is false economy. Another important point in renewing lamps is to make certain that the voltage of the lamp is the same as that of the current in use; if the voltage of the circuit is higher than the rated voltage shown on the lamp, the life of the lamp will be shortened; if it is lower, the lamp will not emit the quantity of light it is rated for.

2. *Dirty Lamps and Reflectors.* The efficiency of a lighting installation may fall off 50 per cent or more as dust and dirt accumulate on lamps and reflectors. Frequent cleaning helps to maintain the original level of illumination. The reflecting equipment should be thoroughly washed and cleaned regularly. The labor cost of cleaning lighting fixtures is so small that a regular cleaning program should be organized and fixtures cleaned at least once in 3 weeks. They can be wiped with a damp cloth, and washed every 12 weeks. The main reason for the alleged failure of totally indirect lighting systems is to be found in this neglect, for in many instances indirect-lighting fixtures have been allowed to go uncleaned for 6 months or more. In one case, a preliminary measurement of the illumination was made; then the reflectors were washed, new lamps of proper voltage substituted for the over-voltage lamps which were blackened from long use, and the ceiling repainted. The subsequent test showed over 175 per cent increase in illumination.

3. *Dirty Walls and Ceilings.* The light-reflecting qualities of room surfaces will deteriorate with time, depending upon the amount of dirt contained in the atmosphere. Dust, soot, smoke, and other deposits will cause such depreciation. Any porous paint or surface covering such as calcimine or whitewash is particularly susceptible in this re-

spect. In industrial localities it is frequently necessary to paint ceilings every year and a half, and side walls every three years. In general it is cheaper to paint than to burn electrical energy or to pay for depreciated eye efficiency in decreased output.

4. *Dirty Windows.* Dirt on the inside and outside of windows frequently absorbs as much as 50 per cent of the light that might otherwise be admitted to the office area; indeed, the diffusing effect of such dirt can result in very high brightness at the windows and can produce serious direct glare. Although the accumulation of dirt may not be so rapid in office buildings as in factories, the windows do require frequent washing to maintain them at reasonable efficiency. A regular program of window cleaning is essential to maintain the desired level of illumination.

HEAT AND VENTILATION

Many experiments have determined that the ideal office temperature is approximately 68°F. When the temperature either rises above or falls below that point and remains so for some time, a distinctly uncomfortable feeling is experienced, this lack of physical comfort inevitably resulting in a lowering of the general output of work. A room in which the heat is automatically regulated by thermostatic control is much more comfortable than one which is alternately hot and cold. Whenever radiators are placed elsewhere than below windows, it is not well to place desks alongside them, as the excessive heat makes the location very uncomfortable. This condition may be mitigated somewhat by placing a screen in front of the radiator, which will have the effect of directing the heat upward.

LOCATION AND EXPOSURE

The location and exposure of the office has a direct bearing upon the comfort or discomfort of the worker. Southern or eastern exposures which are subject to long hours of strong sunlight are often most uncomfortably hot. Glare and heat from the sun may be mitigated by the use of awnings and shades, cutting off light that is needed, although venetian blinds will distribute the heat rays as effectively as they do the light rays. The use of blue glass, or glass covered with a blue mixture, will also absorb the heat rays and render the room much more comfortable, without cutting off too much of the light. Offices on the street level are uncomfortable on hot days because of reflection of the

heat from the street. Buildings also reflect heat; rooms on the side of a building adjacent to another are much warmer than those on the street side, even on the upper floors.

OVERHEATING

From the standpoint of health, there is danger when a room is overheated; any temperature over 70°F. must be considered excessive for general offices. When the temperature drops below 60°F., office work is severely affected, with a decrease in output. Drafts are not only uncomfortable but dangerous to health, causing a chilling and consequent lowering of resistance to respiratory diseases.

WHAT IS THE TEMPERATURE OF YOUR OFFICE?

Do you know that a temperature of 75° brings about a reduction in efficiency of 15 per cent? Dryness of the air, with a temperature higher than 68° lowers vitality, reduces resistance to infection, and renders the individual hypersensitive to changes in temperature and to drafts. The following observations made by a superintendent of schools indicate a common experience:

- 80° Class restless, dull, incapable of continued mental effort
- 76° Class dull and sleepy, penmanship poor
- 75° Class dull, complained of heat
- 74° Not quite so dull as above
- 72° Restless
- 70° Excellent work, cheerfulness in class
- 68° Best work, today seemed their best
- 66° Splendid work
- 65° Class happy, full of work, some spoke about room being cold
- 60° Too cold for good work, complained of the cold

(From "Net Results," published by H. A. Hopf and Company, Management Engineers.)

The general conclusions of the New York State Committee on Ventilation in regard to the effect of various atmospheric conditions upon health and efficiency are that:

1. Even moderately high temperatures—between 24 and 30°C. (75 and 80°F.) are accompanied by demonstrably harmful results. With rising temperatures, the rectal temperature increased, the heart rate increased, and the Crampton index of vasotone decreased, while the rate of respiration was slightly increased.
2. Differences in comfort were slight between 68 and 75°F., but very marked when the temperature reached 86°F.

3. Somewhat exhaustive studies of the alleged influence of atmospheric humidity upon mental achievement yielded entirely negative results.

4. On the other hand, there was a very marked and significant influence of atmospheric temperature upon the performance of physical work—an increase of from 20°C. (68°F.) to 24°C. (75°F.) caused a decrease of 15 per cent in the physical work.

5. There was very definite evidence of the harmful influence of moderately high atmospheric temperature, particularly if followed by sudden exposures to

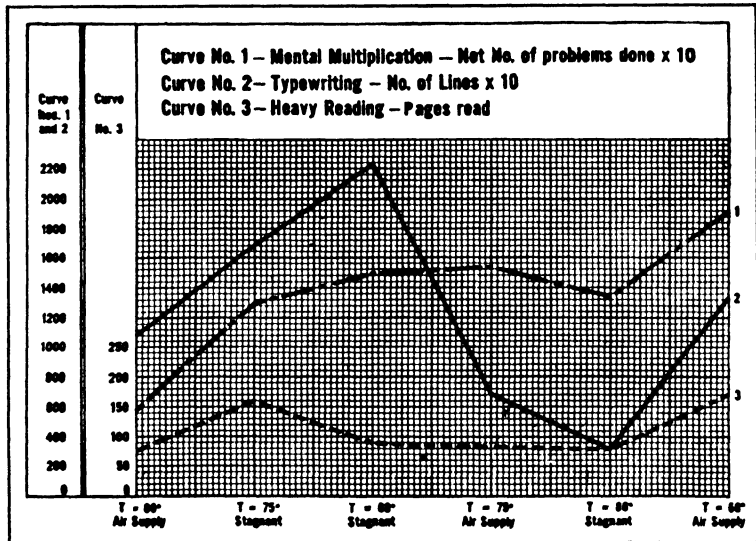


FIG. 67. How atmospheric conditions affect office workers is clearly shown by this graph, based on the results of tests made by the New York State Commission on Ventilation. The graph shows that the air a worker breathes has a direct bearing on his capacity as expressed in his output.

low temperatures, in promoting susceptibility to bacterial infection. For these reasons the commission believes that the dangers of room overheating are far more serious in their effect upon human health and efficiency than has been generally realized, and that every effort should be made to keep the temperature of the schoolroom and the living room at 20°C. (68°F.) or below.

HUMIDITY

The relative amount of moisture in the air has a very definite effect on the mental and physical comfort of office workers. Humidity—the proportion of moisture to the total weight of moisture which the air in

a room can hold—varies as the temperature of the room rises or falls. From the standpoint of health, and therefore of efficiency, relative humidity is one of the most important factors in ventilation. Too high a humidity is depressing; too low makes the air too dry for bodily comfort. Excess humidity increases the strain on the heart, which must pump blood to the surface capillaries in trying to keep the body temperature constant at 98.6°F. The proper level of humidity not only induces comfort, but increases physical working efficiency, keeps the brain more alert, and widens the working span without increasing physical or mental fatigue. The accepted figure for year-round comfort is between 40 and 60 per cent.

AN IDEAL PLAN

The most satisfactory plan for ventilating the large rooms of an office is one that parallels natural ventilation: a system that brings in fresh air from the outside, does not alter it in any way, except to filter out the dust by means of treated wood fiber, and diffuses the fresh air evenly without devitalizing it by contact with heated metallic surfaces.

Proper circulation methods avoid hot or cold spots, drafts, or warm blasts. They include correct location of inlets and outlets, provide fans or blowers of the right capacity, and carefully regulate the volume and speed of the entering air.

VENTILATION TESTING CALCULATOR

A simple, rapid, inexpensive device for testing and balancing ventilating, heating, and air-conditioning systems, which was developed by the United States Navy, is now available to the general public from the Office of Technical Services of the U.S. Department of Commerce. The calculator has several scales showing desirable ventilation standards for areas of various sizes, and methods of achieving them through orifice size and air velocity. Other scales can be used for computation purposes.

Although careful original design of a ventilating system will minimize the need for subsequent readjustment or balancing, it will seldom eliminate it. Variations in quality of workmanship and in assumptions made during design make it necessary to check actual operation before the system is placed in regular use. Procedures for preparing necessary tests are described in the instructions which accompany the device. Included also in the instructions are formulas for computing air volume

and velocity, the use of velometers and anemometers, and methods of taking observations.

NOISE

Office work cannot be efficiently done if there are constant interruptions. It must be remembered that not only does every interruption cause a delay during the actual length of time of the interruption, but considerable time is necessary to get back into the swing of the work. Noise is one of the great disturbers, not only unusual noise, but also the noise that is constant.

That noise is a disturbing element is attested by the fact that practically every person engaged in work that particularly requires mental concentration will, if possible, seek quiet and solitude. But these two conditions are impossible in business, as work of almost any kind is accompanied by more or less noise. Yet office work, being almost entirely mental, requires concentration; the effort to concentrate amid noisy surroundings causes a strain that results in fatigue.

Much of the noise in any office is due to talking. An effort should be made to reduce this by urging clerks to speak in subdued tones if it is necessary to speak at all, making clear the fact that less noise will lessen the amount of fatigue. Incidentally, the loud talking is not limited to clerks; dozens of times I have seen offices so arranged that visitors were interviewed within plain sight and hearing of the whole office force. Cooperation at all executive levels is necessary for effective results in reducing unnecessary noise due to talking.

The office of a certain factory was located on the first floor. Between the punch presses in the basement and the machine shop on the second floor, the noise was constant. Added to the regular noise of the factory was that of several typewriters and other office machines. When I mentioned the noise, the manager stated that the clerks were used to it and "never noticed it." As an experiment, I placed two clerks in a private room where the noise was very much less; one increased her output 90 per cent, and the other 100 per cent!

In another office I have seen 50 clerks lose 15 seconds every time a truck was rolled across the floor above them. That particular truck made two or three trips an hour. Figure it out! $50 \times 15 \times 2 \times 8 \times 300$ totals 60,000 minutes or 1000 hours a year. At 60 cents an hour, this amounts to \$600 a year, enough to buy several sets of rubber tires for the offending truck and leave a generous allowance for other noise-reducing measures.—W. H. Leffingwell.

Many sources of noise exist within the office: conversation, the scraping of chairs on the floor, rattling of papers, the incessant pounding and clicking of typewriter keys, or other noise-making office machinery. The chief source of noise may, however, be outside the office.

Hard surfaces reflect sound and cause reverberations, while soft surfaces absorb sound waves. The requirements of modern building construction call for the use of hard building materials. In the typical

COEFFICIENTS OF SOUND ABSORPTION OF VARIOUS BUILDING AND FINISHING MATERIALS

Materials	Coefficient
Open window	1.00
Cheesecloth	0.019
Plaster on tile	0.025
Brick set in Portland cement	0.025
Glass	0.027
Plaster on wire lath	0.033
Plaster on wood lath	0.034
Wood sheathing (hard pine)	0.061
House plants, per cubic meter	0.11
Linoleum, loose on floor	0.12
Cratone cloth	0.15
Cork 2.5 centimeters thick, loose on floor	0.16
Cocoa matting	0.172
Carpet rugs	0.20
Acoustic plasters	0.20
Shelia curtains	0.23
Oriental rugs, extra heavy	0.29
Sound-absorbing tile	0.37
Hair felt, 1 inch in thickness	0.53
A person	4.70

modern office, the wall and ceiling surfaces are finished in hard gypsum plaster applied on concrete, hollow tile, or metal lath. Such rooms are very noisy; every sound produced is noticeably intensified and permeates the entire room, on the same principle involved when a railroad train passes through a tunnel. The train does not produce any more noise than in the open, but the hard walls of the tunnel throw back the sounds, causing them to reverberate and making the resulting noise much louder than that produced in the open air.

Rooms in residences are quieted by the introduction of soft, highly sound-absorptive furnishings such as hangings, upholstered furniture, carpets, and so forth, materials not entirely practical in the office.

The table above gives the coefficients of sound absorption of vari-

ous materials used in building and furnishing. An open window is used as the unit; 1 square foot of open window is considered as being 100 per cent absorptive, because all sound striking an open window passes out of the room. Since the absorption of sound varies in accordance with its pitch, it must be borne in mind that the coefficients given are for one pitch only—namely, one octave above middle C on the piano, which approximates the pitch of the voice.

A study of this list confirms the statement that the hard-surfaced materials reflect the sound waves, and soft or porous materials absorb them.

To neutralize the effect of the hard building materials, it is necessary to install over the entire ceiling surface of a room a material having a high coefficient of sound absorption. There are several companies which specialize in the application of such treatments and are uniformly successful in securing the desired results; in addition, the technique of application has been so developed that a satisfactory appearance is produced.

FLOOR COVERING

The modern methods of constructing office buildings also bring in the problem of office floor covering. In some so-called loft buildings, no attention is paid to this important question and the concrete floor is left as originally laid. There is perhaps no more uncomfortable floor either to stand on or to rest the feet upon. It is cold, noisy, and generally unsatisfactory in other ways.

The factors of the office-floor-covering problem are as follows:

1. *General Comfort Underfoot.* A floor covering should retain about the same temperature as the rest of the room; it should be resilient, should absorb shocks in walking, and should have an even surface.

2. *Sanitation.* It should be made of a substance not too absorbent, which can be readily cleaned, and which will not provide a lurking place for either visible or microscopic dirt.

3. *Durability.* It should strongly resist temperature and humidity changes, decay and disintegration; it should resist abrasion and should wear uniformly.

4. *Sound Producing.* The movement of chairs or human feet upon its surface should not produce a scraping sound.

5. *Sound Reflection.* It should have sound-absorbing qualities.

6. *Ease of Repair.* It should be repaired easily.

7. *Fire Resistance.* It should resist fire to a reasonable extent.

8. *Maintenance.* It should be easy to keep in condition.

9. *Good Appearance.* It should have a good appearance.

10. *Reasonable Cost.* The cost should not be excessive.

All these 10 factors are important, but there is no known material that would rate 100 per cent on each of them. Some materials rate high on one factor and low on another. There is no doubt, for instance, about the durability of concrete and tile, but in most of the other factors these materials have many defects. Also, the only floor covering having high sound-absorbing qualities would be a rug or a carpet; but these are lacking in other important factors.

The American Hospital Association made a very extensive investigation of this subject, the results of which were submitted to an annual conference of the association. The committee resorted to laboratory tests and examined, in all, 56 different types of floor covering and rated them on the 6 factors of abrasion, pressure, resistance to fire, absorbency of water, resistance to acid and alkali, and freedom from staining. The committee recommended as its first choice, reinforced rubber; second, battleship linoleum; third, soft mastic.⁵

DRINKING FOUNTAINS

In the erection of the average office building, the question of the supply of drinking water is usually an afterthought. While it is true that most office buildings are supplied with a water system, the water is rarely cool, and it is difficult—in summertime especially—to induce clerks to drink it, the result being that companies do a thriving business selling bottled water and ice to cool it.

The best method for ensuring an adequate supply of drinking water is to furnish centrally cooled water, piped to the location and fed through fountains; this can be installed economically only during the erection of the building and must therefore be designed in advance.

Whatever type of water supply is used, there should be plenty of fountains. Good practice recommends one fountain to be placed in the center of each four bays, thus making the average distance for any clerk to travel for drinking water 20 feet. The usual practice is to provide fountains in hallways or out-of-the-way corners, so that not only do the clerks travel an unnecessarily long distance for water, but trips to these remote corners also provide excellent opportunities for office gossip and other unprofitable conversation.

⁵ "Report of the Committee on Floors," *Publication 47*, American Hospital Association, Chicago.

The average person should drink water at least 5 or 6 times a day. If each of 100 clerks in an office were compelled to walk 50 feet to and 50 feet from the drinking fountain 5 times a day, each clerk would walk 500 feet a day. Multiplied by 100 clerks, the distance traveled would be 50,000 feet or nearly 10 miles. Multiplied by 300 working days, the clerks would be walking 3,000 miles for water in a year! This sounds almost impossible, yet in one new office building the drinking fountain was placed in the hall in the center of the building. Since the building is 375 feet long, the clerks on each side of the fountain have to walk 25 to 182 feet to get a drink, an average distance of 100 feet. There are approximately 200 clerks on each of the 5 floors. If the clerks in this office drink as much water as they should, they will walk an average distance of 50,000 miles a year for it!

Bubbler fountains are the most sanitary, though all makes are not equally so. Where cups are used, paper ones should be provided, for sanitary reasons.

TOILET FACILITIES

The legal requirements on this question, in most states, prescribe a minimum of one toilet seat for every 20 persons, and separate toilets for each sex. Practically all offices comply with these requirements, although exceptions do exist. But these laws, though designed from the standpoint of minimum health necessity, do not forbid providing more than the minimum.

From the added standpoint of efficiency, there should be one toilet seat for every 15 persons, and one washbowl for every 20, with an abundance of mirrors, especially in the women's room. If these provisions are not made, clerks will spend an inordinate amount of time away from their tasks; the cost of additional equipment will be paid for many times over in wasted time.

Liquid or powdered soap, in suitable containers, is more sanitary than cake soap.

Individual or "pull-clean" towels are desirable from the personal hygienic standpoint, but paper towels serve the purpose equally well, are economical, and are used by an increasing number of offices, many of which, however, still supply individual cloth towels to women employees.

PHYSICAL HAZARDS IN OFFICES

Physical hazards which would not be permitted in a well-run small factory or machine shop often exist in small business offices. This situation is aggravated by crowding office workers into inadequate space, by the use of obsolete or makeshift equipment, or by improper office layout or arrangement. Accidents due to these causes, as well as those resulting from unsafe working habits, can be costly. Although insurance or workmen's compensation may pay the direct costs of an injury, the indirect costs, due to lost time and production of the injured person and other workers, are a complete loss to the business.

The following check list will prove useful in identifying hazards in offices which may cause injuries to workers or visitors. The office manager should take steps to eliminate these hazards.

I. Tripping, slipping, and falling hazards**A. Floors and stairways**

1. Water, soap, oil, etc.
2. Highly polished surfaces
3. Torn or loose coverings
4. Rough or splintered handrails
5. Illumination
6. Treads

B. Projecting outlets**C. Extension cords****D. Ladders****E. Wastebaskets****II. Collision and obstruction hazards****A. Aisle obstructions****B. Valves and pipes****C. Pencil sharpeners****D. Open desk and file-cabinet drawers****E. Furniture and equipment****III. Equipment hazards****A. Office machines****1. Unguarded moving parts****2. Wiring, switches, cords****B. Plumbing fixtures****C. Furniture****D. Dollies****E. Mail carts****F. Glass desk tops****G. Wastepaper baskets****H. Edges of metal equipment****I. Electric fans**

- IV. Hazards from falling objects
 - A. File cabinets
 - B. Lockers, shelves
 - C. Ceiling and lighting fixtures
 - D. Plaster
 - E. Stacked materials
- V. Fire and panic hazards
 - A. Disposal of paper and waste
 - B. Safety cans for inflammable materials
 - C. Disposal facilities for smokers
 - D. Fire escapes and exits
 - 1. Aisles
 - 2. Windows
 - 3. Doors
 - 4. Signs and lights
 - E. Fire-protective equipment
 - 1. Inaccessible
 - 2. Blocked
- VI. Miscellaneous
 - A. Working space
 - 1. Unsanitary condition
 - 2. Arrangement of desks, tables, etc.
 - 3. Aisle width
 - B. Housekeeping
 - C. Ventilation
 - D. Storage of poisonous substances
 - E. Steam pipes

(Adapted from "Use and Application of 'Report of Physical Hazards in Offices,'" May 2, 1947, *Federal Departmental Safety Council, reported in Small Business Aids, U.S. Department of Commerce.*)

CLOCKS

Every office should be supplied with clocks, properly regulated and keeping good time, in such a position that they may be seen from the desk of each clerk in the room. Although this will involve the expense of a number of clocks, it is nevertheless real economy. "Clock watching" should be cultivated—not tabooed, as the copybook maxims imply. Of course, the real message behind the ban on clock watching is that a clerk should be sufficiently interested in his work that the passage of time is unnoticed. Experience has shown, however, that the clerks who use the clock as a pacemaker, or time marker, accomplish

much more than those who fail to mark the passage of time. In organizations where work is measured—as it should be—and time is recorded, the clock is a necessity.

QUESTIONS FOR DISCUSSION

1. What is meant by “working conditions,” and why is the subject important?
2. Comment on the general importance of lighting in offices.
3. How far does daylight penetrate a window?
4. How can the glare of direct sunlight shining on windows be prevented?
5. How does the light reflectance of various surfaces affect the illumination of an office?
6. Comment on the preferred colors of ceilings and walls for offices.
7. What is the relation between lighting and the comfort of employees?
8. How may light be measured?
9. What are the causes and effects of glare?
10. Name four factors of artificial lighting and comment on each.
11. Comment on the expense of artificial lighting.
12. What are the causes of eyestrain?
13. Why is wiring important?
14. Comment on desk lights and drop lights.
15. Name and describe three general methods of lighting, stating the advantages and disadvantages of each.
16. What are the advantages and disadvantages of direct incandescent lighting?
17. What are the advantages and disadvantages of semi-indirect lighting?
18. What are the advantages and disadvantages of totally indirect lighting?
19. Why has not the ideal intensity of light been precisely determined? Or has it? What may be done about it?
20. Define or explain “foot-candle” and “lumen,” and state the use and significance of each.
21. What is the purpose of a visibility meter?
22. Explain what is meant by good seeing conditions.
23. What are the two objects of lighting and seeing conditions?
24. What are the minimum requirements of every lighting installation?

25. Upon what three factors do comfortable lighting and good seeing conditions depend chiefly?
26. For what is an illuminometer used?
27. What minimum standards of office lighting are recommended?
28. Why is it important to maintain lighting efficiency?
29. What is involved in the maintenance of the lighting system?
30. What four factors are constantly operating to reduce lighting efficiency?
31. How long should lamps be used? Why?
32. How often should lamps and reflectors be cleaned? Why?
33. How often should windows be cleaned?
34. Comment on heat and ventilation in the office.
35. What effect on the worker have the location and exposure of the office?
36. What is the ideal temperature for an office? Why?
37. What is the result of overheating and underheating?
38. What relation has humidity to comfort? Why?
39. What is the most satisfactory ventilating plan for a large room?
40. How may the effectiveness of ventilation be tested?
41. Comment on noise and its importance, suggesting what may be done to minimize it.
42. What is the unit used to measure the absorption of noise?
43. What kinds of surfaces absorb sound?
44. What are the ten factors of the office-floor-covering problem?
45. What is a good floor covering for office use? Why?
46. Comment on drinking fountains in offices
47. How far should a clerk have to travel for a drink of water?
48. Why are the legal requirements for toilet facilities not always satisfactory?
49. Comment on "clock watching."

PROBLEM I

In the Iroquois Knitting Company's proposed office (mentioned in Chaps. XII, XIV, and XVI), what should be done regarding lighting, daylight and artificial? heating? and ventilation? At present, the only lighting in the space is from direct units with blue-shade reflectors, suspended by cords from the ceiling, and spaced irregularly to fit the workbenches and machines which were in place when the space was used as a factory. Heat is furnished by five 1½-inch pipes placed directly

across the windows, about 3 feet from the ceiling. There is no ventilating system.

PROBLEM II

In the proposed office space to be refitted for the Iroquois Knitting Company, how would you handle the noise problem, floor covering, drinking fountains, telephone and electrical connections, toilet facilities, and the like?

What would you do about interior decoration?

"If letters weighed ten pounds apiece, it wouldn't take long to find a correct routing."—W. H. LEFFINGWELL.

XVI

OFFICE ARRANGEMENT

Scientific office layout calls for the arrangement of departments and equipment in accordance with a well-defined, well-thought-out plan. It is not unusual to find departments divided between different floors, or to find crowded conditions in some places, while an excess of space exists in others. Nor is it at all unusual to find arrangements that violate almost every principle of scientific layout.

A particularly bad layout will frequently cost much more in wasted space and energy than would be required to entirely rearrange it, even if considerable expense were involved in the change. The waste entailed by a bad layout is a continuous daily expense which never ceases until eliminated by rearrangement.

It will be universally admitted that the general appearance of an office should be good, but usually this desirable quality is considered from one standpoint only—what will our visitors think about our office? The impression made upon visitors is of course important, but there are many other considerations.

In the first place, the arrangement should suggest to the casual observer that the office is efficient and businesslike. Second, the office must look neat and orderly and thoroughly up to date in every way. This does not necessarily imply new equipment; but equipment which is manifestly obsolete and behind the times, such as box files, letter presses, ancient bookcases, high-standing desks, and roll-top desks, should either be discarded or placed where it will attract as little attention as possible. All broken, badly scarred, and scratched equipment should be either discarded or renovated.

In addition to the general effect of disorder and carelessness, there is

the constant danger of the loss or misplacement of important papers. Thousands of offices would save money, accelerate work, and generally improve their clerical service by a drastic cleanup. Spasmodic cleanups have no permanent value.

Crowded conditions in an office not only interfere with good work; they also have a psychological effect upon the office workers. The annoyance caused by having to work in a crowded place tends to reduce the output even more, and the morale of the establishment is injured just to the extent that this annoyance is acute.

STRAIGHT-LINE FLOW OF WORK

One of the most important principles of modern industrial practice, which often applies equally to the office and factory, is what is known as the "straight-line flow of work." The phrase is not to be interpreted literally—the lines need not necessarily be mathematically straight, nor the work perfectly fluid. The broad general meaning of the term, as used by the industrial engineer, is that the work, in progressing from one operation to another, should follow a course approximating, as nearly as may be possible, a straight line; the work should always move forward from the beginning to the end of each subassembly; all travel backward or sideways should be eliminated, since every departure from the shortest distance, whether backward or sideways, tends to slow up the progress of the work, to interfere with its continuity, and to cause additional labor and loss of time.

In modern production the correctness of this theory needs no argument for support, being completely obvious. But its application to office arrangement is relatively recent and its importance is not yet generally recognized. It is easy to understand that all travel through space—whether of a casting weighing hundreds of pounds or a piece of paper weighing less than half an ounce—consumes both energy and time—mostly time, which in office work is tremendously important.

ADVANTAGES OF STRAIGHT-LINE FLOW

1. *Increased Speed.* The straight-line flow in office work increases the speed with which work passes from one clerk to another through a specified routine. When combined with the unit plan of flow, where the work passes in specified units of 1, 5, 10, 20, or some other unit, the speed factor is still further accentuated.

2. *Fewer Papers Lost or Mislaid.* The straighter the line of flow, the less danger there is of losing or mislaying important papers, since one main reason for papers being lost or mislaid is their being handled in an irregular manner.

3. *Less Messenger Work.* The need for messenger work is also lessened, for it is apparent that, when work flows in straight lines, the distances between the various operations will necessarily be short, the ideal condition being the arrangement of the desks so that work may be passed from one to the other without the clerk's having to rise from his seat.

4. *Conveyors May Be Used.* In some offices, important routines are so planned that a conveyer belt or other transportation device carries the work from operation to operation, one piece at a time, as each operator finishes his work on it. This plan is especially helpful in order routines.

5. *Keeps Clerks and Executives at Their Desks.* An even more important result of straight-line flow is the reduction in the tendency of high-priced clerks and even executives to act as their own messengers, for where the work flows in irregular lines, there is a constant tendency for clerks to do their own messenger work. To what extent this tendency becomes practice may be determined by counting the number of clerks standing on their feet or walking around the office at any one time; exclude from the count all file clerks, messengers, and other persons whose work requires them to stand. Make this observation once an hour every day for a week, in order to get a reliable figure; record the figures and calculate the percentage of those standing to the total number of clerks whose work requires them to be seated. If the percentage runs above 10, it is an indication of defective flow of work; further observation will confirm the fact that those found standing are mostly engaged in doing messenger work, a low-priced service, instead of the clerical work for which they were engaged. This condition, be it remembered, is the fault of the management, not of the clerks; at the same time it should not be overlooked that even though a clerk is not at his desk he may be working, but he is not doing clerical work effectively.

ANALYZING THE FLOW OF WORK

Most office managers will agree readily enough with the principle of straight-line flow of work but find themselves at a loss as to how to rearrange the office so as to get this much-desired effect. The most cursory observation will show that there are many countercurrents of work in

every office and in most departments; if one attempted to chart the actual existing flow of *all* work on a floor plan of the office, he would inevitably produce a maze—a confused network of lines running in various directions.

It must be at once admitted that it is practically impossible to arrange an office so that *all* work will always flow forward in absolutely straight lines, never reversing itself or crossing its own path, since in very few offices is the work so simple that it can all be comprised in a few routines. In almost every office there are many routines, some large and consisting of many steps and a large number of details, others involving but a small amount of work and few steps.

WHAT IS THE DOMINANT ROUTINE?

Therefore, in analyzing the flow of work, the first step, obviously, is to determine which routine is the dominant one, that is, the routine around which the work of the office as a whole revolves. In most offices where orders are handled, the order routine will be the dominant one, many steps being usually involved and the volume of work large. In other offices a different routine may be dominant, such, for example, as the policy routine in an insurance office.

Select what seems to be the most important routine, whatever it may be, and count the number of persons in the entire office who work directly and exclusively on this routine; then count the persons who work part

An effective way of visualizing the movement of work from desk to desk has been devised by Irvin A. Herrmann, office manager of Servel, Inc. Place a sheet of translucent paper over the floor plan of the office and trace the path of the routine by drawing a continuous line from the point at which the routine starts to the final step. Different colored lines or varied dash lines may be used to show the movement of multiple copies of forms. The standard work-simplification symbols are used to characterize the operation at each step in the line of flow. Such a symbolized diagram enables an analyst to visualize the over-all step-by-step activity of an entire procedure, making it easy to spot operations which may be eliminated, note sequences of steps which should be changed to promote a better flow of work, or even suggest a rearrangement of the entire floor toward that end.

of their time on it, figuring the percentage of such time. In this way, the total number of hours devoted to one specific routine may be obtained readily. Proceed thus with several routines that are obviously the most important; the one to which the greatest amount of time is devoted may be considered the dominant routine.

Stemming from each of these principal routines will be found a number of small and dependent ones, consisting of perhaps three or four operations only. These should be carefully studied to determine whether or not they actually belong to the dominant routine; if it is found that they do, the time required for them should be added to the figure already secured for the dominant routine.

When all the statistics have been gathered, the relative number of clerical hours required for each routine should be recorded and studied; in practically every case it will be found that the amount of time required to perform the whole work of the routine appears excessive when compared with the time required for each actual operation. Such a result is by no means surprising and is easily explained: the difference is the time lost through lack of direct flow; this time—or most of it—can be saved by establishing the straight-line principle.

DEPARTMENTS WITH MANY LINES OF FLOW

In any analysis of this kind, certain departments with many lines of flow will be found, such, for example, as the mailing and mail-opening departments. For the sake of economy, these two operations are often combined, the clerks working in the morning at opening mail and in the afternoon at enclosing, sealing, and stamping. Such a department is a service station and is not subject to the same flow as, let us say, the order section. The proper location for a combined service of this kind is one from which it can most readily serve all other sections; it should be located where no unusual amount of walking would be needed to reach it.

A stenographic section is a similar example of combined service, but the conditions would be somewhat different, as will be explained shortly.

Central files also serve many departments.

LOCATING THE DEPARTMENTS WITHIN AN OFFICE

As we have seen, work which travels from one department to another in a routine suggests arranging departments so that the work may travel

in straight or continuously forward lines, as far as possible, instead of crossing back and forth. There are, however, other factors which must also be considered.

1. *Contact between Departments.* One of the most important features in office arrangement is the necessity for contact between one department and another or between one person and another. The ideal arrangement of departments is, of course, one which most closely conforms to the principles previously explained. However, since the departments of a business are usually interdependent and have more or less relation with each other, it is not entirely possible to carry out these principles rigorously; some compromise will invariably be found necessary.

First consideration should be given to those departments that have the greatest amount of contact with each other; such departments should always be placed together. Certain departments should be contiguous to the factory, if there is one, or to the salesroom, or stock room, or shipping department.

The credit department, in most companies, has frequent, almost constant, occasion to consult the ledgers in the bookkeeping division; these two should be contiguous. The collection division will need to consult not only the ledgers, but also the invoice files.

2. *Contact with the Public.* On the other hand, one or more departments and divisions will have considerable contact with the general public; this fact must also be considered in determining their location. It would be unwise to locate such departments so that the public would be compelled to pass through the general office to reach them.

3. *Noisy Departments.* Departments in which there are a large number of noisy machines, or where there is much telephoning or loud conversation or many visitors, should, if at all possible, be segregated from other departments. Noise is a most disturbing element in clerical work, and everything possible should be done to avoid or minimize it.

4. *Untidy Departments.* Departments which, through the nature of the work performed in them, generally present an untidy appearance, should naturally be kept from the public view as far as possible, in order that visitors will not receive an unfavorable impression and judge the whole office by one department. Such departments as circularizing, stock rooms, shipping rooms, and so forth, come under this general category.

5. *Executive Requirements.* The requirements of executives as to location are various. Certain of them will need much communication

with certain others, and some will need almost continuous contact with the departments under their control; in such cases it would be a mistake to locate such executives at a distance from their clerks. Other executives, again, such as the purchasing agent and the employment or personnel man, must be located where they can readily be reached by visitors without disturbance to the rest of the office. Still others must be placed near either the factory or the salesroom, if there are such in the same building. All these requirements must be carefully studied in advance, before making the new arrangement.

6. *Central Service Departments.* Central service departments will naturally have relations with most of the other departments, but it will be impossible to locate them contiguous to all such departments; here again, compromise to some extent is unavoidable.

In establishing such departments the dominant considerations should be to see that the location is

1. The best for the purpose of the work.
2. Sufficiently convenient for all the departments to be served from it.
3. Satisfactory from the point of view of other departments (a noise-producing department should not be located adjacent to workers who require quiet, unless it is enclosed and soundproofed).

The filing can be done in the open office, and the files should be so located as to be most convenient to those who have the greatest occasion to use them.

The stenographic section is a noisy one, and the combined sounds of a large number of machines in operation will disturb the workers in adjacent departments; if possible, therefore, this section should be located in a spot that can be enclosed and thus shut off most of the noise. A point that should not be forgotten in this connection is that since a stenographic section requires good lighting, the enclosure of the space should not interfere with the lighting. If sound-deadening treatment is used, however, and the stenographers centralized, it may be unnecessary to place them in a separate enclosed room.

RELATION OF WORKERS WITH EACH OTHER

Because of the relation of clerks within the department to each other, it is much simpler to put the straight-line flow principle into operation within a department than throughout the organization. There are other factors, also.

Certain clerks will need to be located near the files or other equipment they most frequently use, to avoid much travel back and forth. Clerks

who use some particular machine part of their time should be located near it. Machines operated by electricity should be set up near the floor or baseboard outlets, so that the placing of conduits over the top of the floor, for someone to trip over, may be avoided. It is not good practice to suspend electric cord from ceiling outlets; in many localities the practice is forbidden by law.

Certain clerks have frequent contact with some particular individual. A stenographer, for example, may be called many times daily to take dictation from a certain person.

A few clerks may be employed on work which requires them frequently to transact business with outside visitors; they should be so located as to reduce unnecessary travel on their part.

It frequently happens that two clerks are placed at desks facing each other, because they have much work to do in common. Investigation will show whether this is the best way to do such work; usually it is not.

The requirement of each clerk as to light requires careful attention. Of course, good light should be provided for all clerks, but frequently there is considerable choice of location in regard to light. All clerical work does not require the same amount of light, as set forth in the preceding chapter on working conditions. A bookkeeper or stenographer, as a rule, requires more light than does a stock clerk.

UNIFORMITY IS DESIRABLE

The general appearance of an office is always improved by a uniform arrangement; this does not mean that all desks and other equipment should be identical, nor would this be advisable. Used correctly and sensibly, uniformity means that there should be a general similarity so that the appearance is harmonious. It is obvious, of course, that all clerks performing one kind of work should have the same kind of desk, for if there is a miscellaneous assortment of desks of all sizes, types, and colors, a good-appearing arrangement will be difficult, if not impossible, to make.

Uniformity, in this sense, has also a considerable bearing upon the economical use of space.

Another desirable characteristic of uniformity of equipment in arrangement is that it makes for economy in replacements. If the desks used throughout the office are of a similar size and style, it will often be possible to take one from a place where it is temporarily out of use, and put it where it can be fully used. But if the desk is larger or smaller or of a different finish from the others, its transfer might be objectionable.

PLANNING THE ARRANGEMENT

1. *A Full-time Job.* When it has been decided to make a change in the office arrangement, the first and most important step is to place the job in the hands of some competent person who will be able to devote *all* his time to the task, *from its start to its completion.* This person should have a complete and comprehensive knowledge of the needs of the organization before he starts the work of rearrangement and should begin by making all the studies outlined here. The larger the office, the more important it is that this study should be made by an expert, or at least guided by one.

The person chosen for the work of planning the arrangement should be one who has all the needed authority, who is capable of winning cooperation, who has no other duties for the time being to distract his attention, and who can and will give the question the necessary and adequate study. Such an individual will work to produce a condition which will best serve each department, executive, and clerk, resulting in a more scientific arrangement than otherwise.

2. *Not This.* It is easy enough to call in a draftsman from the engineering department or from the outside, give him a few instructions and order him to go ahead, but the result will not be satisfactory in any respect. Drafting is the least important part of the whole job and may be assigned to any clerk or outside draftsman after all the studies have been completed.

3. *Nor This.* Another popular plan is to appoint some subexecutive or senior clerk to take charge of the details, and then send him around to the various departments to inquire what is wanted. Since he has no authority, and everyone in the organization knows that his knowledge

In the office of one large organization, there was a grand scramble for choice spots in the new building, and much ill feeling developed. Executives with small departments, fighting for prestige, secured good locations and proceeded to fence them off, spending thousands of dollars for needless, space-wasting partitions, so that the location would be worthless for anyone else, while large groups like the book-keeping section and other large sections of office workers were crowded into congested spaces, with poor light and ventilation, merely because the heads of those sections were not so influential or so aggressive as the others.

of the subject is negligible, he makes little progress in welding the organization together and producing a workable plan. In such case, the department chief who has the greatest "pull," or demands the most, gets what he wants in the way of comfort, good light, and ventilation for himself, regardless of how it may affect others; the more modest executive, who is usually an easygoing fellow and rather backward in making demands, has to take what is left.

MAKE A PLAN OF THE PRESENT ARRANGEMENT

When the work of rearrangement has been placed in the hands of a competent person, the first step is to make a drawing to scale of the existing arrangement and equipment, drawing each desk and piece of equipment accurately to scale and showing the exact present location.

At first sight this may appear to be useless work, but as will appear later, it is a most important step, even though the existing arrangement is not to be preserved. The best scale for this purpose is $\frac{1}{4}$ inch to the foot; the use of a smaller scale makes accuracy difficult, besides being difficult to read and to judge distances; a larger scale is unnecessary.

If the floor is so large that the drawing becomes unwieldy and difficult to work with, it can be made in sections. Since it is impossible for the eye to take in the drawing of the entire floor when it runs beyond 25 inches in length (100 feet), there is no advantage in having it all on one sheet.

When this drawing is finished, it should be traced in ink on a tracing cloth. A draftsman may be used for this drafting work, if desired. If the office is to be rearranged in the same location, it would be well first to make a tracing of the floor without the desks and have lithoprints made of this on tracing cloth, with one extra on white drawing paper. This will save retracing it for the new arrangement. The existing layout can then be put in.

When this drawing is complete, have five lithoprints made on rather heavy paper, or colored cardboard, one green, one yellow, and three white. The use of lithoprints instead of blueprints is recommended because the former do not shrink, while the latter do. Blueprints will often shrink a half an inch to the yard, which will show the office to be 2 feet shorter for every 36 inches of drawing.

The lithoprints are used as follows: One of the white prints is used as a guide, one is used to mark flow lines upon, and the third, as well as

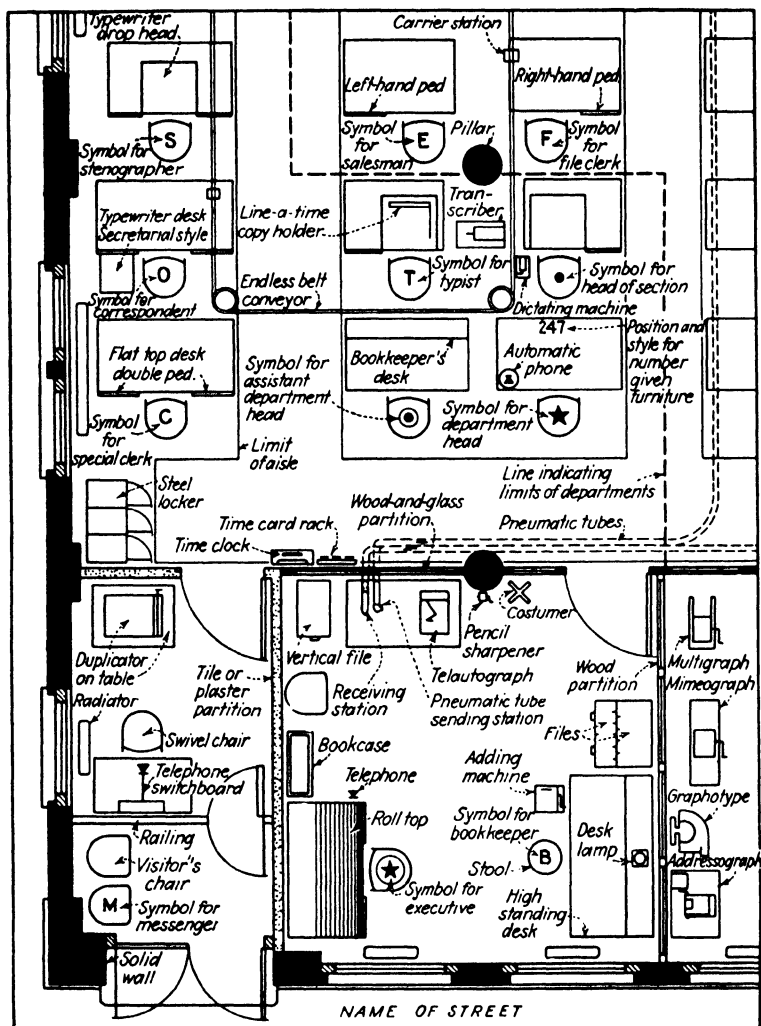


FIG. 68. Standard symbols are used to indicate each piece of equipment on the floor plan; otherwise the result would be a mass of rectangles meaning little. With symbols like those shown above, it is unnecessary to name the pieces. It is done in this section of a large office layout simply for the purpose of identifying the symbols. It will help to number each piece, as shown in Fig. 69. These numbers will appear on the typewritten list and will be helpful in planning the rearrangement as well as in directing the moving.

the green and yellow prints, will be used for templets (i.e., cardboard cutouts of the equipment).

MAP THE FLOW OF WORK

Take the white lithoprint and mark on it the exact course followed by the work on the dominant routine, from desk to desk. Then mark the "flow lines" of the next two most important routines, using pencils of distinguishing colors. As a rule, these three routines will be sufficient; if other routines are to be shown, additional prints should be used, as it is confusing to have more than three routines shown on one sheet.

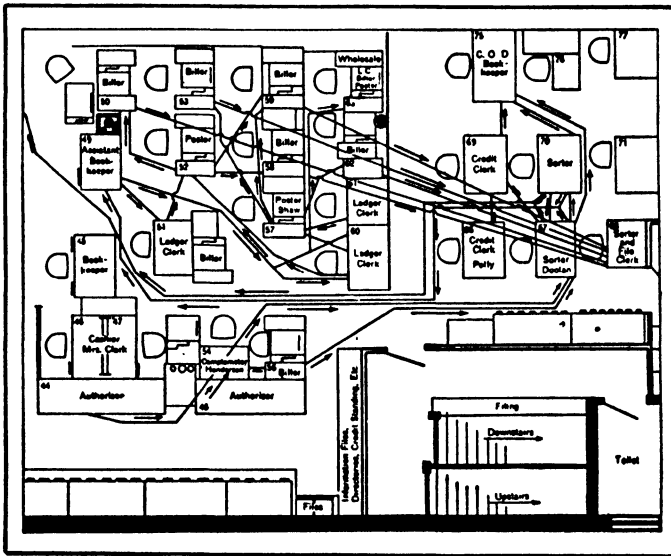


FIG. 69. Mapping the flow of work.

This work will require some time, but the result will well repay the time expended. It is not at all unusual to find conditions similar to those illustrated in Fig. 69, which is only part of one office. Executives who study a flow map of this kind will begin to understand why so many clerks are necessary to do the work in the present manner, and they are likely to develop a wholesome respect for the work thereafter.

DETERMINE DEPARTMENTAL SPACE REQUIREMENTS

It is necessary to get a general idea of the allotment of space for each department; the studies previously made will aid in this. Every depart-

ment will be represented on the floor plan by simple rectangles. This allotment of space should be discussed with the chief of each department and his approval secured as to the general location. This discussion will require some time and will probably cause some argument. The person in charge of planning the new arrangement will learn much of human nature in these discussions, but, as this knowledge will be valuable to him, he should not feel unduly discouraged or consider it a waste of time. Unless a department head is satisfied with the general location allotted him, he certainly will not agree with the final plan, but there should be a good, logical reason for the location of each department, and this reason should be fully and patiently explained.

FIGURING EXPANSION

As outlined in a previous chapter, expansion should be figured and allowed for in the new arrangement. The study for this should be made before the new layout is planned and due space allowed in the new plan. The expansion will be figured in percentage of growth, which must be translated into the actual number of new clerks required.

ALLOWANCES FOR AISLES AND DESKS

The general allotment of space having been approved, it then becomes necessary to decide upon main and cross aisles. Main aisles should be preferably 4 to 6 feet wide, with an absolute minimum of 3 feet; cross aisles should be 3 feet wide and not more than 20 feet apart. These aisles should be lightly sketched upon the plan with pencil.

Not more than two desks should be placed side by side, and if possible each desk should be next to an aisle, so that the occupant of the desk can rise and pass down the aisle without disturbing any other worker.

There should be, from the front of one desk to the back of another, a minimum distance of 30 inches, which allows ample seating space for the ordinary chair. Executives, or persons using a tilting-back chair, should be allowed a minimum of 3 feet between desks.

TEMPLETS

Templets (often called "templates") are cardboard cutouts of each piece of equipment, cut from lithoprints. Since they have been drawn

to scale, they can be moved around on the floor plan to show various arrangements, thus obviating the necessity of moving the actual equipment itself until the final layout has been approved.

Before the templets are cut, two complete lists of all equipment in each department should be made, one on cards and one typed on a sheet, for future guidance. The numbers shown on the floor plan should correspond to the numbers on the lists.

The three lithoprints reserved for templets will be cut up, the white first, the other colors later on. It will be found best to cut them so that the desk and its accompanying chair will be on the same templet, since this saves much handling. The cutting should be close to the line, though the actual line should be left on the templet. All templets should be carefully preserved in envelopes, as it is very easy to lose a desk or filing-cabinet templet, which causes much extra work when the loss is discovered.

The green templets denote that the desks and other equipment shown in that color are expansion equipment, while the yellow templets represent new equipment to be purchased. By providing for this expansion in the new layout, whenever new clerks are employed in the future, space for them will have already been allotted.

MAKING THE NEW TEMPLET LAYOUT

In planning the new layout, the best way is to take a lithoprint of the new floor, bare of desks, and place it on top of a piece of cork carpet cemented to a piece of three-ply veneer. It can be pinned in place with thumbtacks and the whole arrangement handled in much the same way as a drawing board, if the edges are square to each other; it can also be carried about readily from one place to another. On this surface the templets are pinned with glass-headed pins like those used for maps. Not only do these glass-headed pins make it easy to "pick up" a piece of equipment and move it around on the floor plan, but the fact that they are available in fifteen or more colors makes it possible to show distinguishing features when that is desirable, as it sometimes is.

At first, the templets should be placed, but not pinned, on the board, until it is certain that the desired arrangement is possible, when they may be pinned in place. After the templets representing the existing equipment of a department have been arranged, the green templet representing space allowed for expansion should be put in place. If any pieces of equipment are to be abandoned, a yellow templet of the de-

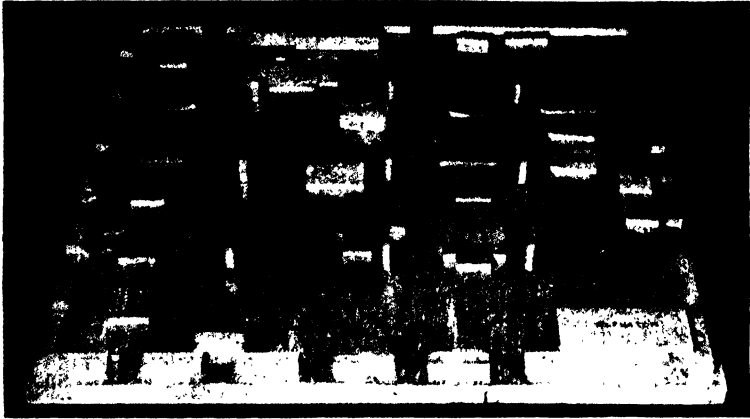


FIG. 70. To visualize the flow of work and show how suggested changes might affect it, one manager uses this ordinary flat piece of plywood. Wooden blocks, cut to scale sizes, represent units of equipment and may be moved about as desired.

sired size (to scale) of the new equipment to be purchased should be pinned in its proper location.

When the layout is thus completed the flow lines of the three main routines may be indicated with colored strings wound around the pins holding the templets. This new layout can then be compared with the flow lines in the old plan of arrangement; the improvement will be instantly and graphically displayed.

THIS IS IMPORTANT

The new arrangement thus depicted should then be "sold" to each department head. When approval is secured, the person approving should sign his name to the templet plan. This precaution makes it more difficult for him to change his mind and thereby cause extra work, because most people feel bound to stand by their signature when once it is given.

After all the signatures have been obtained from the heads of the various departments, the signed plan should be taken to the senior management, explained, and duly approved by signature in the same manner.

It is now ready for the draftsman to make the final tracing on tracing cloth.

From this tracing an adequate number of blueprints for telephone men, electricians, movers, and others can be made.

QUESTIONS FOR DISCUSSION

1. Why is office layout important?
2. What is the relative importance of the appearance of an office?
3. What is the effect of crowded conditions in an office?
4. Explain fully "straight-line flow."
5. What five advantages may reasonably be expected from "straight-line flow" in office work?
6. Why is it desirable to keep clerks and executives at their desks?
7. Is it possible to arrange an office so that all work will flow in straight lines? Explain.
8. How would you proceed to analyze the flow of work? In the course of your analysis, what would you discover about the routines in the office?
9. What is a "dominant routine"?
10. Why should some departments have more lines of flow than others? Illustrate your answer.
11. List six special considerations affecting the location of different departments and comment on each.
12. What effect on office arrangement has the contact between departments?
13. What effect on office arrangement has contact with the public?
14. What should be done with noisy departments? Why?
15. What should be done with untidy departments? Why?
16. Where should executives be located? Why?
17. Where should central service departments be located? Why?
18. What factors affect the location of certain clerks?
19. Comment on the meaning, importance, and desirability of uniformity of arrangement.
20. What is the first and most important step to take before planning the office arrangement?
21. Why is it wise to make a scale drawing of the existing arrangement?
22. What is the best scale to use? Why?
23. Why are symbols used to indicate each piece of equipment, instead of the names?
24. How would you map the flow of work?
25. How would you determine departmental space requirements?
26. When should one calculate and allow for expansion?
27. How much space would you allow for aisles? and between desks?

PROBLEM III

In planning the proposed office of the Iroquois Knitting Company (mentioned in problems for Chaps. XII, XIV, and XV), make a tentative arrangement, with the following facts to guide you:

There are approximately 200 office workers, divided in this manner:

Purchasing department	6
Credit department	9
Order department	26
Correspondence department	14
Statistical department	22
Accounting department	14
Planning department	23
Pay-roll department	12
Timekeeper's department	20
Shipping department	12
Stenographers, typists, and private secretaries	32
File clerks	10
	<hr/> 200

There are 27 inside telephones in use. The electrically operated machines number 17, including the card-punching, sorting, and tabulating machines in the statistical department. There are about 40 typewriting machines in use in all departments combined.

"Getting the work done is not so hard if we have properly qualified personnel for the job—with a willingness to work."—ROBERT H. STUEBING.

XVII

THE OFFICE WORKER AND HIS JOB

Most reasonable people will agree to the standardization of equipment, materials, methods, and working conditions. But some will hesitate at the mention of standardization of personnel, in the mistaken belief that scientific management aims to cast all people in one and the same mold. When the term "standardization of personnel" is used, it does not mean that one type of person is to be selected for all types of work, nor that all work is to be made to fit a standard type of person. It does not mean that human beings are to be reduced to automatons or deprived of initiative by making labor a joyless drudgery. Quite the contrary.

Scientific management recognizes that human beings are highly diversified in both physical and mental capacities, and that these basic traits are fixed and unalterable. Nevertheless, every person is entitled to serve industry in the capacity for which he is best fitted, and scientific management endeavors to find a place for each where he can do the work for which he is naturally best fitted and most capable. Therefore, the phrase "standardization of personnel" clearly signifies the application of the scientific method of standardization to the problem of developing the personnel of an organization; or, in other words, standardizing the method of solving the problem of selecting, employing, training, and managing that personnel.

WHAT STANDARDIZATION OF PERSONNEL INVOLVES

1. *Recognizing Individual Differences.* Standardization of personnel involves a constant effort on the part of those undertaking the work to learn to differentiate between persons; to recognize the essential char-

acteristics that distinguish them; and to ascertain in what respects these characteristics differ.

2. *Job Analysis and Requirements.* Standardization of personnel also involves the ability to determine the characteristics required for a specific position. Until we have learned to differentiate these characteristics, we cannot determine them accurately; in so far as we have determined them, however, we should be able to recognize the particular characteristics required for any particular job.

3. *Finding the Right Person for the Work.* Standardization of personnel likewise involves the ability to select the person best fitted for the work—that is, the person possessing in the highest degree and number the various mental and physical characteristics required to perform the work.

4. *Adequate Training.* Finally, standardization of personnel involves training the persons thus scientifically selected, so that they may perform the work according to the standard method that has been established.

PERSONNEL AN IMPORTANT MANAGEMENT FUNCTION

Of all the functions of management, the personnel function is one of the most vital and at the same time probably the most difficult to execute satisfactorily. It is a field which for years has been the subject of more legislation and discussion than almost any other. In many organizations the personnel function is a specialized field, often in charge of a staff man reporting directly to the president of the company. The director of personnel, as he is often called, is not only responsible for employment and training, but he also participates generally and specifically in all activities that will tend to keep employees happy, cooperative, and productive.

The relationship between the personnel manager and the office manager is similar to the relationship of the office manager to the other executives in the company. Outside his own department, each is a staff officer, expert in his particular field and ready and willing to cooperate with other executives to place at their disposal the full benefits of the special knowledge and ability each possesses—the office manager to improve the performance of office work, and the personnel manager to improve the quality of personnel relationships at all operating levels and sometimes at all levels.

It is obvious that since the office manager is interested in attaining

similar objectives with respect to the office employees, he should be thoroughly familiar with principles and techniques for doing so. In offices where the office manager is also primarily responsible for the personnel function, the importance of the subject is paramount.

HOW MEN DIFFER

A famous scientist once summed up his study of mankind in the statement that man is what he was born, plus his environment and experience. Men differ both physically and mentally, but it is certain that their mental differences are greater and more striking than their physical differences. In the mental history of every man there are probably countless currents extending back through his myriad ancestors, which manifest themselves in many curious ways and exist alongside the characteristics he has acquired through environment and experience.

The native traits and characteristics of nearly every individual are fairly well fixed, inasmuch as most of them have been emphasized and nurtured during childhood through contact with the parents from whom they were inherited; these tend to remain and influence the conduct of the individual all through his life history.

Acquired traits, habits, and characteristics, those derived from environment and experience, exert a very powerful influence on the life of the individual, but they are fluid rather than fixed and tend to change as their sources change. The environment acts upon the individual, who in turn, to some extent, reacts upon his environment. Experience changes individuals but it is itself volitional to a great extent: within certain limits the individual has the choice of his own experience. The worker is affected by his work, his job, to the extent that he possesses the capacity for adapting himself to its conditions; on the other hand, the job is affected by the worker to the extent that he possesses initiative and the desire to change.

PHYSICAL CAPACITIES

Most physical capacities are capable of measurement, and there is little disagreement as to their evaluation, though their relative importance on some kinds of work is not so well recognized as it should be.

The primary physical capacity is undoubtedly *health*, for with it other capacities may to some extent be acquired; without it all others are affected.

The second most important physical capacity is *eyesight*; it is perhaps also the most neglected.

In some occupations, *hearing* is a most important capacity; in office work slight defects in hearing are often negligible as a handicap.

Dexterity is of considerable value in some office occupations, but in others it is not especially required.

A highly valuable capacity in all office operations is *coordination* of hand and brain.

Appearance is a capacity much in demand in some positions and desirable in all.

Manner is a capacity of great value in all occupations when there is contact with other persons.

Bodily strength is a capacity of varying importance, probably of less importance now than formerly; certainly it is of minor importance in office work.

MENTAL CAPACITIES

Mental capacities are not so easily recognizable as physical ones, nor are they so capable of precise definition. Nevertheless, the problem they present must be approached in a scientific manner, and there is little doubt that eventually it will be possible to detect the most important mental qualities and make approximately correct measurement of the varying degrees they exhibit.

Judgment is a desirable capacity in all office work, as it is required to some degree in every operation. It may be described as the ability to decide between two or more courses of action, to decide between two or more facts of greater or less similarity, or to compare one or more facts with an established standard. When differences of choice are wide, there is little need of judgment—considered as a deliberate mental operation—but when there is a narrow margin of difference, judgment is necessary. Ordinarily we do not judge matters and things that can be measured, but instead let the measurement decide the judgment. Where a person takes one course of action in preference to another, his judgment is good or bad according to whether the results of the act are successful or otherwise.

Initiative is the capacity possessed by some persons which causes them to change the established order of things in greater or less degree, to take on work without instructions, or to assume the leadership in new ideas. In some occupations this capacity is the highest value, but it

may often prove dangerous. It is satisfactory so long as the leadership is exercised in the proper direction and results in good for the organization, but it often follows devious and uncertain paths, getting into side-tracks at times and occasionally reversing the direction. Unless controlled by judgment it is likely to invite disaster. The value of initiative has been greatly exaggerated, when applied to all persons in an organization. An organization is often defined as a collection of persons working together for a common end; if this is to be accomplished, initiative must be placed under strict control, as its chief value is found in the leaders.

Aggressiveness is a latent capacity in most people, but in some it is highly developed. A certain amount of it is necessary in an organization, but, like initiative, it should be under strict control. Otherwise, it is not a social asset.

Skill in specific lines is a necessary capacity in all office occupations, especially where scientific management exists.

Thoroughness is an exceedingly valuable capacity in office work, since most office operations are of a character where attention to details is vitally important.

Organizing ability is a very rare capacity; when discovered, it usually marks the possessor for promotion to an executive position. It is evidenced by the manner in which its possessor carries on work, even though he works by himself.

Supervising ability is equally rare. It is the capacity to oversee the work of others, detecting wherein it may be wrong, keeping it up to standard, and carrying it along smoothly without rupture, disturbance, or disagreeable episodes.

Disposition is assumed to be the general conduct of a person in his relations with others. A good disposition is desirable in all occupations; in executive positions it is invaluable, despite the opinions of some to the contrary.

Tact and *diplomacy* are closely allied capacities, which in some office positions are extremely important and in others practically negative, except as they touch upon relations with fellow workers.

Culture and *knowledge* are purely acquired capacities of different value and varying importance in office occupations.

THE INTERESTS OF THE WORKER

The things an employee is interested in represent his volitional life and are of real importance to the management. What the worker wills

to do is of far greater moment to him than the work he does for a salary; if his interests are antagonistic to his work, he will never do the best work of which he is capable. If, on the other hand, a worker is interested in his job and is ambitious to perfect himself in its performance, he will do so because in this case his interests and his work harmonize. A top executive once related a story of a worker who had both longings and capacities for handicraft work; he would have made an excellent carpenter, but he desired for social reasons to work in an office. His work there was decidedly ineffective, and the salary he earned was considerably less than that he could have earned as a carpenter—the work he really liked to do—but he felt it a social degradation to doff his white collar and put on overalls.

OPPORTUNITIES FOR THE WORKER

Another potent factor in clerical output is to be found in the opportunities the position offers to the worker. His capacities may be large and his interests harmonious, but, if the opportunities of the position are not such as to enable him to use his capacities to their fullest extent, the net result will be correspondingly lowered. If such a condition is only temporary it may have no serious effect, but if long continued it will gradually atrophy the capacities and dull the ambitions of the worker.

In using the term "opportunities," much more is involved than conditions for advancement or promotion. The opportunity to use the capacities one possesses is of greater import than the question of emolument, though that fact is not always recognized or admitted, for obvious reasons. Opportunity heightens interest and increases capacity; all three act and react upon each other to a very large extent.

MORALE OF THE WORKER

The office manager is responsible for the morale of his office force. Morale starts at the top. It may be defined as the mental state of the individual or group, with respect to such factors as zeal, spirit, hope, confidence, and so on. When morale is high, there is confidence in the leadership and an eagerness to prove oneself worthy of it. There is an *esprit de corps*, the feeling that one is doing the right work, for the right company. It is shown in the attitude toward the company and its officers and department heads: not "the company," "them," not "they" or "it," but "our company," "our product," "us," "we."

High morale cannot be developed by the president talking about the company being "one great big family." One is reminded too vividly of the Scotsman who said to the maid who had served the family long and well, "Maggie, ye ha' been wi' us for thirty years. From now on, ye wi' be considered a member of the family. As such, ye wi' receive no pay."

Morale is not built by what company executives say, but by what they do or do not do. Every step taken by a company is appraised by its employees in terms of "How will this affect me and my chances here?" If the employees' reaction is based on misinformation, the result is nevertheless exactly the same as though the information were correct. It cannot be too strongly emphasized that the channels of communication between the company and its employees not only should be kept open and working, but that they should be two-way channels. Every care should be taken to see that information coming down is accurate and is prepared with extreme care to get as favorable a reaction to it as possible and that all communications going up the channel are given immediately the attention they deserve.

Too often suggestions from employees are treated as kicks or annoyances. When an employee is interested enough to make a suggestion, every consideration should be given to that suggestion, whether it is any good or not. It should not be ignored; the employee should be invited to discuss it from all angles, so that he may see for himself whether it can be used at once, or later, or not at all. A company cannot have too many of its employees thinking for it.

GRIEVANCES

The handling of grievances is another case in point. Grievances may arise from any number of causes adversely affecting the mental attitude of the worker toward his job. The cause may be real or imaginary, but even an imaginary cause may point to some real source of dissatisfaction. Some typical grievances and causes are shown on pages 390 and 391.

Where no particular thought has been given to handling grievances, the worker will approach his supervisor, who in turn will take it up with his superior, and so on up the line until it reaches someone who will make the decision or take the action called for, then down the line it goes again. Meanwhile the worker frets. To him the grievance is important; to his superiors it is just another burden added to those they are already carrying, and, to them, seemingly much less important.

Even the so-called "open-door policy," under which any employee is

invited to "come right in and tell his story," depends upon the reaction of the immediate superior toward "going over his head." The office manager who realizes the potentialities of "pin-prick" frustrations and annoyances will make adequate provision for taking care of them before they balloon into serious complaints. Every possible effort should be made to settle grievances promptly at the first step. One of the most important clauses in union contracts is the provision for grievances.¹

Like many other incidents, grievances are "symptomatic details," often pointing the way to weaknesses in the organization structure or procedure, the correction of which can anticipate and take care of such incidents before they happen.²

HOW SCIENTIFIC MANAGEMENT HELPS

Scientific management seeks to solve the personnel problem,

1. By finding the person with just the right capacities—not an excess of them, not more than can be used on the job;
2. By finding the person whose interests harmonize with the work;
3. By providing that person with a job which affords him opportunity to develop his capacities to the fullest extent.

Certainly everyone will agree that these three aims are highly desirable and well worth while, whether or not one also agrees that only through scientific management can they be attained to the fullest extent.

THE TYPES OF OFFICE WORKERS

In every position there are factors which make for either effective or ineffective work. The problem is not one of merely finding the person who can do the work and will stay on the job, even though that is exactly the way that most companies have been attempting to handle the situation.

In considering the various types of office workers, it must be kept in mind that we are considering dominant traits only. As has already been recognized, each person has many capacities: in like manner each position requires a certain amount of many capacities, if it is to be properly filled.

¹ See footnote at the end of Chap. XXII.

² An excellent brief discussion of grievances will be found in the *NOMA Handbook for Office Managers*, pp. 243-249.

TYPICAL EXAMPLES OF WORKERS' GRIEVANCES
Common Causes

Type of Grievance

(listed without reference to frequency)

A. Wages:

1. Demand for individual wage adjustment.
2. Complaints about job classification.
3. Complaints about incentive systems.
4. Miscellaneous.

B. Supervision:

1. Complaints against discipline.
2. Objection to a particular supervisor.
3. Objection to method of supervision.

C. Seniority, Discharge, etc.:

1. Loss of seniority.
2. Calculation of seniority.
3. Interpretation of seniority.

The worker feels that—

- He is not getting what he is worth.
He gets less than others doing work requiring the same degree of skill.
His job is worth more than it pays and should be reclassified.
He deserves to be upgraded.
The method of figuring his pay is so complicated that he doesn't know what his rate really is.
His piece rates are too low.
His piece rates are cut when his production increases.
Mistakes are made in calculating pay.
Methods of paying off are inconsiderate.
Supervisor doesn't like him and picks on him.
Company has it in for him because he is active in the union.
His mistakes were due to inadequate instruction.
Supervisor is playing favorites.
Supervisor is trying to undermine the union.
Supervisor ignores complaints.
There are too many rules and regulations.
Rules and regulations are not clearly posted.
Supervisors do too much snooping.
He has been unfairly deprived of seniority.
He hasn't received all the seniority due him.
Clause in contract has been unfairly interpreted by company (clauses often vague).

4. Disciplinary discharge or layoff.

He has been penalized unfairly or at least too severely. Company wanted to get rid of him anyway for union activity or other reasons.

5. Promotion.

Seniority clause has been violated.

Company wouldn't promote him because of union activity.

He doesn't have a chance to advance himself.

He has had more than his share of unpleasant tasks.

6. Transfers to other departments or shifts.

D. General Working Conditions:

1. Safety and health.

Toilet facilities are inadequate.

Dampness, noise, fumes, and other unpleasant or unsafe conditions should be corrected.

He doesn't have enough time for personal needs.

He has to lose too much time waiting for work.

Overtime is unnecessary.

He is being unfairly denied an employment release (certificate of availability).

2. Miscellaneous.

Lunchroom facilities are inadequate.

E. Collective Bargaining:

1. Violations of contract.

Company is stalling or putting obstacles in way of grievance settlements.

2. Interpretation of contract.

Company won't give supervisors authority to grant concessions.

3. Settlement of grievances.

Company has disregarded precedents and agreed-upon interpretations.

Company fails to discipline supervisors where disciplinary action is necessary and has been promised.

(Adapted from *Settling Plant Grievances*, published by the Division of Labor Standards of the U.S. Department of Labor, Bulletin 60, pp. 2-4.)

THE CHIEF EXECUTIVE

This type must possess, in high degree, many capacities. Organizing ability stands high on this list, for the executive who is not an organizer will not be effective even though his other capacities be highly developed. His judgment should be of a highly discriminative character, for upon it much depends. If in addition he possesses initiative and aggressiveness he will be successful. Tact and diplomacy, though desirable, are not essential, while supervising ability is of great importance. The possession of an even disposition, while not essential, is highly desirable and need not interfere with other essential capacities. Culture and knowledge are placed last on the list, because, while desirable, great and notable business successes have been achieved without them. The executive of the highest type will have all these capacities well developed, but such a man is rarely found.

THE EXECUTIVE ASSISTANT

For this position the same characteristics are required as for the chief executive, though not developed, perhaps, to the same degree. Thoroughness, however, must be present. If the person is an understudy for the executive, he should possess these capacities in a much higher degree than if he were merely an assistant looking for no higher position.

STAFF INVESTIGATOR

This position, which is often that of an assistant to the chief executive, denotes a person having charge of some particular staff function. It requires, first of all, knowledge and skill in the specific line covered by the work, a discriminating judgment, and considerable initiative. Thoroughness is a requisite for this position also. If the staff investigator possesses any of the other capacities of an executive, they can also be utilized in the position.

DEPARTMENT OR SECTION HEAD

The subexecutive requires, in a lesser degree, practically the same capacities as the chief executive, since the holders of these positions have the opportunity of becoming chief executives, if they have these capacities highly developed, and occasion arises. Department heads, therefore, should be selected with this end in view. In this position,

supervising ability is of even more importance than in that of the chief executive; skill in specific lines is valuable.

EXPERT CLERKS

Such workers as expert clerks, bookkeepers, and stenographers first of all require skill in their specific lines, with thoroughness as an extremely important quality. To a limited degree, initiative is of value, but its development should be strictly controlled. A general knowledge of all the work also tends to improve results and enlarge opportunities.

DETAIL CLERKS

Clerks whose work is of a detail nature, not requiring expert knowledge, must possess first of all the capacity of adaptability in a high degree; second, skill in specific lines; and third, knowledge sufficient for the work. Needless to say, thoroughness is also required.

JUNIOR CLERK AND APPRENTICE

These positions require similar capacities to the last two mentioned categories, though to a lesser degree.

ANALYZING THE JOB

In dealing with the subject of job analysis, it should be borne in mind that there is a distinction between the occupation and the job; the occupation includes the job. For example, the term "stenographer" de-

Every skilled occupation consists of two distinct but interdependent types of activity:

1. *Automatisms*, which are
habitual actions
executed without conscious thought
best developed by repetition
in frequent, short, snappy drills
2. *Operations requiring thinking* or the exercise of judgment
best developed by doing jobs, projects, problems

Col. Robert I. Rees.

(*Courtesy of American Management Association.*)

notes an occupation, but this occupation is composed of several specific jobs, such as taking dictation, typing letters from dictation, and so on. While it is necessary to determine the qualities required for any occupation, this can be accomplished only by taking the sum total of the capacities required on each job of which the occupation is composed. Hence, with this object in view the analysis of the job is the starting place.

The best method developed for this purpose up to the present is to appoint specially trained interviewers³ to do the work if the office is a large one; if small, it can be done by the personnel manager, or by the office manager himself. The interviewer must be able to separate essentials from nonessentials, and to discriminate closely as to the degree of each major capacity required. The work calls for a high degree of general intelligence, the ability to analyze, and a well-developed faculty of judgment.

At the beginning of this investigation, a rough classification of the various occupations in the office will aid the subsequent work, though after the investigation is finished it will be generally found that the classification does not agree with the facts discovered. Nevertheless, it will serve as a guide to the investigation, as a useful hypothesis.

Before the interviewers begin work on the analyses, they should, if there are several to be made, hold a series of conferences in which the work they are to do is discussed, carefully explained, and thoroughly understood by all who are to take part.

GETTING THE FACTS

The interviewers then proceed to secure the essential facts required for each occupation, through the medium of personal interviews with the workers in that occupation, information which they will supplement with their own observation. The essential information required is

1. The name of the occupation, with any alternative names by which it may be known, and a statement of the various places where it is performed.
2. A statement of the duties of that occupation, giving the functions performed and the responsibilities.
3. The conditions of the work, described as relating to the following:
 - a. Location.

³ The term "analyst" or "job analyst" is widely used to designate the person doing this work, which is, nevertheless, functionally, interviewing. Hence our use of the functional term "interviewer."

b. Time—whether permanent or temporary work, hours of work, and so forth.

c. Whether the work is performed standing, sitting, walking, or in some other position.

d. Whether or not speed is a requisite.

e. The amount of accuracy required.

f. Degree of automaticity—that is, whether it is varied or monotonous.

g. Disagreeable features, if any, should be noted and described.

h. The method of pay, the rate, and whether or not there are bonuses and premiums attached, or penalties of any kind.

i. The relation of this occupation to others.

In this connection, all occupations which naturally lead to this and higher positions, utilizing the experience in the lower occupation, should be mentioned.

4. A full description of the worker as to age, sex, race, and nationality, together with the mental and physical capacities required.

OCCUPATIONAL DESCRIPTION

From the information thus obtained, there is prepared for the use of the employment interviewer an occupational description, or job specification, as it is frequently called. The following is typical:

Name of Occupation.—Clerk in mail-opening division.

Age.—17 to 20.

Sex.—Female.

Statement of Duties.—This worker must sort letters by departments, operate a Lightning mail-opening machine, and open and sort letters properly. Other work will include making out statement of cash received for the cashier, which statement must balance with the cash received; after the mail is opened and delivered, she will be expected to address envelopes by hand, and to perform minor clerical tasks as called upon.

Statement of Responsibilities.—The worker is expected to get the mail opened and distributed as early as possible, in order that other clerks may work upon it. She will handle a considerable amount of currency and checks, and should therefore be honest and trustworthy.

Conditions of the Work.—It is done in the mail-opening department. It is necessary for this clerk to report for duty one half-hour before the office opens, in order to get an early start. She will be relieved one half-hour before the office closes. The work is permanent.

Posture.—Most of the work is done in a sitting position, but there is also a considerable amount of walking about.

Speed.—This is required.

Accuracy is very important.

Automaticity.—The work is varied in its general character, but when skill is developed, the various methods should be performed with automaticity, but never to the extent that inaccuracies creep in.

Disagreeable Features.—With the exception of the early start, there are none.

Method of Pay.—The weekly wage offered for starting is \$ Possible limit of salary in this position is \$ In addition to the salary there is a bonus for quantity of work performed at the standard rate.

Penalties for Errors.—None is prescribed.

Relation of this Occupation to Others.—Junior clerks with the required qualifications may be promoted to this position. Occupants of the positions may be promoted to the cashier's section, or to other clerical operations, such as card entry clerks, file clerks, and so forth.

Nationality.—American.

Physical Qualities.—Healthy; average strength; normal eyesight.

Education.—Grammar-school graduate or better.

Experience.—None necessary.

Skill.—Can be developed.

Language Ability.—None.

Personal Qualities.—Good appearance; cooperative ability to work with others; adaptability, speed, accuracy, with ordinary judgment.

ANALYZING THE NONROUTINE JOB

It is possible to standardize the work of any clerk, whether that work is of a routine character or not. There are many tasks performed by nonroutine workers which are similar in nature to some of the routine jobs; if the one best method has been determined for doing the routine jobs, it is universally applicable and should be used by all, even the nonroutine clerks. The secretary, for example, will be called upon to do many operations which may be standardized elsewhere in the office, and—provided the amount of training necessary is not too great—she should be taught to perform them in the standardized way.

In some nonroutine jobs, it is very difficult to list, offhand, all the duties that are to be performed. The best way to prepare the material for such a list is to have the worker keep for several days, or a week if necessary, an analysis-of-work sheet, which is merely a record of each duty as it is performed—the time taken and the number of pieces done—if the work is of a nature that can be counted. From a careful study of these records the office manager will be able not only to prepare a list of duties but also to make many improvements in the manner of performing them. It may perhaps be observed, from a study of these sheets, that the clerk is not doing the work in the best order, that there are too many changes of work, too many interruptions or other

AN ANALYSIS OF WORK						DATE <i>July 3-1949</i>	
NAME <i>Carl Charles</i>		POSITION <i>Detail Cost Clerk</i>		DEPT. <i>Accounting</i>			
						SECTION	
1	2	3	4	5	6	7	
STARTED	STOPPED	ELAPSED MINUTES	NUMBER DONE	SYMBOL	KIND OF WORK NAME IT CLEARLY AND ALWAYS USE THE SAME WORDS	LEAVE BLANK	RPH
<i>8:47</i>	<i>8:57</i>	<i>.37</i>	<i>1</i>	<i>B.P.</i>	<i>Posting on labor cards</i>		
<i>8:57</i>	<i>8:54</i>	<i>.17</i>	<i>1</i>	<i>B.P.</i>	<i>" " specifications</i>		
<i>8:54</i>	<i>9:13</i>	<i>.19</i>	<i>1</i>	<i>R.P.</i>	<i>Figuring on labor cards</i>		
<i>9:13</i>	<i>9:17</i>	<i>.4</i>		<i>E.H.</i>	<i>Errand for blue prints</i>		
<i>9:17</i>	<i>9:58</i>	<i>41</i>	<i>1</i>	<i>R.P.</i>	<i>Figuring on labor cards</i>		
<i>9:58</i>	<i>11:11</i>	<i>73</i>		<i>B.P.</i>	<i>Posting on specification</i>		
<i>11:11</i>	<i>11:17</i>	<i>6</i>		<i>H.W.</i>	<i>Washroom-drinking ft.</i>		
<i>11:17</i>	<i>12:42</i>	<i>15</i>		<i>B.P.</i>	<i>Posting on specification</i>		
<i>12:42</i>	<i>1:24</i>	<i>42</i>		<i>L.L.</i>	<i>Lunch</i>		
<i>1:24</i>	<i>1:38</i>	<i>14</i>	<i>1</i>	<i>B.P.</i>	<i>Posting on specification</i>		
<i>1:38</i>	<i>1:49</i>	<i>11</i>	<i>1</i>	<i>R.L.</i>	<i>Adding up specification</i>		
<i>1:49</i>	<i>2:38</i>	<i>49</i>	<i>1</i>	<i>B.P.</i>	<i>Posting/figuring summary ^{copy} _{total}</i>		
<i>2:38</i>	<i>3:30</i>	<i>52</i>		<i>B.D.</i>	<i>Sorting time tickets</i>		
<i>3:30</i>	<i>3:35</i>	<i>5</i>		<i>H.W.</i>	<i>Washroom-drinking ft.</i>		
<i>3:35</i>	<i>3:53</i>	<i>18</i>	<i>1</i>	<i>B.P.</i>	<i>Posting on labor cards</i>		
<i>3:53</i>	<i>4:13</i>	<i>20</i>		<i>R.P.</i>	<i>figuring time tickets</i>		
<i>4:13</i>	<i>4:35</i>	<i>22</i>		<i>B.D.</i>	<i>Sorting time tickets</i>		
<i>4:35</i>	<i>4:41</i>	<i>6</i>		<i>E.H.</i>	<i>Errand acc blue prints</i>		
<i>4:41</i>	<i>5:12</i>	<i>31</i>		<i>B.P.</i>	<i>Posting on labor cards</i>		
		<i>552</i>					

FIG. 71. An analysis-of-work sheet.

DIRECTIONS TO EMPLOYEES FOR USING THE ANALYSIS-OF-WORK SHEET

Proceed with your daily work as usual. Do not hurry or try to speed up. Speed is not a factor, and it will not make any difference whether you work faster or slower than usual.

When you begin a task, write in Column 1 the time you start it; at the same time write in Column 6 the kind of work. When you finish or stop work on a task, write in Column 2 the time you stopped work; write in Column 3 the number of minutes (Column 2 less Column 1); write in Column 4 the number of pieces done, if the work is of a nature that can be counted or measured. (By the term, "number done," is meant that, in filing, just as an example, one letter—no matter how many pages—is counted as one piece. One letter and attached reply is also one piece. If a folder is filed in, it is counted as one piece, no matter how many pieces it contains. In typewriting work, each letter typed is counted as one piece. In other kinds of work, such as order writing or making entries, each order or entry counts as one piece.)

At the end of the day, total the elapsed minutes in Column 3; that total should equal the number of minutes you worked in the day. If it does not, there is an error in your calculations; please find the error and correct it. Be sure to account for all your time each day. Then hand the sheet to your supervisor.

Be sure to record every interruption to the work which lasts more than one minute.

If at any time of day you have finished one task and have to wait until another is assigned to you, write in Column 6 "Waiting for Work."

Record telephone interruptions. Each time you are interrupted by a telephone call, whether incoming or outgoing, put an asterisk opposite the period in which it occurs. Total these interruptions at the end of each day.

impediments to the progress of the work; such knowledge will be of great value and assistance in standardizing.

When the list is as complete as the interviewer can make it, it should then be submitted to executives and department heads who have contact with this worker, for they can often suggest additions to the list, or possibly detect things that should not be done by the particular clerk or kind of clerk whose work is being studied.

An analysis should then be made of the principal nonroutine duties. Some of these can perhaps be determined without extended study, while others will be of sufficient importance or volume to justify the most careful and scientific study, which should be done in the manner described elsewhere.

The writing of standard practice on the portions of the work studied will naturally form part of the work of the original investigator. Current-practice instructions should be written out in the manner outlined below.

Training should, as a matter of course, immediately follow the established practice.

When the nonroutine jobs are thus standardized, it will be seen that a distinct improvement in the control of the office manager follows, even though in some special instance it may not be possible to develop methods of wage payment which will act as an incentive to a high output. However, that is frequently possible.

STANDARDIZING THE NONROUTINE JOB

The standardization of the work of a nonroutine office worker should be conducted as follows:

1. *List the principal duties of each worker.* This is sometimes called an assignment record, because it shows the duties assigned to the worker. These duties should be divided as follows:

- a. *The daily duties.* These are the standardized duties which the clerk is supposed to perform each day. As there will not be many, they may usually be typed on a card which may be kept in the desk or other convenient place. Opposite each listed duty should appear a reference to the Standard Practice Instructions, so that a new employee may easily learn what is required.

- b. *Calendar of duties.* On a calendar like that shown in Fig. 72 can be entered in advance both the standard and the special duties to be performed, whether weekly, monthly, or on any particular day of the

papers, a special file should be provided. At the same time that the memorandums or papers are placed in the folder, a special tickler note should be made out and placed in the tickler file to come up at a date several days in advance of the date in question. When the tickler note comes up, a memorandum of this duty should be transferred to its proper day in the calendar of duties. The reason for bringing it up

WORK AHEAD		
DATE RECEIVED	WHAT	CLEARED (date and disposition)

FIG. 73. An assignment record like this helps to ensure that no tasks are overlooked because they are forgotten.

several days in advance is to provide against the contingency of assigning more jobs for that particular day than can be done in a day.

d. Duties to be done as soon as possible. There will always be assignments that need not be done on any particular day, but which should be done at the most convenient time. These are the types of tasks which, in the ordinary office, are usually neglected from day to day, until finally it is useless or too late to do them. No task whatever should be assigned for completion at an indefinite time. When the assignment for a task of this kind is made, a final date should be set

for its completion in such terms as "any time before . . ."; for this purpose the clerk should have an assignment book like that shown in Fig. 73, in which these assignments are entered as they are received. The record should contain a brief statement of what is to be done, and, if necessary, a reference to more complete instructions filed elsewhere.

Whenever the assignments in the calendar are noticed to be few and light, the clerk should be instructed to look over this assignment book, to discover if it is possible to start on one of these jobs. At the time of making the entry in the book it may be possible to estimate the number of hours required to do the job; if this estimate is entered along with the record, it will be of considerable assistance in planning the day's work. When the assignment is actually begun, a record of the date of starting is entered; when the work is completed, the date of completion should also be entered and the assignment crossed off the book with a blue pencil or other form of marking which will stand out prominently.

2. *Study the nonroutine duties and standardize the method of performing them.*

3. *Prepare written instructions for both standard and current practice.* Complete standard-practice instructions should be prepared for the performance of all standardized nonroutine work and current-practice instructions for whatever portion of it remains unstandardized.

The specific instructions for each job should be a matter of gradual preparation; this should be a major assignment for the incumbent of the position. Each sheet of instructions, as it is prepared, should be approved by the executive to whom the clerk reports. As a rule it is difficult to get a clerk to prepare these instructions, for at first he cannot do it and learn the duties of the position at the same time; later, when he has learned the duties, he cannot see the necessity of writing instructions for himself. It should, however, be explained to him that these instructions are for an emergency, in which event they may prove invaluable. If he should be absent, for any reason, the work must go on just the same; unless the substitute has available instructions already prepared, there will be many small details overlooked, and some important matters may be neglected.

The sheets of instructions, as they are prepared, should be bound in a binder, which, when not in use, should be kept in a specified place in the clerk's desk. The office manager should have a complete set of all such instructions, of course.

In the initial preparations for such a set of instructions, time should not be expended in making minute and elaborate classifications. These

should be written down when their need is suggested by some actual occurrence.

When the most important matters have been worked out in writing, they should be properly classified for easy reference and written up in final form. Loose leaves with blank space at the end of each classification will facilitate changes and make much copying unnecessary.

4. *Give adequate training on all tasks.* Training should be given for all nonroutine tasks in the same manner as for thoroughly standardized work.

The following examples of nonroutine workers are used for illustrative purposes only and by no means exhaust the list. What is here given is mainly for the purpose of illustrating the manner in which the work lends itself to standardization.

THE TELEPHONE OPERATOR

A thoroughly trained and experienced telephone operator is a jewel. As the primary point of oral contact between the company and those with whom it deals, the telephone operator has an unparalleled opportunity to build good will or equally to destroy it, according to the way she handles all calls passing through her switchboard. By her proficiency in expediting calls, she saves the time of executives and others whose time is precious.

To find a competent telephone operator is not easy. If it is possible to engage a girl who has been trained by the telephone company, that is probably the most satisfactory source. If not, care should be exercised to get someone who has a pleasing voice, a pleasant disposition, a will to serve, and a capacity for work.

Courtesy. It would seem to be quite unnecessary to stress the importance of courtesy over the telephone, after the telephone company's years of advertising "the voice with the smile wins." We must not forget, however, that each year there are several hundred thousand new office workers who may never have seen this advertising and whose use of the telephone may have been confined to unsupervised social calls, with the usual unrestrained banter that often characterizes them.

It is surprising how thoughtless some people are when they use the telephone. The very words used, even the tone and inflection of the voice, may convey to the person at the other end of the line an entirely erroneous impression of the speaker and of the firm for permitting such discourtesy or carelessness. Some people treat the telephone as

though it were a nuisance instead of a facility. The primary rule for telephone courtesy is this: Never say anything over the telephone that you would not say to a person face to face. Courtesy over the telephone must be carefully studied and thoroughly and patiently taught.

Tact. Next to courtesy in importance is tact. Without this, important inquiries may be entirely lost to the company, and customers may be unnecessarily annoyed. Though tact seems to be a natural characteristic of some people, who have it much more strongly developed than others, it can be inculcated until it becomes an acquired characteristic; many naturally tactless persons have developed this trait considerably through practice.

Standard Phrases. Methods for and words used in making and answering calls should be studied and standardized. Each company decides for itself the standard response to be made to the telephone ring; the telephone operator should then be taught that response as standard. The announcement of the name of the company may be sufficient to indicate to the person calling that he has the right number; in all cases, however, great care must be used in pronouncing the name clearly, without mumbling or slurring over.

In like manner, the method of getting the name and business of the person telephoning should be standardized and carefully taught to all who have occasion to answer the telephone. "May I tell him who is calling?" will be more likely to get a response than "Who's calling?"

A competent and well-trained telephone operator will also be able to help standardize the use of the telephone throughout the organization and control its undesirable use. Telephone communications with customers and others should be standardized as to methods of conversation, even to the extent of using certain standard phrases to fit common occasions which are constantly repeated in telephoning.

Personal Calls. The operator can help control the use of the telephone for personal calls by clerks. These are discouraged in most companies as they may monopolize the lines when customers desire to call the company. To avoid impairing office morale by absolute denial of this privilege, some companies, while not allowing clerks to use the telephone for personal calls or the reception of messages, permit the operator to receive and deliver messages for clerks. This she can usually do with little loss of time or danger of delaying customers, thereby eliminating the needless and unduly extended telephone conversations so prevalent among young people.

Other companies require all personal telephone calls by employees

to be made and received from certain telephones or from a telephone booth. The telephone operator can thus keep track of those who are abusing the privilege.

Toll Calls. The control of toll and long-distance calls is a difficult problem that faces many office managers. Certain members of the organization would much rather telephone than write, even when time is not an important factor. Some concerns have their telephone operator make a record of each long-distance call, showing the type of service used, the date, the person placing the call, the person and company called, the time of day, whether or not the call was completed on the first attempt, the number of minutes talked, and the cost of the call. This record is sent to the person making the call, for his signature, then to the department head for approval, and finally to the accounting department for distribution after checking and paying the telephone company's bill. If there is any question about the call having been unnecessary, or on company business, this record will provide a basis for control.

Trained substitutes should be provided to replace the operator during the lunch hour and at other times when she may have occasion to leave the switchboard temporarily.

THE RECEPTION CLERK

All visitors get their first impression of a company at the reception desk. In some cases the reception clerk is also the telephone operator; but if there is too much of either kind of work, one or the other will suffer neglect.

Courtesy. For exactly the same reason as the telephone operator, the reception clerk must possess the habit or trait of courtesy to a high degree; it may be considered a prime requisite in this position also. The development of good will frequently begins at the entrance to the office—the reception room—and the person assigned to receive visitors should be selected with that fact vividly in mind. Some offices install as reception clerks courteous, elderly gentlemen who perhaps have passed their period of usefulness as clerks, but who never forget that they are gentlemen. With careful training and supervision, young women make good receptionists, although they do not always fully appreciate their responsibilities in this work as do older and more mature employees. Visitors are inclined to be severely critical of any lack of attention or interest on the part of the reception clerk.

Standardize the Duties. The duties of the reception clerk should be carefully drawn up, thoroughly standardized, and patiently taught to the employee responsible for this work. The primary duty is to receive and direct all callers. This requires two faculties: greeting the caller and a familiarity with the company organization. Effective ways of greeting all types of callers should be worked out and standardized, so that the reception clerk will be able to handle adequately any situation that may arise. Standard responses to a visitor's questions are readily prepared, memorized, and practiced until they become second nature.

The receptionist should be familiar with the location of various departments and executives and with explicit directions for getting there. These directions should be carefully drawn up, written down, and memorized so that they can be recalled without hesitation. If a corrected list of all officers and employees is kept at the reception desk the work of that desk will be facilitated accordingly.

Related Duties. Other related duties which may reasonably be centered at this desk are as a clearinghouse for incoming and outgoing telegrams, calls for repairmen, and an in-and-out directory of executives and department heads.

Telegrams. The reception desk is the logical place for the delivery of all incoming telegrams. From here they can be sent promptly to the person or department for whom they are intended. Likewise, if all outgoing telegrams are sent to the reception desk, one person is thus made responsible for calling the messenger, or for sending the message direct to the telegraph company's office over the Telefax, an instrument devised for that purpose. Offices having a continuous stream of incoming and outgoing telegrams will of course have an operator who does little else but handle messages.

Repairmen. All calls for outside repairmen, even though made direct by a department—which is not too good practice—should be relayed to the reception desk. When the repairman arrives, he can be directed without delay to the proper location. Since his time is charged for from the moment he leaves his workshop until he returns, appreciable money savings may be made by handling repair calls at the information desk, instead of allowing repairmen to wander from department to department or to wait while each department is asked "if you called a repairman."

Executives' Whereabouts. Many offices find it helpful to keep track of executives through the information desk. The use of directory equip-

ment devised especially for the purpose makes that task relatively simple and effective. Thus there is one central point to inquire where any desired executive is at the moment.

JANITORIAL WORK

In the average office the work of cleaning is perhaps the most unsatisfactorily performed job. If the office is one of many located in a large office building, the cleaning is generally provided by the management of the building. In an office large enough to employ its own janitor crew, the work is usually better done, but even then there are opportunities for improvement in the methods used.

Standardize the Work. The first step in standardizing janitorial work is to determine what should be done. Every task connected with this work should be listed and a study made of the method and time required to do each one in a workmanlike manner. Any portions of the work that require special treatment should be investigated and done in the best way possible, which should then be standardized.

Schedule the Work. The next step is the scheduling of the work. Even though some items are not necessarily daily tasks, a definite time should be set for their performance. A special janitor's program may be worked out on the plan described earlier in this chapter for analyzing, organizing, standardizing, and scheduling nonroutine jobs.

Inspect the Work. When the work has been completely standardized and scheduled, periodical inspection should be arranged. All cleaning tasks which should be performed daily should be inspected daily by someone who knows what to look for and who can report the results of his inspection to the office manager.

OFFICE-APPLIANCE MAINTENANCE AND REPAIR

Where a large number of office appliances are used, it may be decidedly economical to employ a regular mechanic whose duty it is to keep all such appliances in repair.

Training. As a rule, the service stations of the companies manufacturing the appliances will be glad to give the necessary training on the machines at their repair rooms, provided, of course, that the company employing the repairman will pay his salary while he is learning. An investigation probably will show also that for certain appliances it might be wise to keep on hand certain repair parts that need frequent renewal.

Inspection. As a rule, machine operators are not mechanics in any sense of the word; not only are they unable to understand the reason for a breakdown, but often they cannot detect something wrong that will inevitably lead to a breakdown. Certain types of machines will require frequent inspection; other types, only occasional inspection. The time of inspection should not be left to the mechanic; it should be selected for him instead, and he should be required to report to some responsible person when an inspection has been completed.

Routine and Report. A routine should be set up for reporting the need of repairs, distinguishing between emergencies and nonemergencies. Getting something repaired by the mechanic should not call for coaxing or "playing up" by the employee whose equipment needs attention, as happens in some offices; this should be handled on a strictly service basis, administered and controlled by the office manager or his assistant. A daily report of service calls and action taken will probably be effective in seeing that repairs are made promptly, without discrimination or favoritism. The use of a repair requisition, filled out and sent through the house mail, will indicate priorities, if any. It should always be kept in mind that any equipment not in good working condition is a handicap to satisfactory output. Time lost by an employee while waiting for repairs is being paid for by the company, with no return to the company for the time thus being wasted.

QUESTIONS FOR DISCUSSION

1. What four points does the phrase, "standardization of personnel," involve?
2. How does scientific management seek to solve the personnel problem?
3. Why should the office manager be familiar with personnel principles and techniques?
4. What are the two main kinds of capacities to be considered in studying differences in individuals?
5. List eight physical capacities of the worker and comment briefly on each. Which of these physical capacities do you consider are the most desirable for office personnel? Why?
6. List ten mental capacities of the worker and comment briefly on each. Which of these mental capacities do you consider are the most desirable for office workers? Why?
7. Why is it important for a worker's outside interests to harmonize with his work?

8. What effect on the worker have the opportunities of his position?
9. List seven types of office workers and indicate the dominant traits each should possess.
10. What is the distinction between the "occupation" and the "job"?
11. What steps are to be taken in analyzing a job?
12. What is the essential function of a job analyst?
13. What essential information is required in making a job analysis? Do you think any of these are unimportant? If so, why?
14. What is the occupational description? How does it differ from the job specification?
15. Do you believe there are benefits to be realized from standardizing the work of a nonroutine clerk? Explain.
16. How would you proceed to analyze a nonroutine job?
17. How would you proceed to standardize the work of a nonroutine worker?
18. What is an assignment record, and why is it so termed?
19. What does a calendar of duties show?
20. Why should complete standard-practice instructions be prepared for a nonroutine position?
21. What is the difference, if any, between standard-practice instructions and current-practice instructions?
22. Name four nonroutine workers and describe or explain the duties and outstanding characteristics of each.
23. Comment on the requirements of a good telephone operator.
24. Comment on the requirements of a good reception clerk.
25. How would you organize the janitorial work in an office?
26. Comment on the maintenance and repair of office appliances.

PROBLEM I

Mr. Williams, an old and valued employee of the Proctor Pencil Company, has a wide list of duties. He checks all invoices for unit price and accuracy; he has charge of all export shipments; he keeps certain personal records for the president; and he makes for the controller a daily and weekly report of all sales. When orders are coming in heavily, he neglects the export shipments and, vice versa, orders are held up for export shipments. His reports are always late. A study of the actual quantity of work performed, however, shows that he is only doing about half a day's work. His excuse is that his work is constantly interrupted.

How would you proceed to reorganize Mr. Williams' work?

PROBLEM II

Carl Bailey, the controller of a paper mill, won his position because of the excellent work he did for the proprietor. He came from a humble family and began his work as a ledger clerk. When he was finally promoted to the position of general bookkeeper, he attracted the attention of the owner, who permitted him to handle, out of hours, his personal books. Bailey made the most of his opportunity and, before many years had passed, he was made controller of the whole company. Soon, however, it developed that he was overworked, as he insisted on doing all the work himself. He was querulous and had few friends in the organization. Employees feared him for he was constantly ferreting out some "miscreant" and firing him. He had a peculiarly irritating habit of pointing out faults of workers publicly. He was a wizard at figures and could detect almost instantly any discrepancy in a financial report.

What do you think caused this sort of development? Do you think this man is in the right place? How would you use him? What are his weak points, and how would you strengthen them?

"Once we learn how to get and analyze information from people, it will be easy to make intelligent decisions regarding them."—GUY B. ARTHUR, JR.

XVIII

THE EMPLOYMENT OF CLERICAL WORKERS

The function of *employment* is concerned with locating desirable applicants for the position to be filled, interviewing the most promising, selecting the one who possesses most nearly the qualifications required for the work to be done, giving preliminary instructions in company rules, and putting the new employee on the payroll. The function of *training* is concerned with properly inducting the new employee into the organization, furnishing the instruction he needs for doing his work correctly, and following up to see that he is getting along satisfactorily.

If the office is large enough, there should be a special division for clerical employment, in charge of an employment manager. In many offices, especially the smaller ones, the employment of clerical employees is handled by the office manager himself. Occasionally, however, an office will be found where each department head employs the help for his own department; the disadvantages of that arrangement are

1. *No Uniform Employment Policy.* There can be no uniform employment policy where so many different nonspecialists hire employees; this is a specialized work, which should be handled by specialists in it.

2. *Waste of Effort.* New employees are often being hired in one department, while other departments are releasing persons who would be competent to fill the vacancies.

3. *Lack of Centralized Records.* There is no opportunity to establish centralized employment records.

The functions of employment and discharge should be assigned to one person. This does not mean that a department manager should be prohibited from saying whether or not any given person shall work in his department. If he objects to such a person, he can refer him to the employment manager with recommendation for release from his

department. The main reason for having the person who does the hiring also handle the discharging is that it can be done more tactfully and more calmly. Usually the department head who desires to get rid of an employee has been irritated beyond control by the circumstances; he is not in a frame of mind calculated to discuss the point with the person he desires to have discharged. It is much better all around to send the employee to the employment department.

SOURCES OF APPLICANTS

Probably the most likely sources of applicants for employment are the public employment services and the private employment agencies. Since different agencies may handle different kinds and grades of help, some experimenting may be necessary until one is found that is able to supply the kind of help desired. Once found, that agency should be given the exclusive agency for that grade of help. "Shopping" by employers among several agencies is not satisfactory, since each agency approached realizes that under such circumstances speed in presenting personable candidates is more important than quality.

Schools, colleges, and training agencies are sources for specific types of help, especially for younger, inexperienced applicants who have promotional possibilities. Local agencies of equipment manufacturers are possible sources of operators of their equipment.

Sometimes friends or relatives of present employees constitute a source that may be tapped. Many large financial houses, however, are very careful not to hire relatives of present employees for fear of collusion. Other concerns not thus affected have sometimes found the source helpful.

Former employees with satisfactory records form a valuable source on occasion, especially for temporary periods. If a woman has left her position to get married, she may welcome an opportunity to pick up some extra money. Also, employees who have left for other satisfactory reasons may find the "green fields" were no better than those they left and would be glad to return, if they could do so without losing face.

Newspaper help-wanted advertisements are sometimes effective and sometimes not. Responses are many in times of poor business and not so many when business is very good and employment full. But they do reach some applicants who would not be found by any of the other sources.

EXPERIENCED CLERKS OR BEGINNERS?

Experienced clerks are always in demand, as compared with beginners, though it is by no means a demonstrated fact that the experience which most of them have is of any value in the new position. The office manager whose policy it is to employ beginners and, after training them in the ways and policies of the company, advance them to higher positions, will usually operate his office more economically and with much better results than the one who, in order to save himself the expense of training, is always in search of someone who, he persuades himself, "has just the experience wanted." That policy usually resolves itself into a continual string of disappointed hopes, though here and there a "lucky strike" keeps hope alive.

THE "WAITING" ROOM

Since first impressions are usually lasting, employment work should be so planned that the first impressions of the new employee are favorable. The employment office should not be tucked away in some dark and poorly ventilated corner of the building, where it is necessary for the applicant to wander about looking for it. Seats should be provided for a number of people, so that they may be comfortable while waiting. There should also be a private room attached, in which the actual interviewing can take place, so that the applicant does not feel embarrassed because other applicants may be sitting within hearing.

INTERVIEWING THE APPLICANT

Since there are always two sides to an employment interview, its importance can hardly be overestimated. Both applicant and interviewer are seeking certain information, part of which will be brought out by specific questions, and part by impressions received during the interview. The interviewer who takes the attitude that he is doing the applicant a favor by talking with him will not get such consistently satisfactory results as will one who looks upon the interview as an opportunity to make another friend for the company. There is no such thing as an excess of good will.

Not every applicant for employment is looking for a job; the more desirable and better qualified applicant will examine carefully the opportunities open to him, in order to select the one he believes offers him the most in job satisfaction as well as in money return. The first

question in the mind of a well-qualified applicant is not necessarily "How can I get this job?" but rather "Do I want to work for this company?" If the interviewer will keep this in mind during the interview, he will be able more intelligently and effectively to direct the interview toward the result he desires, that is, to find the right person for the position to be filled.

There are certain questions which must be answered satisfactorily before concluding that an applicant is or is not the right person for the job. Here they are:

1. *Can this applicant do well the work we want done?* Has he the training or experience which fits him for this job? If not, can he be trained readily for it; that is, is he trainable? Since there is work to be done, we want to be sure to get someone who can do it. This point is of prime importance, as a rule.

2. *How well will he get along with our other employees?* Some very competent workers are troublemakers. They should be spotted before they get on the payroll, for their very competence is an embarrassing hindrance to their subsequent release. Inquiries of former employers should include a question on this point.

3. *What salary is he asking?* If the company has a well-prepared salary standardization plan, the salary range for the position open has been set; if the salary expected by the applicant is within the established range, that point is taken care of. To pay more is to upset the schedule; to pay less is economically and ethically unsound, leading to later embarrassment when the scale is known, as it surely will be, if, indeed, it is not already published.

Many interviewers ask what salary the applicant has been receiving. The original purpose of this question was to make sure that he would not be paid more than that amount in the new job. Since a salary standardization plan is based on what the job is worth, previous salaries received by the applicant on other jobs have little bearing on his qualifications for this one. They may show that other employers are paying more or less; or they may be an indication of the applicant's lack of aggressiveness in asking for an increase, if the amount is much lower than the salary scale provides for this job. After all, we know what the job open is worth, and if we are satisfied that this applicant can handle it satisfactorily, any previous salaries he may have received elsewhere are rather academic, for the reasons just stated.

The answers to the above three basic questions can for the most part be brought out in the course of the interview, which, to be effective, should be more in the nature of a friendly conversation than an inqui-

sition. Since most persons do not apply for a job more than once or twice in their lives, the experience is often approached with some apprehension and trepidation.

An experienced and observant interviewer will try to put the applicant at ease, thus removing inhibitions to free and frank responses. If

Position desired

PRELIMINARY INFORMATION BLANK—CLERICAL

Date

Please answer the following questions:

Age

1. Are you now working? If so, where?
How long have you been there? What do you do there?

Why do you wish to leave?

2. If you are not working now, where was the last place you worked?
.....
How long were you there? What did you do there?

When did you leave? Why?

3. Where did you work before that?
How long were you there? What did you do there?

When did you leave? Why?

4. Give the names of the men you worked for in the last three places you worked, as stated by you in answer to questions number 1, 2, and 3 above:

1. Name Position (May we refer) 1

2. Name Position (to him?) 2

3. Name Position () 3

5. How many brothers and sisters have you?

Older brothers of whom are married and are working.

Younger brothers ... of whom ... are working, and ... are living at home.

Older sisters of whom are married and are working.

Younger sisters ... of whom ... are working, and ... are living at home.

6. Is your father living? If so, is he working?

7. Is your mother living? If so, is she working?

8. When were you born? Where?

If accepted for employment by Ellis Brown and Company I agree to obey its rules and regulations for employees.

Name

Address

Telephone number

the company uses a so-called preliminary information blank as the basis for the interview, the interviewer can pick any of several points to open the conversation with: previous jobs, schools attended, where he lives, and so on. For example:

"You worked at Ellis Brown's?" "Yes."

"What do they make?" (or sell, or do.)

"What was your work?" (Encourage the applicant to go into detail, thus giving a picture of him at work and indicating his actual familiarity with the kind of work he said he did there.)

"What kind of people are they to work for?" (This question often brings out sore spots, which may or may not indicate the applicant's feelings toward a previous employer. It should not be dwelt upon.)

"Do you know Mr. White there?" "Yes."

"What does he do?"

"How did you happen to leave there?" (If applicant is still working there, say "Why are you thinking of leaving?" Do not dwell on this point.)

The interviewer's tone of voice should be very carefully controlled, so that it indicates a friendly interest, not a snooping curiosity. Appropriate inflections will help to bring about a gradual relaxing of any stiffness that may have been present at the beginning.

Some interviewers prefer to let the applicant tell his story first, on the theory that since he is speaking on a subject with which he is familiar, he will talk more easily and frankly and may give leads which can be subsequently followed up if desired. Certainly, if an applicant is obviously almost "spilling over," it is well to let him talk, if only to relieve the pressure.

When the applicant has finished, the interviewer will carry on the conversation, asking questions which have been carefully formulated, thoroughly studied, and experimented with beforehand, to be sure that they will bring out the information desired and necessary for a wise decision. The interviewer will have before him a job specification prepared from the job analysis described in a previous chapter. If the position to be filled has not been analyzed, the interviewer should try to get from the department manager specific information as to the capacities required; he should not be satisfied with a general statement that a "first-class experienced clerk" is required.

When the interview has progressed sufficiently to satisfy the interviewer that the applicant is promising enough to be considered for employment, the interviewer should record his impressions on a form designed for the purpose. On this he should write the name, address,

INTERVIEWER'S REPORT	
Applicant	Position
Address	Age Educ.: G H B C T
..... Date of interview	
What was your first general impression of the applicant?	
.....	
Personal appearance	
What, if any, peculiarity or characteristic impressed you?	
.....	
Would you like to associate with the applicant?	
Do you think the applicant healthy? Self-reliant? Alert?	
Would you, personally, employ the applicant? Why or why not?	
.....	
.....	
Remarks:	
.....	
.....	
(Signed)	
(interviewer)	
Date	

age, education, and previous experience of the applicant, and then his impressions. Sometimes a predetermined code is used for this purpose, or the code can be printed on the form and checked off by the interviewer.

After the interviewer has obtained the desired information, or after an application blank has been filled out, psychological or trade tests, if desired, can be given, as explained in the chapter on testing. If there is no intention of employing the applicant, he should not be required to fill out the application blank or take a test, though such a routine is practiced by many interviewers who dislike to disappoint an applicant.

INTERVIEWING APPLICANTS FOR EXECUTIVE POSITIONS

Asking a person to fill out an application blank for an executive position is not of much value, except as a record of education, training, and experience. Nor are there many tests which can be applied to such positions. The best current practice is to have such men interviewed by a number of executives in turn, each of whom records his impressions; in any case, the applicant should be interviewed several times. At the

first interview he usually tries to "sell" himself, is on his best behavior, and puts his best foot forward, seeking to make a favorable impression—in which he usually succeeds. At the second meeting he does not so obviously try to sell himself, and the interviewer can usually see much further into his real characteristics than was possible at the first interview. On the third interview the applicant shows even more of his real self and can be judged still more fairly.

THE APPLICATION BLANK

A showing of a sample application form has purposely been omitted, as in our opinion each employment manager should prepare his own. If the application blanks of several offices are examined, it will be found that 50 percent of them are almost identical in wording, indicating that they have been copied from each other.

As in the construction of any form, analysis is necessary to determine just what information is valuable on the application blank. One very necessary piece of information is the telephone number, so that the applicant can be located quickly when wanted, if he should be selected from a number of applicants interviewed over several days. When all the information has been listed that will be needed during the interview and for consideration of the applicant's qualifications, the construction of the form should follow the general principles already given for designing forms of any kind.

THE QUESTION OF REFERENCES

What consideration should be given to references is a debatable point. Since it is recognized that no applicant for employment gives as a reference a person who he knows will not speak well of him, references may have to be more or less discounted. Furthermore, very few men are inclined to speak ill of a person who has left their employ, unless the separation was caused by some flagrant act, such as deliberate dishonesty, which, on the whole, is rare. The typical letter of reference does *not* read: "The young lady in question proved quite unsatisfactory. Her mind appeared to be on other things besides her work, and she spent a great deal of her time either in the washroom or gossiping with other employees."

If a reference is required, it should be followed up, either by a personal interview or by a personal letter. If a printed form letter is used, it should be very carefully designed so as to facilitate checking the

information desired. A reference letter should ask for specific information and should not deal with generalities. One should keep in mind at all times the questions to which answers are desired. Information sought from former employers should take the form of answers to the following questions:

1. How long and between what dates did this individual work for you?

2. What was his work? That is, what did he do?

3. How well did he do his work? Was his work satisfactory?

4. How did he get along with the other employees?

5. Why did he leave?

6. Would you reemploy him? If not, why not?

Often a personal conference with the former employer will bring out points not otherwise ascertainable.

SCHOOL RECORD

Because educational authorities realize the value to a prospective employer of an applicant's having had some contact with actual work, the present trend is to arrange for so-called "field work." Arrangements are made with business offices to have selected members of the senior class come to the company's office for a period of time, there to do such clerical or other work as may be assigned. To make this really worth while and not merely an accommodation on the part of an employer, the time thus spent should be consecutive over a period of two or three weeks, if possible, in order to provide some degree of continuity. That is not always possible, however, with all school schedules.

There have always been pupils who have had to work part time, after school, Saturdays, and during vacation periods. Employers always respect students who have partially worked their way through school and college; other things being equal, they will give preference to such students.

With the closer cooperation between the National Office Management Association and educators at both local and national levels, but especially through educational committees of the local chapter, the schools and colleges are becoming more aware of what prospective office workers need in the way of preparation, not only for work, but for job seeking as well. To the extent that the pupil's school record shows him to be industrious, cooperative, and a good student, that record will be helpful to him. Many schools require their teachers to rate each senior on certain points and make that rating available to prospective em-

Date..... Name.....
 (Place check mark in front)

1. What kind of impression does she make at first sight?
 ()very favorable ()excellent ()good ()fair ()poor
 2. What is your opinion as to her
 - a. Personal appearance: ()pleasing ()neat ()careless ()unattractive
 - b. Carriage and general bearing: ()erect ()normal ()poor
 - c. Dress: ()extravagant ()refined ()appropriate ()neat ()poor
 - d. Disposition: ()cheerful ()ordinary ()gloomy ()sensitive ()irritable
 - e. Tactfulness: ()tactful ()ordinary ()careless ()tactless
 - f. Courtesy: ()very courteous ()polite ()average ()careless ()rude
 3. What is her attitude toward attendance?
 ()punctual ()occasionally late ()habitually late
 ()rarely absent ()occasionally absent ()often absent
 4. What is her attitude toward her work?
 ()enthusiastic ()interested ()normal ()indifferent ()neglectful
 5. Does she generally try to give satisfaction? ()yes ()no
 6. How does she get along with others?
 ()highly cooperative ()good team worker ()fair ()contentious
 ()works best alone
 7. What about her ability to work without supervision?
 ()dependable ()usually reliable ()needs supervision
 ()little supervision required ()occasional supervision needed
 8. Industry (application to her work)
 ()energetic and persevering ()usually industrious ()wastes time
 9. What is the quality of her output? (accuracy, neatness, arrangement)
 ()neat, well arranged ()meets requirements ()many errors
 10. Quantity of her output? (amount done, promptness, speed)
 ()does more than average ()up to standard ()limited output
 ()unsatisfactory
 11. What is your opinion of her ability to learn new methods?
 ()very quick ()readily ()fair ()slow ()dull
 12. Her resourcefulness and originality? (meet situations, devise methods)
 ()requires detailed instructions ()fair ()good ()high
 13. What seems to be her own opinion of herself? ()highly conceited
 ()overconfident ()self-confident ()normal ()humble ()introvert
 14. Do you think she is especially adapted to secretarial work?
 ()unusually so ()yes, when experienced ()fairly so ()doubtful ()no
 15. Has she had business experience? ()yes ()no
 16. How does she stand on the following characteristics: (Good; Fair; Poor)
- | | | | |
|--------------|----------------|-----------------|----------------|
| industry | ()G ()F ()P | initiative | ()G ()F ()P |
| thoroughness | ()G ()F ()P | good judgment | ()G ()F ()P |
| consistency | ()G ()F ()P | originality | ()G ()F ()P |
| dispatch | ()G ()F ()P | self-reliance | ()G ()F ()P |
| alertness | ()G ()F ()P | resourcefulness | ()G ()F ()P |
| carefulness | ()G ()F ()P | poise | ()G ()F ()P |
| honesty | ()G ()F ()P | self-control | ()G ()F ()P |
| truthfulness | ()G ()F ()P | stability | ()G ()F ()P |

ployers. The evaluation of grades varies with the school's reputation as a whole. Generally, high grades are evidence of ability to do work of a stated level.

A MATTER OF OPINION

The question is sometimes asked whether an applicant for a position should be required to write an application letter to the employer. Not all employers agree on this point. Some believe it is highly desirable; many do not, unless the applicant cannot conveniently come to the office for an interview because of distance. Generally, most application letters written by seniors reflect the instructor's ideas as to what an effective application letter is. Here, again, there is not uniform agreement.

In our opinion, the effectiveness of an application letter depends upon the objective to be accomplished by the letter. About the most that any application letter can do is to lead to an interview with a prospective employer. If the letter tells everything, nothing is left for the interview. On the other hand, if an application letter tells just enough so that an employer reading it wants to know more and sends for the writer, the letter has accomplished its purpose. As literary efforts, application letters from school and college students are not too impressive. As compilations of data about the student's accomplishments, a well-designed printed application form is much to be preferred.

THE QUALIFICATION CARD

For each newly engaged employee, a qualification card should be written up, stating, besides his name, address, telephone number, and similar information, all other facts which have a bearing on his relation with the company.

His physical qualifications, such as age, health, height, and weight, should be recorded on the qualification card, together with any physical limitations or disabilities.

His educational attainments should also appear there; the number of years of schooling he has had and any subsequent training, such as trade schools, correspondence schools, and so forth.

Technical ability and capacities, as revealed by the employment tests, should be recorded.

The full story of his business experience should appear. If he has any

special hobbies, plays games, participates in athletic sports, or possesses any similar qualifications that might be of interest in connection with the activities of employees in the company, these things should also be noted.

Finally, any special qualifications which may have been observed in him by the interviewer should be noted on the card.

All this information should be placed on the card at the time of his engagement, and in addition, space should be provided on it for the following:

His history with the company—positions held, salary earned, reasons for transfer, promotion, and so forth. Record for attendance and punctuality. Suggestions he has made through the company's suggestion system; those which have been adopted. Complaints: those which were well taken, and those which passed unnoticed. His desires and ambitions, as learned by interviews with the department manager, should be periodically recorded. This card, which should be specially prepared for every individual, will be found of particular value in considering the employee for transfer or promotion and may act as a deterrent in preventing his hasty and ill-considered discharge.

Every employee should be regarded as an asset, for money has been invested in his employment and training, with the idea that he will earn dividends for the company on that investment. It is just as important, therefore, that the company keep a careful inventory of this asset as of any other and watch for its development.

INTRODUCING THE NEW EMPLOYEE

After an employee has been engaged, he goes to work. His introduction to the job and to his fellow workers is a matter of no small import. Statistics show that a very large number of the quitters leave their positions during the first week, and sometimes even on the first day. The chief reason for this is that the employee contracts a dislike for or fear of the place, the position, or his fellow workers, and quickly deserts, moved thereto by his initial impressions, which may be only trifles in themselves, but seem most important in strange surroundings. Knowing this, it is customary in many places to give considerable attention to orienting or inducting the new employee into his position.

The interviewer starts the induction process by engaging in a candid conversation with the new worker, explaining to him that having now joined the company, he is entitled to know something of its history and policies. The existing company rules are also explained, the newcomer

being acquainted with what the company desires its employees to do and what it does not permit. Since one of the purposes of the induction procedure is to give the new employee such information about the company and the requirements of and facilities provided for its employees as will enable him to take hold with confidence in himself, in his supervisor and associates, and in the company, the interviewer will explain those points. Some offices print this detailed information, or part of it, in an employees' handbook, thus making possible reference to it as desired.¹

The new worker is then personally conducted through the office, or at least such portions of it as he will have occasion to visit; he is shown the lunchroom, the rest room, toilets, lockers, and so forth, and introduced to the head of the department in which he is assigned to work. That executive has a preliminary friendly conversation with him and then introduces him to the other workers. After this, the training clerk—to whom he has by this time been introduced also—takes him in hand and begins to explain the new job. At noon, some particular employee in the department, known for his qualifications as a "good mixer," goes to lunch with him, introduces him to the other workers, and initiates him as far as possible into the fellowship of his associates.

The new worker, treated in this hospitable and friendly manner on the very first day, is likely to respond to the welcome he receives; his strangeness quickly wears off, and he feels that he has at last gained employment in an office where his work is going to be appreciated; he is mentally more at ease with both his surroundings and his associates—a highly desirable condition.

Contrast this reception, which is both sincere and inexpensive, with that of the clerk who is assigned to a desk and expected to start work with hardly a word of advice or explanation, to say nothing of welcome. Surrounded by strange people to whom he has not been introduced and who take no notice whatever of his presence, it can be easily imagined what feelings begin to grow in his mind concerning the company, the office, the people in it, and the job in general. He is a stranger and is allowed to remain so; he feels embarrassed and hesitates to ask even the simplest question. At noon he sneaks out by himself to lunch—and perhaps never comes back again.

Unfortunately, this latter picture is often more true of the average office than is the former and is responsible for much of the turnover among newly hired employees.

¹ See Chap. XXI for details as to the contents of employees' handbooks.

THE FOLLOW-UP

After the new employee has been properly introduced to his job and to his associates, the interest of the company in his welfare should not be permitted to relax, for it is important that the newcomer be made one of the office family as soon as possible. At first no obtrusive efforts should be put forth, as it should not be too evident that the company is purposely trying to make him feel at home; otherwise the object may defeat itself, and the worker himself may to some extent become spoiled.

The person delegated to take him to lunch or introduce him to other employees should also tell him about such employee activities as may exist and invite him to join and take part in them. If the company has a library, the librarian should endeavor to interest him in the books and magazines which are available. If there are organized social activities, someone in one or the other of the groups should invite him to join.

In the beginning, the company should take no obvious part in this; after two or three weeks or so, the employment or office manager should make inquiries; if the newcomer has not taken part in the company activities as much as desired, the manager should tactfully endeavor to find the reasons why, though no semblance, even, of compulsion, should be shown. It may be that the person is following some particular hobby of his own, as perhaps may be gleaned from his qualification card.

This sort of follow-up work is especially valuable with a new employee, as it helps him over the initial—which is always the hardest—part of his work. As soon as this is accomplished, the official efforts should cease and the worker be left to his own resources in social matters.

The company is, however, continuously interested in seeing that the new employee is doing his work satisfactorily without hindrances, whether real or imaginary, to effective performance. Slight misunderstandings or misconceptions can often be quickly and easily cleared up if the office or employment manager has a brief occasional informal chat with the employee about his work and his progress in it. The manager will often uncover situations that might otherwise continue unnoticed indefinitely.

DETERMINING CAUSES OF DISSATISFACTION

Dissatisfaction, unless manifested in open rebellion, is seldom reported by employees voluntarily to the management. It is something rather to be concealed, though the concealment is never fully effective,

and its indications can be readily detected by an observant and discerning manager. Some of the symptoms of dissatisfaction are

1. *Lack of Interest in the Work.* When there is a perceptible lack of interest in the work, manifested by an appreciable group of clerks, it may be fairly assumed that in some way or other the management is at fault.

2. *Lack of Discipline.* When disciplinary rules are generally disregarded, the fault may be in the rules themselves—they may be stricter than necessary, impossible to enforce, or too difficult to follow; their nonobservance itself may be an indication of general dissatisfaction.

3. *Lack of Cooperation.* When a lack of cooperation is perceptible, it may be traced to dissatisfaction.

4. *General Nonparticipation in Social Affairs.* If employees generally appear to take no interest in any social recreations, such as clubs, games, athletic sports, and so forth, which the management may have provided, that is almost invariably a symptom of dissatisfaction.

Portents like the above should warn the office manager that something is wrong; an investigation should be set afoot before the dissatisfaction has had time to spread, for dissatisfied employees are not good producers. It will frequently be found that the employees are not necessarily and wholly wrong, that the situation is not due to "pure cussedness." The employees will often be found to be on the whole decidedly right, or at least to have just cause for their dissatisfaction; correction of the condition lies with the management.

To locate and anticipate incipient dissatisfaction, a member of the office manager's staff should make a periodical check about once a month.

First, he should look for conditions likely to cause discontent, such as dirt and disorder, unsanitary conditions, machines out of repair, bad lighting, and so forth. All such items should be listed on a standard check list, and every item investigated and reported upon.

Second, he should spend some time in each department, observing the employees at work and watching particularly for any of the symptoms above mentioned. This observation can be done unobtrusively, but it should not be so surreptitious as to merit the term "sneaking." Employees are not too stupid to do a little observing themselves.

Finally, if he is able to do so tactfully, he should engage some of the employees in conversation, as suggested above under "Follow-up." Much information can be gained by a tactful and sympathetic person.

Any investigation of this sort should be made by a member of the office manager's staff or by the office manager himself, as no report from section heads will be adequate or wholly satisfactory.

TURNOVER OF EMPLOYEES

In every office except a very small one, employees are constantly leaving for one reason or another. The relation between the number of persons leaving and the average number on the payroll is called "labor turnover"; sometimes labor turnover is expressed as the relation between the number of persons hired to maintain an average staff and the average number on the staff. For control purposes, however, it is more important to consider the number leaving, rather than the number hired, even though in many cases the resulting percentage may be the same; as we shall see shortly, the office manager is more concerned in this connection with why employees leave, than with why they are hired. If the average payroll is 100 clerks, and 50 clerks left the employ of the company during the year, the annual rate of turnover would be 50 per cent. There is no question that this represents a serious loss. It has been variously computed that it costs from \$50 to \$100 to train an office employee, a cost that includes hiring, training, errors while learning, loss of output while learning, and so on.

REDUCING THE TURNOVER RATE

A zero rate of turnover is an impossibility over a period of years, for deaths, marriages, and other unavoidable causes prevent it. Steps can be taken, however, to reduce the turnover rate to less than it is in most offices, by determining the causes and then trying to remove them or at least mitigate them.

The first step is to recognize that the office actually has a labor-turnover problem, by figuring the average turnover rate regularly and periodically, at least once a month. If this is figured by departments, it will show the location of high and low turnovers, as well as the general condition in the office. General average length-of-service figures serve as a good barometer of conditions, though such an average should be computed by taking those on the payroll during a certain period, rather than the figure on any given date.

The second step is to find out why employees leave.

The final step is to do something about it.

WHY EMPLOYEES LEAVE

There are two main reasons for employees leaving: either they leave of their own accord, or they are discharged. Neither fact should be accepted complacently or submissively; every separation of an employee from his job, whether voluntary or involuntary, is serious enough to warrant getting the real facts in answer to the question, "Was this separation necessary?"

Every employee who is leaving should be interviewed by either the office manager or the employment manager, who should skillfully and tactfully endeavor to ascertain the real reason for the separation and—what is often even more important—the circumstances leading up to the event. Only in this way may some causes of dissatisfaction be discovered and plugged, if possible.

Even when an employee has been discharged, for whatever stated reason, a dismissal interview should be required, for the reasons just stated. Seldom will the true reason be given if the department or section head does the discharging; this fact alone is sufficient argument for having the person who does the hiring also do the discharging. Even under the best conditions, the true reason is difficult to discover. Of course, if the cause is sickness, marriage, or some other apparent and unavoidable fact, it is readily accounted for, but there may be other reasons, like those stated below, which can be discovered only through the dismissal interview.

The following are some of the usual reasons for separations:

Larger salary offered	Incompetence
Better business opportunity	Health
Hours too long for health	Real or fancied grievance
Hours too long for salary	Marriage
Late and uncertain hours	Morals
Night work	Dishonesty
Insubordination	Temporarily employed
Poor attendance	School
Monotony of work	Resumes former position

Most employees, when leaving, will, if tactfully approached, give what appears to them the true reason for their getting through; when a collection of these reasons has been made and studied, it will frequently give the management a key to what may be really serious defects in the organization with respect to working conditions especially and possibly other conditions indirectly connected with them. Thus, if many em-

ployees are discharged for incompetency, the employment methods may need investigation; insubordination might bring up the question of whether or not the office management might not to some extent be provocative of it; leaving for larger salary would raise the question of the adequacy of salaries; in fact, most of these causes in one way or another suggest some office problem for consideration. The value of such a tabulation used in this manner is at once apparent.

QUESTIONS FOR DISCUSSION

1. Distinguish between the functions of employment and those of training.
2. What are the three disadvantages of having department heads do their own employing?
3. Why should the functions of employment and discharge be assigned to one person?
4. What sources of applicants for employment are available? Comment briefly on each.
5. Comment on the hiring of "experienced" clerks, instead of beginners.
6. Comment on the waiting room of the employment office.
7. How should an applicant for employment be interviewed?
8. Comment on the interviewing of applicants for executive positions.
9. What information should appear on the application blank?
10. Of how much value are an applicant's references? Why?
11. What eight questions should be asked of former employers?
12. What is the qualification card, and what information does it contain?
13. How should the worker be introduced to his job? Why?
14. What is the follow-up, and why is it important and necessary?
15. How may causes of employee dissatisfaction be determined?
16. What is "turnover rate," what is its importance and significance, and how may it be reduced?
17. Why do employees leave?
18. What is the dismissal interview, and why should it be required?

PROBLEM

In the home office of the Harrison Company—a chain-store organization—the personnel department is in charge of a man, who, before he

was employed, had some reputation as a character reader. By a set of ingenious leading questions and a study of the appearance of the applicant, he claims to be able to judge ability. Further, each applicant fills out an application form giving his business history, his education, religion, and family background. References given are followed carefully, and, if any discrepancy in the information given is found, the new employee is immediately discharged. When hired, the applicant is sent to the department where he is to work and immediately assigned a desk. Rules are very strict and many employees are punished in one way or another for infractions. The turnover is about 60 per cent per annum, many either quitting or being discharged in the first month of employment.

What, in your opinion, is the cause of such a high turnover?

"Personnel tests are more widely used in the clerical field than in any other."—FORREST V. ROUTT, JR.

XIX

EMPLOYEE TESTING

A trade or occupational test is designed to determine in a short time whether or not a person possesses the specific capacities, abilities, and skills of the particular trade or occupation being tested and the extent to which he possesses them. Although tests have been used for this purpose for many years and rapid progress has been made, many offices still cling to the old wasteful method of employing clerks on the basis of "trial and error."

THE TRIAL-AND-ERROR METHOD

This consists of employing for a trial period persons who can pass the initial observation examination. At the end of the trial period, if they are satisfactory, they are placed on the permanent staff. The method is so loose that placing permanent persons on the permanent staff who are far from thoroughly satisfactory is not unknown.

Among the wastes of the trial-and-error method are these:

1. *Waste of Money.* The salary paid to the unsuccessful clerk who has been "tried" and found lacking is largely wasted, for the company gets little work in return for it.

2. *Waste of Time.* The waste of the company's time may be and often is a far greater loss than the salary paid, for work of vital and pressing importance is frequently delayed because clerks are not trained to handle it effectively.

3. *Cost of Training.* While companies using the trial-and-error method of "training" do not have extensive or even definite training systems, there is a training cost attached, resulting from the many mistakes made by the beginner in his efforts to pick up the work as best he

can. This self-training—for that is what it is—is expensive, unsystematic, unsatisfactory, time consuming, and generally futile.

The trial-and-error method is the most costly employment method in existence and almost invariably means poor placements. If good results are obtained, even in one individual case, it is an accident. Turn-over is increased far beyond the point of necessary changes, rarely falling below 25 per cent and often rising above 50 per cent.

HOW SPECIAL ABILITIES CAN BE TESTED

Yet if the various capacities needed for any particular occupation are analyzed, it will be perceived that most of them can be determined by relatively simple tests. Let us take, for example, a typist. The capacities she could possess are listed below.

1. *General Intelligence.* This should at least be sufficient to prevent the worker from making the most obvious blunders. It is often assumed that a typist needs little general intelligence if she is to be used for straight copy work. While it is hardly to be expected, perhaps, that a beginning typist will have the same degree of understanding as that required of an experienced private secretary, she should have a reasonable amount of intelligence if she is to avoid the simplest errors. A typist with the mind of a ten-year-old child is—outside of the simple mechanical work she has learned—but little more valuable for office work than a child of ten years.

2. *Spelling.* Some proficiency in spelling is certainly required. Some persons apparently can never learn to spell; it has been cynically observed that those persons invariably gravitate to typing. Nothing is so irritating to an executive or so damaging to a company's reputation for carefulness as letters containing misspelled words.

3. *Grammar.* A typist may not be able to speak correctly, but she should at least be able to detect common grammatical errors in writing.

4. *Punctuation.* At least the periods, commas, and semicolons should be correct.

5. *Accuracy.* A typist who spends most of her time erasing will not possess much net speed.

6. *Speed.* To be able to earn even a small salary, a typist must have the habit of speed.

7. *Touch System.* This is so unquestionably better than any other that no typist should be employed who does not use it.

Each of these seven simple requisites of a typist can be determined by a short test, sufficiently conclusive to reduce the failures by 75 per

cent. As a matter of fact, several of them can be determined by a combined test not requiring over 30 minutes to give, one which may be given to several typists at the same time if necessary.

It should be apparent that if a test can be devised that will determine the above seven qualities in 30 minutes, the use of such a test would be immeasurably superior to conducting employment on the trial-period basis. The fact is that such tests have been devised and are being used successfully.

UNSCIENTIFIC TESTING

There is a rough-and-ready method of testing clerks, which is used by some companies. It consists of giving the clerk a piece of work to do, observing him during the course of its performance, and examining the finished piece. The selection in such cases is a matter of individual judgment and not of scientific measurement. In this offhand method, sufficient thought is rarely given to selecting work that is fairly representative of what will be done on the job; as a rule, no record is taken of the time expended; and seldom does the employer know how the work compares with that of other clerks. In short, this method of testing cannot be considered as scientific, though it is doubtless better than the trial-and-error method, in that it possibly gives some information beforehand.

HOW TO CONSTRUCT AN EMPLOYMENT TEST

Making employment tests is not a task that can be completed in a few days—it is a process requiring time. Before an office manager decides to construct his own tests, however, it would be well for him to see what others have done and what results they have secured. Considerable progress has been made in the preparation of testing materials available to the office manager. By utilizing them, much time can often be saved and faster progress made.

To the individual who wishes to construct his own tests, the following suggestions, based on sound experience and extended observation, will be of help.

1. *Construct tests easy to give.* Trade tests should be so constructed as to require little time to give; if it is possible to give the test to a number of persons at the same time, so much the better.

2. *Devise tests easy to mark.* These tests should also be devised so that they can be marked and rated without laborious study. Techniques

have now been so highly developed that not more than 1 or 2 minutes are required to correct, mark, and rate any trade-test paper.

3. *Note these three special features.* Three conditions feature these objective tests, as they are called:

a. *No composition.* Avoiding wherever possible the necessity of composition on the part of the person taking the test.

b. *Little writing.* Reducing the amount of writing to a minimum.

c. *Quick scoring.* Making up the test so that it can be scored with a specially prepared but simple stencil.

For example, a test on common sense may contain three questions similar to the following:

Q. In filing letters the first step is to

- () sort the letters alphabetically
- (X) see if all letters have been handled
- () mark file classification on each letter

A cross indicates the correct answer; no writing is necessary. Placing a transparent scale with the correct answers over the examination paper shows whether the applicant's answer is correct.

An even quicker method of scoring is to provide the applicant with a special graphite pencil for marking his answers. Placing his question sheet on an electrically operated scoring machine will instantly show the score on all the questions on the sheet. These machines are used to score some of the National Business Entrance Tests, described later.

4. *Give full time to preparation.* The work of constructing tests should be taken on as a major assignment by some person selected by the office manager; until the chief tests are prepared, this person should be relieved of all other duty.

5. *List capacities to be tested.* The person selected should start by making a list of the essential capacities required in each occupation for which tests are to be prepared. Even for those occupations in which the capacities are most numerous and varied, the list of essentials can be appreciably reduced.

6. *Grade capacities in order of importance.* These essential capacities should be graded in the order of their importance for the occupation.

7. *List knowledges required.* For each capacity there should be drawn up a list of things a knowledge of which is necessary, including largely those which are used in the work, but omitting those which are purely technical and which an applicant for the position cannot be expected to know, but which he can learn after being engaged. This knowledge is more or less in the class with tools of a trade and forms

the basis for the test. The applicant may not yet know which screw to turn; but he knows how to operate a monkey wrench.

8. *Make up tentative tests.* Tentative tests may now be made up. The questions in each test should be graded according to their difficulty, with the simplest first. This makes it possible for even the least intelligent applicants to answer some of the questions in the beginning. The questions should become increasingly difficult, until only a person with very high intelligence could make a perfect score. Such a score, if made, should be an indication that the person making it had developed in a high degree the capacity which it was designed to show.

9. *Provide a "shock absorber."* A "shock absorber" should be put in each test. Many nervous persons taking tests feel certain they will fail; such people cannot do themselves justice while that mental state persists. So psychologists have devised a shock absorber, which is a very simple question that anyone can easily answer. When nervous persons come to this question, they feel reassured and probably say to themselves, "This isn't going to be nearly as hard as I expected," thus recovering their mental poise; as the questions gradually increase in difficulty, they are able to answer them to the limits of their intelligence and information. Were it not for the shock absorber, many capable but nervous persons would abandon the test in despair.

10. *Try out the tentative tests.* The tentative tests should then be tried out on clerks of known ability, by going to the departments where clerks of the kind to be tested are working and giving them the tests. Then information should be obtained from the head of the department as to which are the most and the least efficient clerks in respect to the matter being tested. If the test has been properly constructed, the most efficient clerks should secure the highest ratings, and the least efficient, the lowest (though the intermediate grades may not entirely agree); if this result is not secured, the test must be gone over again and again until one is devised that does give this result. If the proper results do not come from the first trial, there is no reason for discouragement, as the best test makers have had to reconstruct their tests many times.

11. *Try a timed test.* The test decided upon should now be given to clerks who are known to have good work records, and the operations carefully timed. These results should be compared with those obtained from other efficient clerks. From the data secured a time limit may be set for doing the work; this time limit should be such that only the very best workers can complete the tests within it.

12. *Standardize the tests.* The tests, when completed, tested, and

found satisfactory, should be standardized. They can be mimeographed on standard sheets. Complete instructions for giving, grading, and marking them should also be prepared.

13. *Design certain tests for several jobs.* Many of these tests will be found to be suitable for several positions. Grammar, spelling, punctuation, arithmetical calculation, and so forth, are needed in a number of office occupations; the tests should be so designed that they will serve for the positions requiring those abilities.

14. *Include a list of tests available in job specifications.* Each job specification should contain a list of the standard tests which are to be given for each position, so that the employment interviewer can select the right material.

PRIMARY TEST FOR ALL OFFICE WORKERS

As all office work is accomplished with the aid of the eyes, it follows that next to general health, eyesight is the most fundamental physical quality required and should be tested first. If defects in vision are found, their correction, if possible, should be made a condition of employment. There is no reason, of course, why this expense should not be borne by the employee, although some companies arrange to have proper glasses fitted for their employees at low cost, many oculists being willing to make special terms for this purpose.

As a result of the work of Professors Joseph Tiffin and S. Edgar Wirt at the Industrial Vision Institute of Purdue University, it is possible, with the Bausch and Lomb Ortho-Rater, to test and measure the visual performance of any individual and to determine the extent to which the individual's vision meets the standard required by the work he is expected to perform. Substandard or inadequate visual performance is quickly detected. This testing is done right on the employer's premises.

TESTS FOR STENOGRAPHERS

Since considerable experience is required to dictate at a uniform rate of speed, it is important in giving dictation tests to vary the speed. A good way to do this is to divide into several parts the letter to be given; dictate the first part at 60 words a minute, the second at 75 words, the third at 90, the fourth at 100, and the fifth at 125. It will take some practice to acquire this ability, but once learned, it will be possible to grade the taking speed of any stenographer accurately. Even a poor

stenographer should be able to take the first part of the dictation; if the dictation is clearly enunciated, she should not fail until she has reached the limit of her speed.

A *context* test is also valuable in testing stenographers. It consists of a sentence or sentences in which one or more separated words are missing from the text, the applicant being required to write such missing words in the space denoting their omission; any word that will make sense must be counted as correct. For example: "The poor baby as if it were sick." The peculiar value of such tests for a stenographic applicant is that she will often find it necessary in the course of her work to substitute a word for one she cannot read in her notes; if she is apt at substitution, the chances are that she will read her notes all the more readily.

TYPING TEST

In every typing test, care should be taken to use the particular machine with which the applicant is familiar; otherwise the fairness of the test is vitiated by the strangeness of the machine.

The typing test should be to copy a standard letter containing most of the difficulties encountered in ordinary correspondence work. The applicant should be allowed ample time to insert and adjust the paper and type the name, address, and salutation. When this has been done, she should be told what is expected of her and given the word to go. The letter should contain a definite number of standard words, which means that each five-space unit is called a word. Ten minutes is sufficient time to allow. Mistakes may be counted as follows: Each wrong word or word omitted counts 5; each mistake in capitalization or punctuation, 2; each smudge, 2; and from 5 to 10 for poor margins and unsightly distribution. In addition, a certain allowance should be made for the time consumed as compared with a definite standard.

LETTER COMPOSITION

A fair test of letter-writing ability is to request the applicant to write about some subject with which he is perfectly familiar. Many letter-writing tests require the applicant to write a letter applying for a position, because his own business experience is a subject with which he is assumed to be familiar. The length of the letter desired should be stated—usually 100 words are sufficient. The time allowed for the test should be approximately 30 minutes for beginners and 15 minutes for advanced letter writers.

The instructions may be written upon a blackboard, printed on the test sheet, or given orally, but they should be specific, somewhat as follows:

You are to write a letter applying for any position for which you believe you are qualified. Your letter should contain 100 words or more and should state fully:

1. Your education
2. Your experience
3. Your ambitions
4. Age
5. Sex
6. Health
7. Appearance

You will be graded on the neatness and form of your letter, the spelling, punctuation, and paragraphing. Attention will also be given to your choice of words and clearness of expression.

In grading such a test, note whether or not each of the seven facts requested in the instructions is properly covered in the letter. If any is omitted, ascertain the reason, as it may indicate something important.

FILING TESTS

A test for filing ability can be arranged by having 25 cards or slips about 3 by 5 inches in size, numbered from 151 to 175, each containing a typed name and address. The applicant is directed first to arrange them in alphabetical order. When this operation has been marked and graded, the applicant is then directed to arrange the cards in geographical order—alphabetically by states, then alphabetically by towns within each state, and finally alphabetically within each town. The final test should be to arrange the cards in numerical order.

ARITHMETICAL TESTS

These should include examples in addition, subtraction, multiplication, and division. For each subject provide 10 or 12 examples, all of which can be done by a very good clerk in 3 or 5 minutes. Do not expect a beginner to complete them all. Grade the accuracy and speed, counting only the correct performances.

BOOKKEEPING TESTS

In addition to arithmetical tests certain others should be given, designed to show the familiarity of the applicant with simple double-entry

bookkeeping. If such calculations as figuring percentages and discounts form part of the work, simple examples can be prepared for this.

GRAMMAR TESTS

Since most people have forgotten the rules of grammar learned in school, it is not advisable in giving tests to ask for rules. To be able to recognize the correct form of expression from a choice of several is sufficient for business purposes. A test for grammar, therefore, should include a number of sentences with the correct and incorrect wording given, the right expression being sometimes placed first and sometimes second:

- I have (gone—went) to town.
- He (done—did) the job yesterday.
- I (have seen—saw) him before I saw you.

Such a list should contain from 30 to 50 sentences, graded progressively in difficulty.

TEST FOR SPELLING

With those persons who have had long and frequent practice, spelling is a subconscious process. A typist does not spell with the eye so much as with the fingers, though she of course must possess the ability to recognize a word correctly written and detect an incorrectly written one.

In selecting the words for a spelling test, it is important to choose those which will ordinarily be used in the work to be done. In a business office these will usually be words that most frequently occur in ordinary business correspondence. In an engineer's or lawyer's office, there will, in addition, be a large number of technical words.

When the list is compiled, it should be examined for words which are frequently misspelled; a list of these should be prepared in gradation from the simplest to the most difficult.

A spelling test may be given in several ways. The oral method is to read aloud a sentence containing the word to be spelled and then pronounce the word; the person being tested writes down the word. This method usually requires too much time.

Another method uses a list of words incorrectly spelled, intermixed with some words correctly spelled. The test consists of underscoring the misspelled words and writing them correctly in the space left for that purpose.

Two points should be borne in mind in giving spelling tests. There are four usual causes of spelling errors: errors in auditory perception may indicate lack of acuity in hearing; on the other hand, poor pronunciation by the examiner may result in misspelling. If the examinee repeats the word before spelling it, as is customary in all spelling contests, incorrect spelling due to poor pronunciation will be decreased. A third cause of poor spelling is carelessness, which produces about 20 per cent of all spelling errors. Finally, defective learning is responsible for many spelling errors; remedies are the intense use and repetition of the correctly spelled words.

PUNCTUATION

Punctuation tests should test capitalization as well as the ordinary punctuation marks. The following ingenious test is taken from Cody's *Commercial Tests and How to Use Them*.

Elementary test—10 minutes.

1. Draw a short line under each letter that should be a capital, marking directly on this sheet:

john askam, esq., was awarded the degree of ll. d. at the last commencement of dartmouth college. He is a professional bacteriologist in the service of the state of massachusetts, i.e., he is employed by the state board of health. in his appointments president wilson favored the east rather than the west. he wrote for the national educator.

2. Insert commas where needed.

In the course of time when you have grown older and wiser you will find men and women who will appreciate your hard work you will get your reward and the satisfaction of having done your best will be a compensation in itself.

In the first place if I know anything about John Higgins it is morally certain that he was not the thief. However I should not advise you to do it for I fully believe you will lose money if you do.

Will you kindly let us know by return mail just when you expect to ship our order No. 4568 a No. 46 sideboard to be sent direct to our customer James Oakley Pocahontas Mont. Our customer wishes this sideboard at the earliest possible moment and we have promised to hurry it as much as possible.

Total errors.....

Advanced test—8 minutes.

3. Insert apostrophes, commas, colons, semicolons, and periods where needed in the following:

Please send the following as soon as possible 1 doz ladies white linen handkerchiefs the best value you have at about 15 c each 6 cakes of glycerine soap 15 c a cake 6 for 50c a box of ladies cream note paper

and envelopes rough finish unruled about 25 c or any special value you have of this grade.

Remember I cant teach you how to run your business I cant show you how to get dollars from letters dropped in a rat-hole but I do know what human nature is and perhaps you dont and I do know how to line up words so as to make people send you business so far as words will do it.

Errors in advanced test.....

Full punctuation, add elementary and advanced.....¹

TEST OF GENERAL INFORMATION

A test of general information may or may not be of value; where it is decided upon, it should be made to include such information as is of value to the work. In making it up, the questions should be graded from easy to difficult as previously suggested for spelling. Sentences should be arranged with several answers, only one of which is correct.

OTHER TESTS

In addition to tests of proficiency, other tests are also given by some offices.² In this connection, it cannot be emphasized too strongly or too often that testing is a specialty and that only a specialist with adequate experience in devising, giving, and evaluating tests can be expected to attain wholly satisfactory and reliable results.

Intelligence Tests. Intelligence may be defined as the capacity to understand, to reason well, and to adapt oneself. A test for intelligence, therefore, would indicate roughly the extent of a person's ability to select the right answer from a number of choices, based on his ability to understand the circumstances, to reason out the answer, and to adapt himself to the situation. Questions used in intelligence tests are devised for that purpose, with due regard to the age, background, and experience of the one being tested.

Clerical Aptitude Tests. Aptitude tests indicate the kind or kinds of work in which the person being tested is most likely to succeed and rather definitely show those in which he is least likely to succeed. If an individual has no aptitude for clerical work, it would ordinarily be a waste of time to try to train him for such work; he can do better in some

¹ CODY, SHERWIN, *Commercial Tests and How to Use Them*, World Book Company, Yonkers, N. Y.

² Two excellent sources of supply for tests of nearly every kind are The Psychological Corporation, 522 Fifth Ave., New York 18, and the C. H. Stoelting Company, 424 N. Homan Ave., Chicago.

other field. Of the several aptitude tests available, one which has shown excellent results is the Minnesota Vocational Test for Clerical Workers, which is based on the ability of the individual to notice quickly and accurately whether two numbers are the same or different, or whether two names are the same or different.³

Interest Inventories. By asking an individual to check his interests and preferences on a representative list of educational, recreational, occupational, and personal items, it is often possible to gain an idea of the occupational group in which his interest probably lies.⁴

Emotional Stability Tests. Tests have also been devised which indicate to some extent the degree of stability which an individual may possess under emotional stress, to be used where that point is important.

GIVING THE TESTS

An applicant for employment should be informed that the company gives tests for the purpose of finding the work for which he is best fitted. He should be asked if he has any objection to taking a test; care should be taken to put the question in such a way as not to suggest that he may have objections or that the test is usually objected to by other applicants. Some explanation should be given him of the nature and purpose of the tests, pointing out the advantage, from his standpoint as a prospective employee, in that the company, through these tests, can place him in a position where he is most likely to make good.

The tests should be given in a private room, apart from other work going on in the office; this room should be well lighted and ventilated. Cramped or crowded conditions should be avoided and everything possible done to put the person being tested at his ease, for only so can his best efforts be brought forth.

If the tests are not to be given by the employment interviewer, the applicant should be conducted to the room where they are given and personally introduced to the examiner. This little courtesy is generally appreciated by the applicant and will tend to put him more at his ease than if he were merely directed to "go to room 48."

The examiner should be informed that the applicant is being considered for a certain position and should be given the job specifications, with the specific tests to be applied. Only those tests that apply should

³ See BINGHAM, W. V., *Aptitudes and Aptitude Testing*, Harper & Brothers, New York, 1937.

⁴ *Ibid.*, Chap. VII.

be given, unless the examiner has reason to believe that the applicant possesses other desirable capacities.

The examiner should be a person of tact and diplomacy, one who is able to put an applicant at ease quickly. No dictatorial attitude should be permitted. All instructions should be given clearly, in a moderately

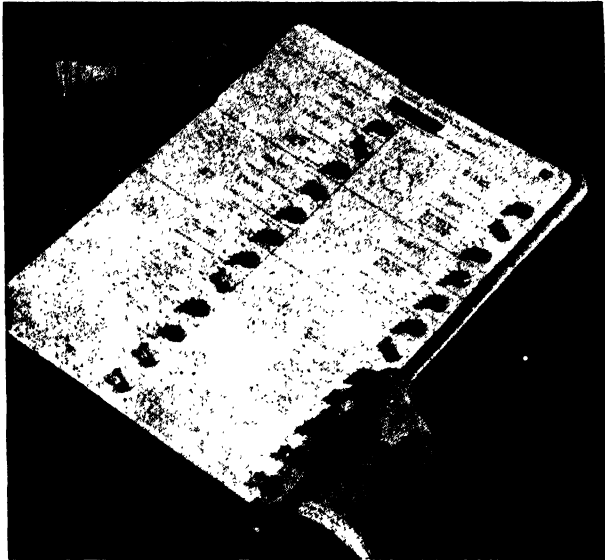


FIG. 74. The Trundle Engineering Company of Cleveland has devised a quick method of testing applicants for employment both before and after the interview. One of its engineers studies the various jobs, determines the proper tests of them, fits the program into existing personnel work, and trains company supervisors. The applicant is given a series of test boards, containing dials which he turns to the answers he thinks are correct. The results are automatically shown when the cover of the test board is closed, thus making the information available for immediate use in the interview. (*The Trundle Engineering Company.*)

quiet tone; the examiner should not hesitate to repeat his instructions if they appear unclear. It should always be remembered that the purpose is to *discover* whether or not the person being tested possesses certain capacities—not to surprise that person into making mistakes. If the tests have been correctly constructed and are given under such conditions, the actual ability of applicants can be determined with reasonably satisfactory results, and the tests themselves may confidently be re-

garded as successful. There will be some exceptions, since no test can always be perfect. And it should always be remembered that a test is a supplement to the interview, never a substitute for it.

THE NATIONAL BUSINESS ENTRANCE TESTS⁵

Considerable interest is manifested in the National Business Entrance Tests, which are administered by the Joint Committee of the National Office Management Association and the United Business Education Association. These tests are the outcome of an attempt to devise a more effective plan for testing the vocational abilities of pupils who expect to obtain business employment and to establish a national accrediting agency which may adequately serve employers seeking competent office workers.

For many years office managers had felt that the graduates of high-school commercial courses were not all they should be. In an endeavor to find the reasons and remedy them, if possible, two factors were discovered as probably largely responsible for the situation. One was the inability or unwillingness of schools to restrict vocational business training to those able to profit by it; because of this fact, many "graduates" lacked the aptitude for and interest in office work.

It was also found that business educators and businessmen did not altogether agree on the subjects that should be taught to vocational business students, how they should be taught, or what ability should be expected. This was really more a lack of understanding of the problem than a disagreement.

By setting up the program of testing the clerical ability of public and private business-school graduates on a uniform nation-wide basis, it was expected that two primary objectives would be attained, and in attaining them, another objective would be accomplished. Since success in passing the tests would depend upon better selection of young people for training, and likewise upon a better training for them, it would be expected that a better trained graduate would be produced.

⁵ These were formerly known as the National Clerical Ability Tests. For a comprehensive report on the genesis, development, and early progress of this testing program, see the report of the Joint Committee in the *Tenth Yearbook of the Eastern Commercial Teachers' Association*, 1937, pp. 1-289. Additional information may be obtained from the Joint Committee on Tests, 132 West Cheltenham Ave., Philadelphia 44, to which we are indebted for many of the details here presented. Specimen tests are available from the committee at low cost.

OBJECTIVES OF THESE TESTS

The complete list of objectives follows:⁶

1. Provide an authoritative device, somewhat comparable to the College Board Examinations, for use in measuring the qualifications of public and private business-school graduates for some of the more common office occupations for which vocational training is given.

2. Assist business teachers and others who are responsible for vocational business-training programs in attempts to bring their course offerings and testing procedures more into line with sound principles and practices in the field of vocational education.

3. Assist educators in their attempts to ensure for vocational business courses students who possess the aptitudes, interests, and abilities required for the kinds of work for which they seek pre-employment training.

4. Provide employers of office help with a better means of appraising the qualifications of applicants for clerical positions, and provide a certification plan which will, to some extent, obviate the necessity of giving employment tests to applicants who have graduated from public and private business schools and colleges.

5. Focus attention of employers of office help on the need for definite standards of competency for beginners in certain office occupations, and emphasize the fact that job analyses should be made to determine just what is required of beginners.

6. Encourage employers—especially office managers—to come to some agreement as to payroll names for common types of office work, so that a common language may be spoken when clerical jobs and training for them are discussed.

7. Set up standards of achievement at which trainers of office workers may aim in setting up programs of training.

8. Bring office managers and other employers of clerical help into a closer working relationship with business educators in public and private schools.

The results of the testing program indicate that many of the objectives are being realized, even if not to the full extent. As the value of the tests becomes more and more evident, it is expected that the success of the program will be reflected in the increasing number of public and private business-school graduates who will be able to step into an office and start work intelligently and capably.

⁶ From Joint Committee on Tests, *Bulletin 2*.

SUBJECTS INCLUDED IN THE TESTS

The plan of the National Business Entrance Tests program is to have tests carefully prepared covering the following skills: stenography, typing, bookkeeping, machine calculation, and general clerical work. In addition to these subjects, tests are prepared on general information and business fundamentals, which are taken by every examinee.

The *general-information* test samples knowledges that may have been absorbed from the radio, newspapers, and common customs. The *fundamentals* test covers items taught in school, such as the mechanics of spelling, English, arithmetic, business vocabulary, and so forth.

These tests are sampling tests. Each is made up of samples of the major kinds of work which the occupation it represents seems to require. A test of this kind is harder to administer than are short "speed" tests; it takes more time and materials. But it may be shown to be more effective as a means of stimulating greater attention to sound vocational training and as a means of measuring clerical ability at the time of initial employment.

HOW OCCUPATIONAL PROFICIENCY IS TESTED

The *bookkeeper* test includes the application of recording techniques, the preparation of statements, and locating and correcting inaccuracies.

The *typist* test is built on the assumption that an all-round typist, as distinguished from the mere copyist, must be able to turn out all kinds of typing rapidly and accurately and in good form. Hence a 2-hour production test is made up of samplings of 8 or 10 typing jobs common to all offices, such as filling in forms, copying forms, setting up statistics, addressing for window envelopes, typing from rough draft, and so on. Only usable work is accepted. This test results in an index of the examinee's ability to handle the more complex typing jobs—not merely a score in terms of copying speed at so many net words a minute for a few minutes. The following of directions is important.

The *stenographer* test is built on the assumption that a stenographer must be able to take ordinary dictation for a reasonable length of time and transcribe her notes promptly and acceptably. Hence the candidate is subjected to a 30-minute dictation test, with 90 minutes allowed for transcription. Only usable transcripts are accepted. Real dictation, not reading, is the basis of the test. This test results in an index of the examinee's ability to take sustained dictation and get out usable tran-

scripts up to a reasonable standard for a day's work—not merely a score in terms of so many words a minute *taken* in a few minutes.

The *calculating-machine operator* must be able to handle a variety of computations rapidly and accurately, and maintain a satisfactory pace by the hour. Hence, a 2-hour production test, made up of samplings of computational work common to many offices, is used. Only correct computations are accepted.

The test for *general office clerk* includes measurement of facility in the skills of checking and classification, ability to interpret and produce handwritten or typed business forms common to this field of work, and a knowledge of and speed in the filing and finding of business materials.

Thus it is seen that these five tests are intensely practical, that training for them should be equally practical, and that one who succeeds in one of them will be likely to succeed in a position from which its materials are drawn. They are production-speed tests, not simply spurt-speed tests, and an attempt is made to simulate actual working conditions.

WHERE THE TESTS ARE GIVEN

Test centers are selected in various parts of the country, determined largely by the applications received. The tests are given in April, May, or June of each year, on dates announced well in advance. The tests are carefully administered and rigidly controlled.

A student may request examination in one or more vocational subjects, but all examinees must take the tests in general information and fundamentals. Prospective examinees in school are selected by the school authorities early in the fall, so that the personality rating schedule may be kept during a substantial part of the school year. But any student or other person who believes himself competent to perform the duties of one of the jobs covered, and who would like tangible evidence of his competence, may take the test desired by paying the required fee and enrolling in any center where the test is given. A worker who wishes to change jobs and has prepared for the change would find these tests helpful in appraising his readiness for the new position.

Employers who wish to measure the relative productiveness of present or prospective employees for salary adjustments, or other reasons, would find these tests helpful. In short, the Joint Committee invites anyone who has good reason to want to know how well prepared he is for one of the jobs covered to enroll for the test covering that job.

Supplementing the efforts of the National Joint Committee of office

managers and business educators is a local committee of at least two persons in every community where there is a branch of the National Office Management Association—one business educator and one office manager, working together for the development of the program both locally and nationally. In cities where there is no branch of the association, local committees may easily be formed, starting with a nucleus of one office manager and one business educator.

TEST CONSTRUCTION AND SCORING

The exact steps taken in the construction of the tests vary somewhat from year to year, but at all times care is taken to see that they conform to sound test-making procedures. In preparing the original tests, the following steps were taken:

1. *Preparation of copy* by an outstanding worker in the field.
2. *Editing of copy* by the technical adviser of the committee.
3. *Submission of revised copy* to representatives of the two national associations for further suggestions and criticism.
4. *Printing of a preliminary form* of the test and trial on a representative sample of secondary-school students, workers, and others.
5. *Analysis of the tryout results.* For each skill tested this analysis would include a study of the reliability of the scoring procedure. For the true-false and multiple-choice tests, this would include an item analysis with a consequent discard of all items lacking a satisfactory discriminating ability.

Tests are now prepared by specialists and reviewed by qualified office employers. The general form of the tests is maintained, so as to retain the qualities which make them reliable and valid.

All scoring of test papers is done by qualified persons. Papers are rated with two things in mind—accuracy in accordance with prescribed standards, and uniformity. Every effort is made to ensure these two things by carefully training those who do the work, supervising their work, and reviewing marginal cases. The scoring of the general information and the fundamental tests is done by scoring machines which give an instantaneous result for each test paper.

PROVISION FOR RECOGNITION

Certificates of proficiency are awarded to successful candidates by the joint committee; these certificates should be recognized as evidence

of occupational competency when presented with an application for the office position for which they are issued. At the same time, the joint committee admits that it is not possible to state that, simply because one has achieved a certain composite score on the test, he will succeed in the position for which he has been tested, or that one whose score is below a given point will fail. There are many unknown factors which contribute to the examinee's success or failure; there is no way to measure or weigh some of these factors in ascertaining their effect or value in predicting a score of occupational success. All that is claimed for the tests is that they are true samples of office work, and that anyone who handles them well, should, other things being equal, have little difficulty with actual office work of similar nature.

QUESTIONS FOR DISCUSSION

1. What is the purpose of a trade or occupational test?
2. Explain the "trial-and-error" method of employment. Why is it the most costly employment method in existence?
3. Can special abilities be tested? Explain.
4. How would you construct an employment test?
5. How would you test a test before giving it to applicants for employment?
6. What is a "shock absorber" in a test, and what is its purpose?
7. When and to whom should timed tests be given?
8. What is the primary test for all office workers?
9. What sort of test is suggested for stenographers?
10. What is a *context* test for stenographers? Why is such a test valuable?
11. Comment on a test for typing ability.
12. List seven capacities for which a typist could be tested, and comment briefly on each.
13. What is a good test in letter composition? Do you agree that this is the best sort of test? Why or why not?
14. How could a test for filing be arranged?
15. Comment on arithmetical and bookkeeping tests.
16. What should a test in grammar include?
17. Comment on the make-up of a test for spelling ability.
18. Comment on a test in punctuation.
19. Mention several considerations to be observed in giving employment tests.

20. Comment on the requirements for a good examiner.
21. Explain the purpose of the National Business Entrance Tests and state how they are prepared and administered.

PROBLEM

How would you devise a test for the following position?

Credit Authorizer in Department Store. Each charge customer's name and ledger experience are recorded on a visible index. When a "take-with" sale is made to such a customer, the salesperson communicates with the authorizer, who looks up the name on the card list and, if favorable, authorizes the credit. At times there is little to do; but at certain hours of the day, requests come along fast and furious. Mistakes are quite serious. If credit is refused to a good customer, that customer is lost to the store; if granted to one who has been proved to be poor pay, a loss may be incurred. Work is done entirely by artificial light.

"Teaching is the imparting of knowledge; training is the development of habits."—W. H. LEFFINGWELL.

XX

THE TRAINING OF CLERICAL EMPLOYEES

It should be obvious that no person can be expected to do what he does not know how to do, or to accomplish something when he does not know exactly what it is that he is expected to accomplish. This statement is not limited to office workers, but is true in every activity of life and at every level of activity, beginning with children in the home, but not ending there.

THE IMPORTANCE OF TRAINING FOR TRAINING

Everyone will agree that children need training; an untrained child is a pathetic nuisance. But if parents have had no training in rearing children, how can we expect the parents to know how to train their offspring? Perhaps no more cogent remark was ever made than the following: "Is it fair to expect children to have good manners when they never see any?" The increased offerings of college courses in marriage testify to the recognition of the desperate need for training of parents in family living. It is encouraging to know that something is being done about this problem. It is discouraging to see how relatively few parents are taking advantage of this opportunity. Too many mothers believe that they instinctively know how to care for their children; too many are fatalists—what is to be is to be, and nothing one can do will make the slightest difference. What a hopeless attitude!

HOW DETAILED SHOULD TRAINING BE?

But how many office managers know how to train office employees? How many offices have an organized program of training, effectively carried out? How many office managers tell their new employees ex-

actly what is expected of them? The dean of one well-known college of business administration remarked that he expected the members of his clerical staff to do what needed to be done without his having to tell them. The dean of another business school, one of the most prominent in the country, made this statement, "You can't go too much into detail with anyone." Could one of these administrators be mistaken? Which of the two schools produces the better-trained graduates? Why?

The old method of "training" office workers—which has not yet been entirely abolished—was simply to place the new clerk at a desk, give him some papers and a few moments' instruction, and then leave him to his own devices. When he made an error—as he was certain to do almost at the start—and it was discovered, he was promptly taken to task for it. This process was continued day after day, the clerk blundering ahead and learning what he could from his own mistakes, until he had "picked up" the work, as it was called. Some "caught on" quickly, but others gave up in despair and sought another office; still others were "fired" by the disgusted department head, and the process began all over again with other new employees. Training in the company's policies, rules, and general methods was mainly acquired in the course of the regular work, although occasionally some concerns accelerated the process by instituting weekly or semiweekly class instruction for an hour or two at a time.

TRAINING INCREASES OUTPUT, REDUCES TURNOVER

In any occupation the difference between the average worker and the expert is almost entirely a matter of training and practice, yet the difference in their output is enormous. Despite this fact, many offices which do not have any definite, organized system of training plead that it costs too much. The large successful companies, however, do not take that view, which may be one reason why they are successful. Organized training invariably costs less than the random, hit-or-miss training acquired by an employee in the regular course of the work; in addition, it requires much less time to bring a worker to a highly productive stage, which always evidences the efficiency of an organization.

Since the worker is paid while he is learning, it may appear to some office managers that they are paying not only the expense of the teaching, but also wages to the learner to acquire a competency that he may take elsewhere. That is conceivable as a theory, but it does not work out in practice, for it is noticeable that there is less desire to shift on

the part of trained workers than of untrained ones; labor-turnover figures clearly show that it is the untrained worker who is most prone to quit and wander from place to place. In short, the thorough training of a working force is the best guarantee for holding it together.

SOME TRAINING IS ALWAYS NECESSARY

An organized program of training need not be elaborate or expensive, so long as it serves the purpose, which is to inform the new employee as to what he is to do and show him how to do it. (Supervision sees that he does it.) Even an experienced worker needs some instruction when entering a new office or a new department; he cannot be left to his own devices if the most satisfactory results are to be attained. Indeed, sometimes experienced clerks need more thorough training than inexperienced ones, since their very experience has given them a certain confidence—as it should—in their ability to do the work. The danger comes from overconfidence, which may cause the worker to feel that the methods he learned in his last place are superior to the ones in effect in the new office and to disregard the importance of following uniform standard practice.

Stenographers and typists usually come to the organization at least partially trained—they may have had experience elsewhere, or they may be fresh from a school in which they have acquired the basic techniques of their occupation, with more or less proficiency. In such cases the company instruction would take the form of training in the forms and standards of the company, the style and format of correspondence, the requirements of certain departments, and in addition, possibly, special instruction in spelling, punctuation, and other work to perfect their specialty, for the training received in the schools is not expected to be complete. Many offices use for this purpose a manual prepared especially for stenographers and transcribers.

Clerks being promoted from one position to another are seldom familiar with the duties of the new position and the details of the work

GOOD TRAINING

Thorough instruction of a trainable person by a competent, experienced instructor, with opportunity for practice under direct supervision.

connected with it. They will need special instruction in those duties and details. If the new incumbent has been acting as understudy to the one whose place he is taking, however, practically no "breaking-in" period will be necessary. Under the so-called "three-position promotion plan" recommended by the Gilbreths, everyone in the organization nominally holds three positions: one, as worker in his present job; two, as a learner of the job above him; and three, as a teacher to the person in the job below him. No employee would be eligible for promotion until he had trained someone for his own job and had learned the job to which he was to be promoted. In any case, the use of written standard-practice instructions is a very practical help, not only in shortening the period of instruction, but in ensuring that the instruction itself is correct and complete.

Subexecutives in training for higher positions will also need special instruction. The understudy plan is particularly effective here. Sometimes this instruction is taken in outside educational institutions, such as correspondence schools, evening colleges, and similar places, the company paying half, or in some cases, even all the tuition fees, upon completion. Sometimes this privilege is extended to all employees who desire to take advantage of it; in such cases, the company may pay the tuition only upon satisfactory completion of the course. It is helpful if the training supervisor keeps in close touch with the progress of the student and encourages him from time to time when it seems necessary.

TRAINING THROUGH STANDARD-PRACTICE INSTRUCTIONS

Directions were given in Chap. XVII for the preparation of written standard-practice instructions for *nonroutine* jobs. The preparation and use of such instructions for *routine* jobs is of even greater importance, for routine work reaches into every part of the company's business; inefficient routines are expensive, time consuming, and the source of frequent complaints from customers. Any steps which can lessen or eliminate any of these annoyances are well worth while and pay off handsomely.

STANDARDIZE THE WORK

The first step is to standardize the work. Standardization is the result of studying the job to determine what the work is, what its purpose is,

whether the work as now performed accomplishes that purpose; whether there are unnecessary steps or motions which may be eliminated; how the workplace should be arranged so as to make it possible for the worker to perform his work handily, with dispatch, with minimum fatigue, with all "tools" within easy reach, with adequate light and space, with comfort, and with as nearly complete absence of disturbing factors as is possible—in other words, *work simplification plus good working conditions*.

PUT THE STANDARD METHOD IN WRITING

When the best method of doing any job has been determined upon, that method should be standardized, that is, prescribed as the method by which that work will always be done until a better way has been found and accepted and similarly standardized. The directions for performing the job according to the standard method should be very carefully written up in detail, with nothing left to the imagination. The directions should be so clear and complete that any reasonably intelligent worker is able not only to read and understand them, but to follow them without any hesitation or difficulty. Perhaps the best way to check up on standard-practice instructions before they are accepted as final is to try them on one or more workers. Before doing this, the person who prepared the instructions should try them on himself. It is surprising how often instructions which one has written turn out to have unsuspected weak spots in them.

The major trouble with written instructions is the way they are written.—Charles O. Libbey.

The preparation of permanent standard-practice instructions cannot be hurried. Occasionally, it is necessary to prepare temporary instructions at short notice. The urgency governs the circumstances in such cases; ordinarily there is no reason why an acceptable job cannot be done quickly. A person who has had considerable experience in writing standard-practice instructions will have no difficulty in tackling a quick job and turning out a fairly good piece of work, sufficient for the time being. But the full advantage of using standard-practice instructions will not be realized until the method has been standardized and applied uniformly wherever the same work is being done.

CHOOSE A DESCRIPTIVE LABEL

The standard-practice instructions must have a name. A name should be selected which indicates what the instructions are. While an experienced analyst may often seem to pick an apt title from the air, just as frequently he finds it necessary to make several tries before he finally hits upon one that fits best. Perhaps the best way is to jot down on a sheet of paper a brief description of the job. This may take five words or it may take ten or twelve. No attempt should be made at this time to choose appropriate words; simply write down the thought that comes to mind. Almost as soon as it is written, suggested changes will occur, which can be made then and there. These suggested changes follow each other in rapid succession until at last a heading results which seems to be adequate as well as sufficient.

STATE THE PURPOSE

Next should be stated the purpose of the work and a short description of it. This is to orient the reader. Nothing is so uninteresting as something without purpose.

IDENTIFY THE FACILITIES

Now the facilities used in performing the work may be stated; these will include printed forms, rubber stamps, files to be consulted and their location, equipment to be used, and so on. Thus the things the worker is to use are identified.

LEAVE NOTHING OUT

Next come the instructions themselves. The standard-practice instructions for a complete routine would show when, where, how, and by whom the routine is originated. From that point its progress through the office is detailed, step by step, stating (as in the case of a printed form, for instance) what it is, where it comes from, who brings it and when, what is done to it there, where it then goes, who takes it and when, what is then done to it, and so on, until it finally ends up in the files, at the outgoing-mail desk, or in the wastebasket. Every routine has a beginning and an end; its beginning may be at the incoming-mail desk, or somebody may have brought it in; it is not ended until it has

reached one or all (as with multicopies) of the three places mentioned. In between are the steps and operations by which the work of the routine is performed. Any tendency to slight or omit details should recall the statement of the business-school dean, "You can't go too much into detail with anyone."

WHO SHOULD HAVE COPIES?

Once prepared, tested, perfected, and adopted as standard, the standard-practice instructions should be placed in the hands of everyone who does the work covered in the instructions. If there are only one or two persons doing that work, the instructions may be typed, provided that clear black typewriter ribbon, fresh carbon paper, and medium-weight white bond or ledger paper are used. If more than three or four copies are required, they may be made by the liquid or stencil duplicator method, on paper appropriate to the process.

A master file containing all the standard-practice instructions should be kept at the analyst's desk, and another at the office manager's. Department and section heads should each have a complete set of the instructions for the work for which their groups are responsible. All these should be indexed and cross-referenced where necessary.

SPOT UNAUTHORIZED CHANGES

It is not sufficient to prepare standard-practice instructions and put them into effect. Human nature being what it is, it is necessary to check up from time to time to make sure that the instructions are being followed; or, if change is called for, to see that desirable changes are made and that all concerned are notified, with directions to put the new instructions into effect on a stated date.

Unless standard-practice instructions are followed up, it will be found that they are gradually, but nonetheless surely, being modified. Changes in personnel, where insufficient attention is given to instructing the newcomer, are often accompanied by lax enforcement of standard-practice instructions. Sometimes present personnel will introduce seeming "short cuts," without considering the reason for including each detail prescribed in the instructions. That is why it is wise to state the purpose; workers can work more intelligently if they know why things are done the way they are. Suggestions for changes will also be more intelligent.

MAINTAIN UNIFORMITY

Four unfortunate conditions may result from unauthorized changes in standard-practice instructions. The first is the lack of uniformity in handling the work. Variations from the established routine result in an increase in "special" cases, which themselves take extra time and slow down the work. So important is this that some office managers require any item which is an exception to the routine to be thrown to a clerk whose job it is to handle ex-routine items. Unless such provision is made, too much time will be spent in trying to figure out what should be done. The purpose of a routine is to handle all similar items uniformly, with dispatch. Any variation requires special attention, which should not be left to the worker handling the routine.

PROVIDE FOR EXCEPTIONS

In one large office, where no such provision was made, the established routines were wonderfully precise; they were the marvel of all visitors. Everything went through the routine in an incredibly short time, well handled; that is, as long as an item stayed in the routine. But let an item once get outside of the routine channels, it was for all practical purposes lost forever, resulting in unfortunate delays and embarrassing questions. To be sure, workers handling the routine were instructed to lay aside any exceptions; this they did faithfully. But no provision had been made for handling the exceptions, which just piled up!

ELIMINATE TIME-WASTING DELAYS

In another office the mail reader's instructions were definite enough: letters about certain subjects went to certain people; a letter intended for two departments would be handled as described in an earlier chapter of this book. In almost every mail, however, were two or three letters which were baffling, even to the experienced mail reader. At first he would read such letters over and over, trying to get a clue to their proper disposition, while the rest of the mail lay on the table awaiting his attention. In vain did the office manager tell him not to spend any time on the difficult letters, but to give them to him to handle. The mail reader, whether out of false pride or out of stubbornness, insisted on trying to solve the puzzles himself, with, of course, consequent delays. Finally, the office manager pointed out the delays resulting from this "determination to master the difficulty," and sug-

gested that the mail reader lay aside any puzzling letter, to be taken up after all the other mail had been distributed. At that time the office manager made a point of being around the mail division, so that he could go over the letters with the reader. This "determination not to be licked" is admirable in its place, but that place is not the consideration of exceptions in a routine planned for handling constantly recurring items of a routine nature.

NO EXCUSE FOR THIS

A second condition that may arise from unauthorized changes in standard-practice instructions shows up when one is tracing the path of some desired item. According to the standard-practice instructions, it should be in a certain place; actually, it is not. Delays then ensue while everybody drops what he is doing in order to find the missing item.

AVOID CONFUSION

A third condition arises when newcomers are to be taught the prescribed method of doing the work. The new worker studies the standard-practice instructions, visualizes the job, and then watches another worker doing it. If the actual performance shows variations from the standard-practice instructions, the newcomer is confused; he may question the method he is watching; the other employee may reply, "Don't worry about that; you do it this way and you'll be all right. That stuff's out of date."

ONLY THE STANDARD METHOD GETS RESULTS

Perhaps the most serious condition, however, is the fact that if the prescribed method is the best method, then any variation from it inevitably results in a slowdown. Standardized methods, set forth in standard-practice instructions, make it possible to establish standards of performance, as explained in the chapter on that subject. These standards, while low enough to be reached by workers trained in the correct methods, should be so high that they cannot possibly be reached by workers using motions and methods known to be inferior, no matter how rapidly the motions are made. When the work and the work methods are standardized, it is imperative that each person do his work in the standardized way. The training this involves may be

given quickly and effectively by means of written standard-practice instructions.

INDIVIDUALIZING THE INSTRUCTION

Instruction should be individualized. Experience shows that there should not be more than eight persons receiving intensive training from one instructor at a time. It is obvious that where the number of persons in the group is small, each member of the group can receive more individual attention; as each person is a separate problem in teaching, it follows that best results are obtained when that fact is taken into account.

SELECT THE INSTRUCTOR WITH CARE

Not every person has the capacity for effective teaching, even if he is thoroughly acquainted with the subject. That is why it is most important for the success of organized training to select a competent, experienced person who, besides possessing the requisite knowledge of his subject, also possesses in the highest possible degree the capacity for imparting that knowledge to others. When analyzed, this capacity is seen to consist of

1. *Knowledge of the Subject to Be Taught.* Without this, even though the lessons are written and thoroughly standardized as to the best methods of teaching, success as a teacher will be small, for the trainees will soon lose confidence in him, with resulting poor progress. A first-class clerk with several years of good experience is a prime requisite. Without experience, the instructor's knowledge is largely theoretical; he is not absolutely sure that what he knows will actually work. On the other hand, if we define experience as "practice under actual working conditions," we realize at once that the value of one's experience depends to a great extent on where he got it.

2. *Ability to Express His Meaning Clearly.* To be able to describe or explain something so clearly that it is immediately understood is a capacity not possessed by all, but imperative for successful teaching.

3. *Patience.* This is essential, for the apparent inability of some persons to learn even the simplest things is often entirely due to lack of patience on the part of the instructor. He should thoroughly recognize the difficulty of learning new habits and should patiently repeat instructions over and over again, when that seems necessary.

4. *Interest in the Work.* Unless the instructor possesses and mani-

feats a keen interest in the subject he teaches, his teaching, be it ever so clear and simple, will lose much of its force and effect.

5. *Dependability.* The instructor should be a reliable person, regular in attendance; he should set an example in this respect.

INSTRUCTION ON THE JOB

Actual instruction on the job implies not merely verbal instructions or the learning of sets of rules, but constant, careful, sympathetic training and coaching in the minutiae of the elements of the work; for while each one of these elements is a simple matter in itself, in the aggregate they form the trade or occupation.

Let us suppose, for example, that the job to be learned is the simple one of addressing envelopes on the typewriter. What are the five elements of this work?

1. *Placing the Copy in the Most Advantageous Position.* If a copyholder is provided, the instructor must see that it is set up and used in the standard way. There is, as has been said, a tendency on the part of clerks—common also to all other workers—to depart from the standard way; this tendency must be overcome by constant watching and frequent checks.

2. *Laying Out the Work Correctly.* The layout of the work is equally important. "Any old way" is not permissible. The one best way *must* be used, for unless it is, the best results will not be obtained. The instructor will not merely repeatedly *tell* the worker how to do it, but will demonstrate it manually, *over and over again*, and keep constant watch until the method has become habitual and fixed.

3. *Using the Correct Motions.* The correct motions for putting an envelope in the machine, for reading copy and typing it, and for taking the envelope out of the machine and laying it aside constitute a cycle of operations which must be performed in the standard way each time, if the best results are to be obtained. It must not be assumed that the worker can and will do this of his own accord. The habit must be formed.

4. *Learning to Read the Copy the Best Way.*¹ Office operations, as a rule, first require reading, then deciding what to do, and finally doing it. If the method of reading is left to chance, it will be found that some clerks will type much less rapidly than others; this is not due to lack of finger speed, but to slow mental reaction. In addressing envelopes, the

¹ Cf. "Reading Quickly and Accurately," in Chap. VIII on Correspondence and Transcribing, p. 176.

novice will usually look at the copy to read the initials, then type them, next look at the name and type that, then the street address, and finally the town and state. These points may be detected by observing the manner in which the typing is done and listening to the tapping of the keys.

The correct way is to read the entire name and address before typing any part of it, and then to type steadily until the entire name and address is written. The time thus taken to read and memorize the whole name and address is so much less than the time required to read part and type part that an operator using the correct method can address nearly twice as many envelopes as one using the incorrect method, even though the actual typing speed may be the same for both.

5. *Developing the Habit of Speed.* Assuming that the worker has learned the correct motions and their proper sequence, the next requirement is the development of speed in making them. This is entirely a matter of habit, which can be acquired only by continued, persistent, repeated practice.

This habit of speed can be cultivated in most persons, if not in all. If the work of the slow-moving clerk is analyzed, it will be found that the chief reason for his slowness lies in the time it takes for him to decide to make the motion. This reaction time, as the psychologists term it, varies with different people. Some clerks will hesitate before every motion, while others will move rapidly, though quietly, and seem to be exerting no great apparent effort. In typing, this has been alluded to as rhythm, and in this lies the secret of speed.

Watch a slow file clerk sorting letters alphabetically. She picks up the letter, looks at it absently, then realizes that she is not supposed to read it, but to find the name—which she then does; next she turns her glance on the guides in the sorter, looks at them absently, slowly finds the correct one, glances hesitantly at the letter again, and finally puts it in its proper place. The rapid sorter picks up the letter, glances quickly but surely at the place where the name should be, finds it, and at the same moment identifies the proper guide and without the slightest hesitation puts the letter in its place. The actual motions of both will appear to be essentially the same, but one will require twice the length of the time the other does, entirely because of the series of hesitations running through the operation.

Reaction time may vary with the same individual, depending upon his age, mental health, degree of fatigue, the intensity of the stimulus, and particularly the expectant attention and its direction. Reaction time is longer in old people and in children; fatigue lengthens it, as

does lack of attention. Concentration of attention shortens the reaction time; so does practice. Persistent practice of the correct method of doing work will lead to work habits which have elements of automaticity in them. This leads to more rapid performance and, if accompanied by quicker decisions—that is, shorter reaction times—results in the habit of speed which must be developed if a reasonable output of work is to be attained and maintained. The quick reaction of the mind in grasping a situation is a prime factor in accomplishing good work quickly.

HOW FAR SHOULD JOB INSTRUCTION BE CARRIED?

Job instruction need not be carried on indefinitely, for there should be a definite goal. Usually this is fixed at two-thirds of the standard rate of production; when this rate is attained, the intensive instruction may cease, though it is a good practice to continue general supervision—an occasional checking up of the work—still further. The full standard rate will ultimately be attained, the habit of making it become fixed, and the checking up diminished to some extent, though general supervision of course must not be entirely abandoned.

HOW TO DEVELOP VERSATILITY

While specialization is and properly should be the aim of every office manager in the conduct of his office, a certain amount of versatility is necessary for various reasons.

First, it is by no means certain that the work a clerk is at present engaged on is beyond doubt the best he is fitted for, even if he has an excellent record for quantity and quality of output. It is easily possible for a specialist to do more than one task equally well, and it is at least conceivable that even a clerk who is 100 per cent efficient on one operation may be 100 per cent efficient on another, or even on a third.

Again, on certain important work there is not always enough volume to keep clerks continually busy, while on other tasks regular clerks will occasionally have to help out. It is well, therefore, to discover the clerks who have a special aptitude for such work and employ them on it.

Finally, where there are peaks in certain sections, it is always helpful to have a number of versatile clerks in other sections who can be switched quickly to cope with the emergency. If there are standard training methods, these clerks can be taught to perform these special

operations. The teaching, of course, will have to be given when this special work is to be done, but it should be as thorough as if it were regular routine work.

If there are no standard training methods, it is important occasionally to shift clerks on routine operations from one special task to another, for the express purpose of developing their versatility. Their performance on these tasks should be specially observed and recorded for future reference.

When versatility is discovered in a clerk, he or she should be listed as a prospective recruit for the "flying squadron."

THE "FLYING SQUADRON"

This term, in office work, is applied to a group of workers trained in several different operations, who may be shifted about from one place to another whenever an emergency arises that needs prompt and efficient handling. The plan of organizing this emergency corps has been in use for a number of years both in office and in factory work.

In office work this idea has been thoroughly demonstrated to be not only workable, but a valuable factor in reducing peaks and avoiding overtime work.

The clerks forming the squadron are trained in the various office operations in the same manner as the new employees, and the training is continued until they can produce 75 per cent of the standard. As a rule, however, this training requires less time than that expended on new clerks.

THE USE OF MOTION PICTURES IN TRAINING

There is no longer any doubt about the value of using motion pictures in training persons for any kind of work. Indeed, for training large groups quickly, no other method will accomplish comparable results.

TWO IMPORTANT ADVANTAGES

The special value in motion pictures as a training tool rests in two advantages: first, the fact that it is possible to show any and all features which enter into the training process and the performance of the work, as well as certain collateral features which, though not part of the

work, it may be desirable to bring out because of the bearing they may have upon the satisfactory handling of the work itself.

The second advantage of motion pictures is the fact that any film or any part of a film may be run through over and over again, with the assurance that each showing will be identical with preceding ones. The film may be halted at any desired point for emphasis; it may be slowed down; and it may be run at the speed which has been established for the performance of the work in question.

PROCURING FILMS FOR TRAINING

Training films may be purchased or rented; they may be made to order by studios which specialize in this work; or they may be made by a member of the staff who has had adequate training and experience in the technique of taking motion pictures.

STOCK FILMS

A large number of prepared films are available for either rent or purchase.² Not all are suitable to every company, however, and care must be exercised in making appropriate selections. The number of films on office work is limited, although some excellent ones have been released. The office manager who wishes to buy or rent stock films will be well advised to take with him a management engineer with specialized experience in the scientific performance of office work, lest the films selected show features that do not contribute to effective work.

PROFESSIONAL FILMS MADE TO ORDER

Only very large companies can probably afford to have films made for them by professional studios. One may be very sure, however, that films so made will be as nearly perfect, technically, as possible. Careful attention to such details as lighting, posing, continuity, fade-outs, close-ups, titling, and so on, may be expected. A professional studio also knows how to play up the dramatic possibilities of a situation, thus lend-

²Sources of information about available films include *Selected Indexes and Sources of Photographic Visual Aids* and *The Index of Training Films*, both published by Eastman Kodak Co., Rochester 4, N.Y.; *Visual Training Aids*, Castle Films, 30 Rockefeller Plaza, New York 20; *16 mm. Motion Pictures*, International Theatrical and Television Co., 25 West 45th St., New York 19.

ing additional interest to the showing. With the advice, counsel, and supervision of an office-management engineer, it is possible to prepare excellent films for office-training purposes.

STAFF-MADE FILMS

In many cases, films prepared by a member of the office manager's staff will serve admirably for training purposes. The good work done by Allan H. Mogensen, Ralph M. Barnes, and others in training amateur motion-picture photographers to "shoot" vital aspects of work performance is having a healthy influence on training programs as well as on work-improvement programs, where micromotion photography had its inception.

Good subjects for staff photographers to work up include workplace layout, work performance, work travel; interpersonnel relations, interdepartmental relations, intercompany relations; equipment operation, adjustment, and maintenance; complete routines from start to finish; company officers, offices, branches, plants, products, advertising; and so on, without limit, except as to expense. Right and wrong ways and before-and-after subjects may be strikingly presented when desirable.

A FILM FOR TRAINING SUPERVISORS

A complete set of professionally made films is available for training supervisors. Although all these films are not on office work, many of the same principles apply and can be used effectively. The improvement of work performance has been effectively promoted by Allan Mogensen, who has stressed the power of example whereby, instead of telling and showing a worker how to improve his job, the film shows how others have made improvements. The desired reaction is, "If he can do that, so can I." This is quite different from bucking suggestions. The picture does not tell what to do; it shows it being done. There is a big difference.

QUESTIONS FOR DISCUSSION

1. Comment on the importance of "training for training."
2. How detailed should training be?
3. Describe and criticize the old method of "training" office workers.
4. Define good training.

5. To what may be ascribed the difference between the average worker and the expert in any occupation? Do you believe it? Why or why not?
6. Comment on the expense to the employer of training employees.
7. Why does training increase output and reduce turnover?
8. Is some training always necessary? Why or why not?
9. What is the "three-position promotion plan"?
10. How are standard-practice instructions for routine jobs prepared?
11. How is the work of a routine job standardized?
12. Why should the standard method be put in writing?
13. How would you choose a name for a set of standard-practice instructions?
14. What should the standard-practice instructions for a complete routine show?
15. Who should have copies of standard-practice instructions? Why?
16. How may unauthorized changes in work methods be prevented?
17. What may result from such unauthorized changes?
18. How should exceptions to the routine item be handled? Why?
19. Why should only the standard method be used?
20. How may the training of employees be individualized?
21. List the five special qualifications a teacher should have, and comment on each.
22. Comment on the relative value of training and experience to an instructor.
23. What is meant by "instruction on the job," and what does it imply?
24. What are the elements of the job of addressing envelopes on the typewriter?
25. Comment on the habit of speed in mental reaction. Do you agree with the statements made? Explain.
26. Why are habits emphasized in training?
27. "Job instruction need not be carried on indefinitely, for there should be a definite goal." Explain.
28. How may versatility be developed in clerks?
29. What is the "flying squadron," and what is its purpose?
30. Upon what two advantages rests the special value of motion pictures as a training tool?
31. How may training films be made available?
32. What precautions should be observed in selecting films for training?

PROBLEM I

It is asserted by many executives that in order to develop initiative, we should not give too minute instructions as to how a piece of work should be done.

Just how far does this apply to office work? Would you permit workers to write their records on plain sheets of memorandum paper? What objection would there be if clerks came in at any hour they pleased, as long as they worked a full 7 hours? Would you permit the file clerk to use whatever system of filing she preferred?

PROBLEM II

In the order-typing division of the office of the Hart Manufacturing Company, there are 18 fanfold billing-machine operators. The machine has a special keyboard, the copy is difficult to handle, and there are many abbreviations to be mastered. The 100 per cent workers write 60 orders an hour, but there are only four such operators, the others ranging from 25 to 75 per cent efficiency. It requires a period of nearly 6 months for an operator to attain 100 per cent efficiency.

What sort of training plan would you install to shorten this period?

"All policies, functions, methods, and procedures should be put in writing."—CARL H. MCKENZIE.

XXI

THE OFFICE MANUAL

Reference has previously been made to handbooks, standard-practice instructions, current-practice instructions, manuals, and so forth. In each case, the objective has been shown to be the preservation of carefully prepared material in such form as to be easily and readily available for instruction and information.

There are three main causes of waste of time in the performance of office work:

1. Inefficient workers
2. Inadequate files and file operation
3. Dissipation of executive energy

Inefficient workers waste time by doing things the wrong way, by having to do them over again, and by delays in trying to find out what is to be done.

Inadequate files and file operation result in hours of time wasted trying to locate papers which should be in only one place.

Executive energy is dissipated every time an executive or supervisor has to make a decision on a point which has previously been decided *but not recorded*. If the primary purpose of having an executive on the job is to see that his supervisees have every facility needed to do their work quickly and effectively, then any interruption which takes his mind off the job lessens the energy remaining available for doing what he is paid to do, *i.e.*, supervising.

Granted that executives have to make decisions and that no one else

Managing is not so much giving orders as it is devising proper and better ways of doing a job and explaining these to the persons who are to carry out the details. (*Courtesy of Factory and Industrial Management.*)

I have invariably found that the preparation of an office manual is one of the best ways of bringing useless work to light that I know of. It is only when the work of the whole organization is brought together, and the attempt made to logically describe it, that a perspective can be obtained. In other words, the by-products of an office manual are sometimes more valuable than the manual itself.—W. H. Leffingwell.

has the authority to decide, once a decision is made, there should be no occasion for the same decision to be made again, unless circumstances are different or unless the wisdom of the former decision is questioned and the possible need of changing it introduced. It is the common daily experience of offices everywhere—large as well as small—to have someone ask for a decision and be met with the response, “What did we do last time?”

Now it may give an executive a feeling of importance and power to have people coming to him constantly for decisions. He may feel that he is a real executive when he is able to “draw upon his knowledge and experience” and come up with the right answer so quickly. Actually, he is often just wasting his time; and executive time is costly, regardless of the level at which it is spent. For he might be doing something more important than looking in a notebook for the answer; an assistant could do that just as well as he could. Why not let the assistant do it?

To compare an executive's memory to a notebook may seem unfair; but that is what the making of repeated similar decisions amounts to. So let's take these repetitions out of the executive's head and put them in the notebook, thus making it possible for everyone with a question to find his own answer quickly and accurately and reducing to a minimum the number of questions to which only the executive can give the answer.

As soon as a decision has been made, it should be recorded. Indeed, it is well to give all decisions in writing, thus making sure that a written record is made. In this way a “book of decisions” can be built up which will be invaluable for reference by anyone having a question of procedure or policy.

Over a period of time—sometimes in just one season—practically every point that is likely to come up does come up. If handled as suggested above, a working policy manual results.

The process we have been describing is haphazard, without plan or system. There are likely to be holes in the manual. Yet some beginning is better than no beginning at all, and this day-by-day recording

is the only way that some office managers will make a start, unless they firmly resolve to approach the problem realistically and determine to solve it in scientific, systematic, and effective fashion, as will now be described.

WHAT THE OFFICE MANUAL SHOULD CONTAIN

The first step in preparing an office manual scientifically and systematically is to draw up an outline of what the manual should contain, always keeping in mind the objective of crystallizing the experience, habits, customs, rules, and practices of the office in such form as to be readily available when needed.

When employees are transferred from one office to another, office manuals make it possible for them to pick up their work at the new location quickly, without delay or hesitation. In times of rapid personnel turnover, green help can turn to the office manual to review points covered in their training. (*Courtesy of NOMA and K. B. Willett.*)

Approaching the manual with this objective in mind, we find that its contents will logically divide into the following sections, although not necessarily in the same order of either importance or presentation:

1. Information about the company and its organization
2. General office rules, regulations, and facilities
3. Standard-practice instructions for doing standardized work
4. Current-practice instructions for doing unstandardized work
5. Company policies based on executive decisions

Before going into detailed explanation and description of each of these sections, it might be well to observe that each section is to a certain extent independent of the other sections, in that it can be prepared and used independently. In other words, it is not necessary to wait until the entire manual has been prepared before beginning to get the benefit of it. For that matter, the benefit received from any one section is not dependent upon the preparation of the entire section. As each part of a section is prepared, it can be put into use. While a systematic development of the manual is desirable and should always be followed generally, it must be recognized that expediency and circumstances may require the preparation and promulgation of certain parts first. The important thing is to have a plan and see that everything that is done fits into the plan, thus assuring orderly progress.

MANUALS IN USE IN ONE COMPANY

The following is the manual equipment of a typical manufacturing company. These manuals are supplemented by thoughtfully designed forms, which also help to establish the approved, or correct, practice.

1. *How to Receive Callers.* This manual opens up with an interesting discussion of the work of the "Receptionist," continues with kinds of greetings, and general comments on dress and personality. It provides also a rough classification of callers and the names of the executives to whom they will ordinarily be referred.

2. *Telephone Etiquette.* Discusses the importance of the telephone operator's work in creating and holding goodwill; gives a list of approved greetings, and some general hints on operation of switchboard; also a list of the personnel with duties of each individual.

3. *Correspondence Manual.* This manual is made up almost wholly of form paragraphs and letters to meet the most commonly recurring situations arising in the company correspondence. It also summarizes policies on complaints, cancellations, and special orders.

4. *Stenographer's Style Book.* Consists of half a dozen pages of facsimile letters showing approved margins, spacing, paragraphing, spelling of trade terms, and the like. The subject matter of the letters discusses the importance of clear, accurate typing, correct spelling, division of words, and the general duties and responsibilities of stenographers.

5. *Incoming Mail.* This manual gives a general classification of incoming mail with instructions for its opening, entering, dating, and routing.

6. *Outgoing Mail.* This manual contains the schedule for picking up outgoing mail, sealing, classifying, stamping, and the like; also brief summary of postal regulations.

7. *How to Pack.* The various products of this company require a number of different methods of packing. This manual illustrates the approved methods. It has two principal uses: (1) to fix responsibility for merchandise damaged in shipment; and (2) to train new employees. The company relieves packers of responsibility for damage to goods packed in the approved manner.

8. *Order Department Procedure.* One of the principal purposes of this manual is to get orders through promptly. It outlines the procedure in handling orders, and gives a general schedule for completion of all steps.

9. *Accounting Department Manual.* Outlines the system of accounting, tracing a number of typical transactions through the books and giving sample entries; also outlines duties of the cashier.

10. *Sales Manual.* This manual has two distinct parts. The first provides the salesman with all necessary information about company policies and routine sales procedures, such as distribution of sales promotional material, obtaining credit information, calculation of probable delivery dates, and the like. The second part of the manual tells him in detail how to sell the product.

(From the *Hammermill Survey of Business Practice*, published by the *Hammermill Paper Company, Erie, Pa.*)

1. INFORMATION ABOUT THE COMPANY AND ITS ORGANIZATION

Since a company, to be effective, must function as a unit, it is desirable to explain in this section the general setup of the company, that is, its organization.

a. What is the company's business? First in importance, probably, is the business in which the company is engaged. If the company is a manufacturer, the products it makes should be listed. If it is a merchandising company, its general lines should be listed. If it is a financial concern, the field of finance in which it operates should be briefly described. And so on. While it is not necessary to go into extended detail regarding the operations of the company, enough should be included to present an intelligent picture to the new employee, as well as to some older employees who may not have known what it is all about.

There is a temptation to enlarge on the history of the company and to play up its steady advance in the face of seemingly insurmountable obstacles, giving due credit, of course, to the individuals who brought it safely through its early days. While this may tickle the vanity of certain persons, it would seem more sensible to reserve these encomiums for a separate booklet, in which full play can be given to the drama of company development. Such an enlargement will be more satisfactory all around and will not burden the office manual with irrelevant narrations.

b. Where is the company located? Next is the location of the company's offices, plants, and branches. This section should state not only the town or city, but also the street address and even the telephone number. In the case of plants, the plant manager should be named; in the case of branches, the branch manager should be named. Thus, for quick reference, this section shows where the company is set up and who is in charge.

c. Who are the company's officers, and where are they located? Now come the company's officers and their respective locations. Here again, it is not necessary to go into detail. A simple statement such as "Ernest H. Johnson is vice-president in charge of all sales" is sufficient. If organization charts are included—as they should be—they will make plain the scope of an officer's authority. Departments should be named, together with their location and the name of each department head. It should be kept in mind at all times that the purpose of this section is not to play up the importance of individuals, but to provide a ready means of reference to the people in the organization with whom one is to deal with respect to any matter of company business. It is obvious that this section may be in continuous revision in order to be kept up to date.

2. GENERAL OFFICE RULES, REGULATIONS, AND FACILITIES

The purpose of this section is to inform the employees of their privileges and responsibilities as members of the organization, and to explain the facilities provided to help them do their work to the best advantage of all concerned.

a. Primary items. Probably the most vital items to an employee are the office hours, the salary paydays, sick-leave allowance, vacation and holiday arrangements, and the chances and method of getting an increase. These points should be clearly and frankly stated and explained, without equivocation.

b. Employee facilities. Next should be the facilities which the company provides for its employees. These would include the location of dressing rooms and washrooms, rest or retiring rooms, elevators, smoking privileges, eating facilities, and the like. Also explained would be the telephone service, the mail and messenger service, how to obtain and replenish supplies, how to get equipment repaired, and so forth. Clear directions should be given as to what to do in case of fire, accident, serious illness, or other emergency. If there is a company doctor or nurse, the name and location should be stated, as well as the telephone number. The location of first-aid equipment and remedies should be given.¹

With the above information, which is often printed separately in the form of a handbook, it will be realized that a new employee can quickly orient himself in the company and wholeheartedly devote his efforts to his own particular job, instead of being beset by uncertainties which cannot help but affect his general morale, by reason of their being uncertain. Fear of the unknown is an effective inhibitor of free action and thought.

3. STANDARD-PRACTICE INSTRUCTIONS

As has been stated elsewhere in this book, standard-practice instructions show in detail how to perform work that has been standardized, that is, work that has been studied and analyzed to determine its essentiality, to eliminate what is unnecessary, to ascertain the best way of doing what is necessary, and to establish the time that should be allowed for doing it. Directions for performing all standardized work should

¹ For a comprehensive report on handbooks and their suggested content, see *How to Prepare and Publish an Employee Manual*, American Management Association, New York, 1947.

WHAT THE EMPLOYEES' HANDBOOK SHOULD CONTAIN

BASIC ESSENTIALS

Office hours	Location and use of washrooms
Regular	Location and use of rest rooms
Special	Location and use of elevators
Overtime	Smoking privileges
Supper money	Eating facilities
Tardiness	First-aid room
Salary paydays	Office etiquette (including visitors)
Sick-leave allowance	Use of telephone service
Holidays observed	Use of mail and messenger services
Vacation arrangements	Company files
Promotions and resignations	Obtaining stationery and supplies
Salary increases	Repairs to equipment
Changes of address	What to do in case of accident, fire, or serious illness
Bulletin boards	Company doctor and nurse
Information desk	

OTHER HELPFUL ITEMS

Brief description of written procedures for doing the work
 Suggestions are welcome and rewarded
 Complaints will be attended to
 Educational privileges
 Company organization and directory
 Employment services and policies
 Lost and found
 Company retirement plan
 Canvassers and collections
 Company publicity
 Savings and loan association
 Company library

SUGGESTED TITLES FOR EMPLOYEE HANDBOOKS

Your Job with American National	Book of Information
Useful Information for Employees	Working with Ward's
Information for Fellow Workers	Wellsworth People
Sherwin-Williams Standards	You and Your Job
The Bank in Which You Work	Book of Facts
Our Job at United Mutual	You and Sears
The Inside Story for You	Our Customs
You and Your Company	

The best method I have found for preparing an office manual is to ask each employee to write up a description of his various duties. It is admitted that employees usually cannot properly describe their work for final publication, but at least the combined lot can recall their duties more definitely than can the office manager by himself.

When the employees have finished their descriptions, they are then handed to the section head for editing. He will perhaps discover certain things that have been omitted. He may even find that some employees are doing things "not in the book," and be thereby enabled to correct faults that he would otherwise overlook. When he has carefully gone over all the sheets, he can hand them over to his superior, the division head, who will likewise scrutinize them to see if they fit in with his understanding of the way the work should be done. After he has passed upon them, they go to the office manager for final editing.

In the final editing, care should be taken to see that instructions are so worded that they will be clearly understood by all concerned. Even experienced writers often find that their work is misunderstood. One writes only with a preconceived idea or thought in mind. The reader, naturally, does not have that same thought and perhaps reads into the words a meaning quite different from that intended by the writer.

I have made it a practice, when preparing instructions, to have them read over by the persons affected, after which I ask them to explain in their own words just what is meant. Frequently I have found that they get from their reading a very different idea from that which I had in mind.—W. H. Leffingwell.

be included in this section, which should have an adequate index, so that any desired part of the work can be quickly located.

Each employee should have a copy of the instructions covering his work; each supervisor should have a copy of the instructions covering the work of every person he supervises, as well as instructions covering his own work and responsibilities. Thus, each person, at whatever level, possesses standard-practice instructions covering the work for which he is responsible, whether he does it himself or simply sees that it is done. The office manager and the supervisor of training will have a complete set of all standard-practice instructions, of course.

4. CURRENT-PRACTICE INSTRUCTIONS

These include directions for performing work which has not yet been standardized, as described above. The distinction between standard-practice instructions and current-practice instructions is not always

clear. After all, if a method of doing a certain piece of work has been set down in writing, in detail, and that method is to be followed until changed, it might be claimed that, since this method has been adopted as the present standard, the written instructions for doing it could be called standard-practice instructions under one accepted definition of the word "standard." And very probably in many offices, many, if not all, written instructions for doing the work are called standard-practice instructions or standard procedures, justified on the theory that they are standard practice.

An Important Difference. To the management engineer, standard practice relates to work that has been standardized and thus made subject to measurement; that is, it may be compared to an established standard of measurement as to both quality of work and quantity of output in a stated time. It is obvious that unstandardized work cannot be measured satisfactorily; the very fact of unstandardization means variation in performance, which in turn results in variation in times and outputs, as well as in quality.

For the reasons just stated, it is desirable to use the term "current-practice instructions" where the work has not been standardized in the sense just explained. The fact that the work has not been standardized will be an incentive to standardize it and get the benefits of standardization. It will always be necessary to have current practice, no matter how far standardization may have progressed; current practice is, of course, abandoned from time to time as standards are set.

Instructions are to be followed, whatever they are called. Lest someone feel that current-practice instructions are not of the same importance as standard-practice instructions, it should be understood that the difference is largely technical—in that one provides for measurement according to predetermined standards and the other does not—but that both are in full force and effect and are to be followed as they stand, until changed by someone in authority. The title is not so important as the

Some companies assign a number to each position in the organization. For instance, the voucher clerk in the Erie branch may be No. 98. The symbols or numbers of all instruction sheets for that position are listed on card No. 98 in the Master Index. This makes possible a quick review of the duties of any position, as well as the quick assembling of the instruction sheets when another clerk is assigned to that position. (*Courtesy of Office Economist of the Art Metal Construction Company.*)

TESTING AN EMPLOYEE'S KNOWLEDGE OF CURRENT PRACTICE

If an employee cannot answer the following questions correctly, he needs to study his written instructions more.

1. Is the safe key left in the safe door while the customer goes to the booth?

2. Is the safe door left open while the customer goes to the booth?

3. May help be given customers handling contents of boxes, such as cutting coupons, and so forth?

4. Must the customer enter the vault with the key to get the box or return it?

5. Are booths and stationery examined after each occupancy? How are we sure that the booth will not be occupied by a second customer before examination?

6. If keys are returned by mail with a letter stating that the box is empty, what is done?

7. If an employee of the box renter brings in a key and says his employer wishes him to see if it is the key for his box, would we permit it to be tried in the box?

8. How are applicants for boxes identified? Must they furnish references then or later?

9. How soon, consistent with safety and law, can wills, cemetery deeds, and insurance policies be removed after death?

10. If you receive a telephone call from someone seeking a box of a decedent whose name is identical with that of one of our renters, what other information would be required before you admitted having the box?

11. Each time access is granted, what precautions are taken to be sure that the person, no matter how well known, is still authorized to have access to that particular box?

12. If a key is found on the premises, what is done with it?

13. Will the safe-deposit company or bank act on a letter from the box renter reading somewhat as follows: "Please open my box with enclosed key and ship contents to me"?

14. Are keys to unrented boxes jointly or individually controlled?

15. May a fiduciary delegate his right of access to a co-fiduciary or to a non-fiduciary?

16. What would you do if you found a customer dead or unconscious on the floor of a coupon booth with his tin box open?

17. What term should be used in referring to the key which sets up the lock for a customer to open his box with his own key?

(Courtesy of Connecticut Safe Deposit Association.)

fact that "this is the way the work is to be done," whether the instructions are called standard-practice instructions or current-practice instructions. So far as the individual employee is concerned, there is no difference; he is to do the work according to the prescribed method.

The distribution of current-practice instructions is the same as of standard-practice instructions—each person has the instructions for his own work; supervisors have all the instructions for the work for which they are responsible.

5. COMPANY POLICIES

Major policies are established for the company by the directors or partners; minor policies are established for departments by the respective department heads and for sections by section heads. As a rule, policies are laid down in the form of decisions as problems arise or as conditions change; not every contingency can be foreseen and provided for. In other words, every company's policies are constantly undergoing additions and changes. Changes are usually slight and infrequent; additions are more frequent.

a. Put all policies in writing. If every decision which results in a policy—as do most decisions—is written down then and there, a body of policy decisions may be built up which provides an invaluable source of reference whenever the question arises, "What should be done?" The policy book should be indexed and cross-indexed so that no delay may be experienced in locating any desired ruling. Each department and section head should have a copy of the policies affecting his group and responsibilities.

b. Record all conference proceedings. Often policies are established during a conference of the parties interested. It is always good practice to have conferences recorded, so that no question will arise as to what was said, done, and agreed upon. The usual procedure in a well-conducted conference is to bring out all the facts, consider the various angles, determine the procedure to follow, and make sure that each person present understands the policy decision and knows what he is to do, if action on his part is involved. Some conference leaders follow the excellent practice, after everybody has agreed, or after a decision has been arrived at, of dictating a memorandum to be typed and sent to each participant; this memorandum becomes a part of each individual's policy book. If the conference is recorded on cylinder, disk, belt, wire, or in shorthand, the proceedings may be transcribed for study at any later time. These proceedings and the dictated memorandum may be

THE PRINCIPLE OF REUSE

Reuse is one of the most important principles of efficiency. It is the one principle which has meant more to the advancement of society than any other. It means *using over again labor which has once been expended*. There are literally millions of examples of this principle in operation in the world about us.

When you read the conclusions of an author, you get the advantage of all the labor he has expended in preparing the material for his book. A library represents hundreds of years of labor; at a small expenditure of labor on your part, the labor of these myriads of workers is yours.

The following examples of reuse show only a few of the many things that can be done by using this principle. A little observation will reveal many, many more which one who is alert can take advantage of.

Weighing Parcel Post Matter. If the weight of a certain article wrapped and tied has once been ascertained, it should not be necessary to reweigh any exactly similar article each time it is prepared for mailing.

Relaying Cables. A corporation occasionally has to cable instructions to all of its foreign agents. Send a cable to one with instructions to transmit to the others, thereby making an appreciable difference in cable expense.

Standard Paragraphs. Standard paragraphs represent an example of reuse with a very wide application. In most companies standard paragraphs can be used to handle as much as 90 per cent of the routine correspondence.

Rules and Instructions. All written rules and instructions are stored labor capable of being used over and over again.

Standard Selling Talks. Whenever a good selling talk has been worked out, it should be circulated among all salesmen. A sales manual is a perfect example of reuse.

Duplicating Machines. All duplicating machines are examples of the principle of reuse.

Standardized Methods. Finding by research the best method and then standardizing that method is an excellent example of reuse.—W. H. Leffingwell.

turned over to the company "editor," or whoever writes up the other parts of the office manual; from the material he can prepare a clear statement of the policy, which will then be duplicated and sent to each person concerned, as the official insert for his policy book.

MECHANICAL FEATURES OF THE OFFICE MANUAL

1. *Use loose-leaf ring binders.* In order to make the manual as flexible as possible, probably the most convenient form is punched 8½- by 11-

inch sheets in ring binders. In front of each binder will be a table of contents and a quick-reference index, arranged in alphabetical order. Properly tabbed guides will separate the various sections and subsections. Generally, manual sheets will be made on a stencil or liquid duplicator, depending on the number of copies desired; it should be remembered that the aniline dyes used in hectograph and liquid duplicators will fade on exposure to sunlight. Where only two or three copies are needed, they may be typed, using a new black ribbon and fresh typewriter carbon, on medium-weight white bond or ledger paper.

2. *Who should do the writing?* The writing of the various sections of the manual should be done by someone who has the knack of using words to reveal thought instead of concealing it. The chief correspondent or his assistant should be able to do this; certainly that faculty is needed in the company's correspondence.

If the company has a house organ, the editor would be a logical person to write up the manual sheets or at least to edit them for clarity after they have been prepared by the analyst. The analyst himself may be able to do a first-class job, although that does not always follow, since he is so close to the work itself. In any case, of course, the analyst should read the final wording, to be sure that it expresses the situation correctly.

3. *Distribution of manual sheets.* As each set of manual sheets for any part of the manual is completed, it should be distributed to those who should receive copies. Ordinarily the supervisor at each level should receive the sheets for his level and be responsible for seeing that everyone in his group receives a copy, reads it, understands it, and puts it in his manual binder at the proper place. All this is easier said than done. In all too many cases, lip service only is given, little attention being paid to the content. In other words, the office manager has a sales job

A grandmother came across some instructions for preparing the holiday eggs for children which were written by a government expert on the subject. The instructions:

"Take a good size egg, make a perforation in the base with a suitable pointed instrument, and a corresponding one in the apex. Then, by applying the lips to one aperture and forcibly exhaling the breath, discharge the shell of its contents."

"Heavens!" murmured Grandma. "What things they have to do nowadays. When I was a girl we just made a hole at each end and blew." (*Courtesy of the Boston Post.*)

on his hands, that of getting his people to read the manual sheets, file them properly, and follow them strictly. This is particularly true when several sheets are received at once; they take time from what one is doing at the moment and are tucked in the manual or laid aside "for attention later." For some, "later" never arrives, and the new material gets buried under other papers, being finally forgotten until some incident arises which the contents of the "mis-laid" manual sheets would have prevented. Everyone who was on the receiving end of the flood of "directives" issued by the innumerable government agencies during the Second World War knows exactly what happened; others can guess.

4. *Making the manual effective.* If the preparation of manual sheets is not to be simply a waste of time and paper, some systematic method of getting them into use must be adopted and adhered to. The first step is to suppress the desire to rush into print whenever a bright idea presents itself. Every proposed addition or change should be analyzed and studied, asking, "Is this necessary? Will it accomplish the purpose desired?" If the answer is in the affirmative, the new proposal should be discussed with those who will be affected by it; everyone is more likely to support something which he has had a hand in developing. When this support is obtained no time should be lost in preparing the manual sheets and putting them out.

As each executive or supervisor receives his copies, he should take it up with those of his supervisees who are concerned, explain the background, see that the new sheets are understood, and set the time for putting them into effect. For the first week or so they should be followed up closely to see that they are being followed. Then occasional subsequent follow-ups will ordinarily be sufficient; every violation should, however, be taken up at once.

5. *Check up periodically.* The supervisor should make a point of regularly looking over all manuals under his supervision. When a new employee starts work, one of his first assignments should be to study his office manual; he should be encouraged to ask about any points he does not understand. Everyone should review his own manual periodically, on general principles. Everyone should be encouraged to make suggestions, but no unauthorized changes should be permitted.

When changes are made in any part of one company's manuals, the office manager notes in a copy kept for the purpose the reasons which led to the change. This record provides a helpful background when considering later proposed changes in forms, methods, routines, and policies, especially. Occasionally, for example, a change will be

proposed which seems to be an improvement over present practice; reference to the record may show that the very thing proposed was in effect at one time and was changed for the reasons recorded. This information makes it possible to consider the "new" proposal from all angles and to take into account the circumstances then and now. In any case, a more intelligent decision can be made on the proposed change.

QUESTIONS FOR DISCUSSION

1. What is the objective of preparing office manuals?
2. What are the three main causes of the waste of time in the performance of office work?
3. How do inefficient workers waste time?
4. How do inadequate files waste time?
5. How is executive energy dissipated?
6. How may executive energy be conserved?
7. What five kinds of material should the complete office manual contain?
8. What is the significance of the statement, "Each main section of the manual is to a certain extent independent of the other sections"?
9. What three kinds of information about the company should be in the office manual?
10. What should the employees' handbook contain?
11. What are standard-practice instructions?
12. What are current-practice instructions?
13. What is the difference between standard-practice instructions and current-practice instructions?
14. How may an employee's knowledge of current-practice instructions be tested?
15. "Instructions are to be followed, whatever they may be called." Defend this statement.
16. How are policies determined, established, and recorded?
17. Explain the mechanical features of the office manual.
18. Who should write up the manual material? Why?
19. How are manual sheets distributed?
20. What can the office manager do to make the office manual effective?
21. Comment on periodical checkups of the office manual.
22. Define or explain the principle of reuse and give several illustrations.

PROBLEM

Explain fully in what respects each of the five different sections of an office manual may contribute to the office manager's control of his office, of his office workers, and of the work done in the office, as to quality, quantity, time, and cost.

"There are only two methods of paying for work—one is for the time the man spends on the work, and the other is for the amount of work he does."—HENRY L. GANTT.

XXII

COMPENSATION OF OFFICE EMPLOYEES

Every manager has an idea as to the amount of money he can afford to pay for a particular type of work to which he is about to assign a new employee, but he does not and cannot know how much service that employee will actually render in return for the payment; as a rule, the new employee, especially when untrained or only partially trained in the work, does not earn the salary offered. This fact makes it necessary for the company, in order to recompense itself for the loss of time and expense involved in training a new employee, to endeavor to place the initial salary at a rate low enough to cover the services rendered and high enough to attract applicants and to induce them to accept the work.

THE SALARY PROBLEM

Establishing the initial salary is one problem; providing for subsequent increases is even more puzzling. In too many cases, as soon as an office employee is placed on the permanent payroll, interest in his salary ceases. The employee, however, never forgets that his salary is small and that he wants more money; if he is sufficiently courageous, he will remind the employer of his desires. If, on the other hand, he is timid and diffident, his salary may advance slowly, and not at all in comparison with the increase of his efficiency.

It is frequently found in offices that clerks engaged on identical work receive salaries with wide variations, indicating that the amount paid bears slight relation to the work done. In offices which give an annual increase of salary, regardless of whether or not there is a corresponding increase in efficiency, it will inevitably happen in the course of time that many clerks will be receiving much higher salaries than the company can afford to pay for the type of work being done.

SALARY ALONE NOT ENOUGH

The apparent tendency of the average individual is to rest content with his present progress, since he does little or nothing to advance himself. He may "wish" to do so, but the wish is not translated into effort. It is generally assumed that all persons are ambitious and anxious to advance, when as a matter of fact the majority of people seem to need constant prodding of some sort to induce them to exert even a moderate effort in their own behalf. This urge may come from within the organization, or from their environment and associates outside of it, but not from within themselves. On the other hand there are many active individuals who are constantly striving to get ahead, some in a reasonable and sensible manner and some without much consideration, if any, for those who get in their way. Sometimes these people succeed, sometimes they fail; but in all cases they make trouble, and they are always in evidence. It is obvious that to cope with such conditions the straight-salary plan is both inadequate and unsatisfactory.

Work is a natural activity; the desire to perform some work is inherent in all normal, healthy persons, even though in different degrees. But this desire does not include all work, since there are innumerable active persons to whom certain kinds of work are repugnant and distasteful; there are millions of persons thus misplaced. Millions more are engaged in tasks, which, while not actually distasteful, are uninteresting; at such tasks a person will work at a pace just sufficient to relieve ennui; conversational interludes are welcome.

SOME INCENTIVE IS NECESSARY

No work is ever performed without an incentive of some kind; that is, no normal being "works for nothing" in the sense that no incentive impels him. Incentives cover the entire range of human desires and may be financial or nonfinancial in character.

Nonfinancial Incentives. The nonfinancial incentives in office work include:

1. Interesting work, manifested by the statement of the employee that he "likes the work"
2. Cheerful, congenial, and healthful surroundings, expressed in the common assertion that "it is a nice place to work"
3. Good treatment, not necessarily the so-called "welfare" work, but such treatment as will call forth the remark that these "are nice people to work for"

To be effective, a financial incentive must be directly connected with the effort exerted, and the gain or loss of money involved must be immediately felt.

4. A "company spirit," that *esprit de corps* manifested in various social activities of the employees, not directly connected with their actual work

There are other nonfinancial incentives, such as the desire to excel or the spirit of emulation. The desire to stand well in the opinion of the group within which one works is also an incentive of this kind, among many others.¹

Financial Incentives. Financial incentives are perhaps the most potent, for they permit the recipient to indulge other desires and interests, all the more eagerly sought because they are of his own unfettered choice, and limited only by the amount of the financial incentive itself.

Even so, a high salary is not necessarily an incentive to put forth the best effort. When an increase in salary is first granted, it may seem to have a stimulating effect, but that soon wears off as the recipient gets used to the salary and the idea grows in his mind that he is worth even more than he is receiving. This is not to be misconstrued as a recommendation for low salaries, for it is a demonstrated fact that well-paid employees are the cheapest in the long run. Its actual import is that a well-paid employee will not necessarily continue to do better work for any length of time after his salary has been raised, if the job remains the same in all respects.

Nor has profit sharing proved itself always to be the valuable incentive its promoters expected. Its chief defect, so far as the rank and file of employees is concerned, lies in two prominent facts. First, the profit is not directly related to the effort put forth, for the company may make a large profit for other reasons than the efficiency of its employees; or it may even sustain a loss, despite that efficiency. Second, even quarterly divisions of profit are too distant from the vision of the average employee to constitute a potent incentive.

There are exceptions to the rule that properly planned financial incentives are usually effective in bringing forth extra effort. If a young employee is obliged to turn over his pay envelope to his parents, it is of small interest to him whether it contains a few dollars more or less. For

¹ For a comprehensive discussion of nonfinancial incentives for office workers, see E. J. Bengel, *Cutting Clerical Costs*, pp. 259-281, McGraw-Hill Book Company, Inc., New York.

this reason it is recommended that any bonus or premium earned should be paid separately so that the employee may fully realize that it is his own spending money, the direct result of his own efforts. It is even more effective to pay it on a date different from the regular payday.

HOW GREAT SHOULD THE EXTRA PAY BE?

The amount of extra pay that will serve as an adequate incentive is a difficult problem to solve. It is obvious that the amount must be sufficient to attract the worker and induce him to put forth his best efforts to secure it; the difficulty lies in the fact that the company cannot afford to pay more for the increased effort than it is worth. There are two principles:

1. *The employee must be paid the market rate of pay for ordinary effort.* The bonus or premium, to be potent, must be clearly something extra, as a reward for the extra effort; if the market rate is not paid for the ordinary work, the employee will not consider the bonus as an extra reward.

2. *The reward should be graded in accordance with the kind of work to be done and the type of worker required to perform it.* It need not and should not be so great for the common types of work and worker as for the higher grades.

Frederick W. Taylor recommended wage increases as follows:

For ordinary shop work, such as ordinary kinds of machine operations, requiring no particular mental concentration, close application, skill or hard work, a premium or bonus of 30 per cent of the regular wages; for ordinary day labor, requiring no special mental effort or skill, but calling for strength and bodily exertion producing fatigue, from 50 to 60 per cent; for work requiring skill or considerable mental application, coupled with close application, but without severe bodily exertion, from 70 to 80 per cent; and for work entailing skill, mental concentration, close application, strength and severe bodily exertion, an increase in average wage of from 80 to 100 per cent is necessary to secure maximum production.²

For office work, a reward of approximately 50 per cent for extra effort will be found to be effective in producing high results.

WAGE-INCENTIVE PLANS

The best known wage-incentive plans, all of which have the same objective, however, are the Halsey Premium Plan, the Taylor Differential

² Quoted by Dwight V. Merrick, in *Time Studies as a Basis for Rate Setting*, p. 336, McGraw-Hill Book Company, Inc., New York.

Piece-rate Plan, the Merrick Multiple Piece-rate Plan, the Gantt Task and Bonus Plan, the Emerson Efficiency Plan, and the Bedaux or Point System, as it is often called. Each of these plans has its advantages and disadvantages, and all, except the first, are based upon standardized conditions for effectiveness. None of these, except the last, is found in its original form in either plant or office, many features having been modified to meet real or imagined variations in conditions.³ Since most present-day wage-incentive plans are either modifications of or based upon the above five plans, a brief description of each would perhaps be helpful here.

The *Halsey* plan pays for the time actually worked at the regular hourly rate. If the work is completed in less than the time set, a bonus of one-third to one-half the hourly rate is paid for the time saved. Since the task is not based on standard conditions (although there is no reason why it should not be), it is easy to beat the standard, which is ordinarily based on previous experience.

The *Taylor* plan has two rates, a high rate for accomplishment within the time set, and a low rate for a longer time. Since the standard task is set so high that only a first-class worker, working steadily, using the standard method, under standard working conditions, could possibly complete it within the time allowed, workers became discouraged after futile attempts to make bonus.

The *Merrick* plan tried to overcome the disadvantage of the Taylor plan by providing three levels of rates instead of two. Thus, although a worker might not reach the standard, he might still get a higher rate than under the Taylor plan.

The *Gantt Task and Bonus Plan* is one of the fairest plans ever devised, being used and advocated even by Taylor himself. The Gantt plan pays for time actually worked, at the regular hourly rate. It also pays the full rate for the difference between time taken and time allowed, plus a bonus for completing the standard task within or in less than the time allowed.

The *Emerson* plan pays the regular hourly rate for time actually worked. If the worker finishes the standard task in less than the standard time, his bonus is based upon his efficiency, as shown by a table starting at 66⅔ per cent and ranging up to 140 per cent of task. Under this plan the bonus runs into exorbitant figures if the worker is able to beat the standard very much.

³ The standard book on wage incentives is that by Charles W. Lytle, *Wage Incentive Methods*, published by The Ronald Press Company, New York, to which reference should be made for details of selection, installation, and operation.

The *Bedaux* or *Point System* is based on points, each of which represents the amount of work produced in one minute. A standard task is set, based on standard conditions and using standard methods; it is valued at so many points, determined by the time allowed to complete the task. For each completion of the standard task (always a predetermined amount of work, and usually a single unit of work containing one or more pieces, as in a batch), a stated number of points is earned, with a stated cents value for each point, determined by relating the time required to the prevailing hourly rate.

The worker gets his day's pay anyway, whether he finishes in standard time or not. If he finishes in less than standard time, he still gets full pay for standard time plus a bonus of 75 per cent of the time saved. The other 25 per cent is divided among the supervisors and indirect workers. An 8-hour day equals 480 points. If the worker produces 540 points in 8 hours, he gets paid for 8 hours at the regular rate and for an additional hour at three-quarters of the regular rate. The merits of the *Bedaux* plan are its fairness, its simplicity, and its ease of understanding by the worker, who can readily figure out the pay that is coming to him. This plan, or modifications of it, is used in many manufacturing plants.

LEFFINGWELL BONUS PLAN

This plan is a combination of the Emerson and Taylor plans, modified to encourage the new or partly efficient worker and enable him to earn enough bonus to encourage him. As with all incentive plans based on standard tasks, it is necessary to set the standard very carefully. This plan is to be used in connection with the work-unit plan described in Chap. XXIV.

1. Determine the general average salary paid for this operation.
2. Determine the maximum amount the company is willing to pay for 100 per cent efficiency. In this connection it is well to consider also the minimum amount of bonus which will be an incentive to the employee to reach 100 per cent.
3. As will be seen from the table, the bonus for 100 per cent efficiency is 50 per cent of the standard wage. Therefore, the standard wage plus 50 per cent should equal the maximum sum it is desired to pay for 100 per cent efficiency. That is to say the standard wage should be two-thirds of the maximum, and the bonus for 100 per cent of efficiency, one-third.
4. Establish a "standard salary" for an operation. By this is meant a sum of money upon which to figure the percentage of bonus. This sum should closely approximate the general run of salaries paid for this operation, but not necessarily so. The only purpose of this standard salary is to figure the bonus; it

does not mean that if a clerk is getting more than the standard salary or less, he is to be reduced or raised to the standard. The object of having a standard is to make the figuring of the bonus more simple.

5. The sliding scale shown in the following table runs from 67 to 100 per cent efficiency.⁴

Percentage of efficiency	Percentage of bonus	Percentage of efficiency	Percentage of bonus
67	0.0	84	13
68	1.0	85	14
69	1.4	86	15
70	2.0	87	16
71	2.8	88	17
72	3.4	89	18
73	4.4	90	20
74	5.2	91	22
75	6.0	92	24
76	6.6	93	26
77	7.2	94	28
78	8.0	95	30
79	8.8	96	32
80	10.0	97	34
81	10.4	98	36
82	11.2	99	38
83	12.0	100	50

Above 100 per cent efficiency, the bonus to be paid is the same rate per piece as at the 50 per cent bonus. For example, if the standard salary is 80 cents an hour, and the standard output is 200 an hour, the bonus for an output of 300 an hour would be figured as follows: 50 per cent of 80 cents is 40 cents, the same bonus that is paid for a production of 200 an hour (that is, 100 per cent efficiency); since this is at the rate of 20 cents a hundred, a clerk who does 300 an hour will get three times 20 cents or 60 cents an hour bonus.

LOWER COST, HIGHER PAY

With this method, the *cost per piece* (figured on the salary plus bonus for a given quantity) is progressively reduced as the quantity done increases, and the clerk gets an adequate reward for increasing his output. In the example given above, suppose that the average output be-

⁴ LEFFINGWELL, W. H., *Scientific Office Management*, p. 250, McGraw-Hill Book Company, Inc., New York (now out of print).

fore standardization was 100 an hour. At 80 cents an hour, the cost per piece would be \$0.008. Suppose that standardization eliminated waste motion and improved the method so that a standard output of 200 an hour would be reasonable. The clerk's salary and bonus at 200 an hour would total \$1.20 an hour; but the cost per piece has fallen from \$0.008 to \$0.006; if the clerk should reach 300 an hour and thereby receive salary and bonus totaling \$1.40 an hour, the cost per piece would have dropped to \$0.00467.

Looking at it another way, the output for a 40-hour week at 100 an hour would be 4,000 pieces, costing \$32 (at 80 cents an hour). An output of 8,000 costs only \$48 (at \$1.20 an hour), while an output of 12,000 costs but \$56 (at \$1.40 an hour). Before standardization, the total average output of three clerks is just equal to the output of one clerk after standardization, with the incentive of a bonus. In addition there is a real saving in overhead. It should be borne in mind that if the standard is properly set, there is little likelihood of a clerk's reaching 150 per cent of the standard; but it may be possible in some cases. Hence the necessity of extreme care in setting standards.

Where a clerk works on both standardized and unstandardized operations, the bonus is paid for the actual time worked on standardized operations, and the regular wage or salary for the time spent on unstandardized ones.

The bonus should be figured not on the amount produced each day, but upon the total hours worked on standardized work during the pay period. This is an incentive to keep the standard of efficiency both high and equable instead of spurting one day and lagging the next.

FOUR BASIC REQUIREMENTS

Whatever plan may be used for rewarding workers for first-class work, the following requirements should be considered:

1. *The standard should be scientifically set.* Thus it will constitute what a first-class worker can do in a specified time by using the one best way. Guesswork, or setting the standard by past performances, will lead to trouble.

2. *The task should be set high enough to secure a full day's work from a first-class worker.* If conditions make it advisable to make a temporary allowance for new workers (though the graduated-bonus plan generally takes care of this satisfactorily), it may be done, but it should be distinctly understood that an allowance is being made and that the standard, as set, is still to be considered the attainable goal.

3. *There should be rigid inspection of the completed task, and the worker should be penalized for defective work.* The penalty should consist of a deduction from the bonus, for it is not wise to deduct from the salary. If necessary, these deductions may be made to the extent of taking away the entire bonus if the work is done hastily or carelessly, but never should a further deduction be made by taking away part of the regular salary. Deductions from bonus should not be unreasonable, for it should always be remembered that the purpose of the bonus is to encourage the worker to increased production; he should not be discouraged by making the penalties too severe.

4. *The standard, once scientifically set, should be considered correct until the method is changed.* It should not be changed if an exceptional worker makes more than the company thinks he should, for this condition is a decided stimulus to the other workers. On the other hand, if the standardizer makes an error and sets the standard too low, the company should stand by the engagement and give the employees the benefit of the excess rate; cutting rates will inevitably bring trouble that will cost more than the excess rate.

REWARDING THE SECTION HEAD

In a section where a number of workers receive a bonus on standardized operations, there should be some plan for rewarding the section head if bonus is earned, for he, too needs an incentive to encourage him in pushing the work. One plan may be to pay the section head a bonus equal to 20 per cent of the bonus earned by the employees in his group. The result of this is to give the section head a financial incentive in seeing that every worker earns a bonus, which is, of course, the end desired.

JOB EVALUATION AND SALARY STANDARDIZATION

Although nearly every office manager will readily admit that a wage-incentive plan of some kind would be a fine thing to have and that he hopes to have such a plan in operation some day, there are many companies which are not paying on a measured work-production basis, even though it may easily be shown that the returns would be many times greater than the initial investment of time and money.⁵

Another plan for compensating office employees on a fair basis, known as "salary standardization," is not based upon a measured output and

⁵ See *NOMA Forum*, Vol. 16, No. 2, pp. 22-28.

<i>The Four Basic Systems of Job Evaluation</i>			
Ranking System	Classification System	Point System	Factor Comparison System
<p><i>The job analysis.</i>—A narrative description of the job with the duties, responsibilities, degree of difficulty, and required qualifications clearly brought out.</p>		<p><i>The job analysis.</i>—A narrative statement of duties and qualifications. In addition, the job is broken down into the important compensable factors, such as required experience and training, mental effort, and physical effort. The amount to which each factor is present in the job is indicated by a short narrative statement.</p>	
<p><i>Method of Relating Jobs</i></p> <p>Jobs are ranked in their order of relative difficulty or value to the company, and grade levels are sometimes defined after the jobs have been ranked.</p>	<p><i>Method of Relating Jobs</i></p> <p>Jobs are allocated to grade levels which are defined arbitrarily prior to evaluating jobs.</p>	<p><i>Method of Relating Jobs</i></p> <p>Jobs are related by factorial analysis. A restricted number of fairly specific factors are selected for application to a limited number of types of work. The point values are predetermined before analysis of jobs and are decided arbitrarily, and the degree of each factor is expressed by a definition.</p>	<p><i>Method of Relating Jobs</i></p> <p>Jobs are related by factorial comparison. The factors used are assumed to be fundamental to all jobs and of universal application, the point values are set after analysis of jobs from existing rates of key jobs, and the degree of each factor are expressed by sample jobs.</p>
<p>From Industrial Job Evaluation Systems Courtesy U. S. Department of Labor</p>			

FIG. 75. The above chart makes it possible to compare the features of the four recognized basic systems of job evaluation. Some analysts prefer one system, some another.

bonuses, but upon a careful classification and standardization of office positions. The value or worth of each position is determined with respect to the following: the requirements or "factors" of the position itself, to estimate the dollar value of the work actually done in the position; the relative value of the position compared with the value of the other positions in the office; and the salaries paid in like positions in the same locality and the same industry. As a result of this "job evaluation," as it is called, it is possible to allocate graded salaries to each position.

The two main objectives of job evaluation and salary standardization are to pay what the job is worth, and, in addition, give "equal pay for equal work"; that is, every job in the office which has the same qualifications and carries the same duties and responsibilities should carry the same salary. Unless some such plan is in effect, there will be found differences amounting in some cases to as much as 50 or 100 per cent. Certainly, if two persons are doing the same quality and quantity of the same kind of work, one of them is not worth twice as much as the other.

To get the full benefits from a salary-standardization plan, the entire office should be analyzed and standardized as explained in Chaps. XVII

and XXIII to XXV. In any case position analysis and classification are necessary before even a start can be made.

JOB CLASSIFICATION

The data resulting from analyzing all the work done in the office will show the nature of the work done by each individual and will make it possible to set up certain reasonably well-defined classes of positions, which will include all or nearly all the office employees. Special classes may be indicated to take care of special cases, but these should be kept to a minimum and should not be set up unless they cannot be included in the standard classifications. The types of office workers described in Chap. XVII may be used; or the list of jobs used by the National Office Management Association in some of its salary surveys,⁶ as follows:

- I. Stenographer, Sr. Takes varied and rapid dictation of any degree of difficulty and transcribes from shorthand notes.
- II. Stenographer, Jr. Takes routine dictation or that of simpler nature or in limited fields and transcribes from shorthand notes.
- III. Transcriber, Sr. Transcribes from dictated records varied dictation of any degree of difficulty.
- IV. Transcriber, Jr. Transcribes from dictated records dictation of simpler or routine nature or in limited fields.
- V. Typist, Sr. Types rapidly and accurately varied material of any degree of difficulty including typing from rough drafts, tabular and statistical material, stencil cutting, etc.
- VI. Typist, Jr. Types simpler material of limited variety such as straight typing from printed or clean copy, form typing, nonstatistical reports, etc.
- VII. Messenger Runs errands. Collects and distributes mail. Opens and puts up mail. May operate duplicating machines.
- VIII. File Clerk, Sr. Classifies, indexes, records and files correspondence, cards or other documents of any nature. Charges out material. Maintains tickler files. Searching and transfer of files.

⁶ *Report of the National Salary Survey*, National Office Management Association, Philadelphia, 1940-1941, p. 8. In more recent surveys, the Association is using the more detailed occupational titles and descriptions defined in the *Dictionary of Occupational Titles*, published by the U.S. Department of Labor.

Description of Job Classes for Job Evaluation Purposes

CLASSES

- A. Work of office- or messenger-boy character.**
- B. Simple operations. Use of few definite rules. Routine operations performed under close supervision.**
 1. Simple clerical work requiring no experience; or training, but no experience, on simple machines, such as sorting, key punch, ditto, and adding machines.
 2. Simple clerical work but requiring some experience to perform job satisfactorily.
 3. Outside training but little experience on more difficult machines, such as typewriter, nonlisting calculators, multigraph, etc.
- C. Requiring recognized clerical ability. Application of a large number of rules though definite and specific; or considerable experience on machines listed under B-3.**
 1. Requiring recognized clerical ability, but the exercise of no definite responsibility, either because of the character of the work or the closeness of the supervision.
 2. Experienced operators on following machines: Typewriter, nonlisting calculators, bookkeeping, and tabulating machines.
 3. Work of C-1 character but of more responsible nature.
- D. Requiring complete and intensive knowledge of a restricted field.**
 1. As above.
 2. Work of D grade plus supervisory responsibility of a minor character.
- E. Requiring knowledge of general policies; command of general rules and principles with application to cases not previously covered and may require long experience with the company.**
 1. Work of the above character where experience is not necessarily long but must have been gained within the company.
 2. Work of a more technical or more difficult character but experience not necessarily within the company.
 3. Work of E-1 grade plus supervisory responsibility.
 4. Work of E-2 grade, with long experience with the company. Or work of D grade which is not subject to check and therefore where the promotion of the employee on the job is generally undesirable.
- F. Work of a highly technical or confidential nature or of semi-executive supervisory character.**
 1. Highly technical or confidential work.
 2. Semiexecutive and supervisory in character.

From Industrial Job Evaluation Systems
Courtesy U. S. Department of Labor

FIG. 76. Here are shown six main classes of office jobs and fourteen subclasses. A comparison of any specific office-position analysis with the above descriptions will show in which class the position belongs.

- IX. File Clerk, Jr. Sorts, arranges and files cards or papers by alphabetic, numeric, or date classifications after having been classified and indexed. Withdraws and refiles filed material. Performs routine clerical work related to files.
- X. Receptionist Greets and directs visitors. Requires tact, good personality and thorough knowledge of company organization. May perform simple clerical duties.
- XI. Telephone Operator. . Operates switchboard or PBX and keeps records pertinent to telephone service.
- XII. Telephone Operator-Receptionist Operates switchboard or PBX and greets and directs visitors. May perform simple clerical duties.
- XIII. Bookkeeping Machine Operator Operates bookkeeping machine or typewriter with calculating attachments in connection with accounts payable or receivable, cash receipts and disbursements, etc., from miscellaneous or prepared media. May include ledger stuffing or other incidental clerical duties.
- XIV. Billing Machine Operator Operates billing machine, types invoices and bills from original orders or shipping papers. May include some checking of calculations and other data.
- XV. Calculating Machine Operator Computes or verifies by machine all types of calculations involving addition, subtraction, multiplication, and division. May involve some tabulating or related clerical activities.
- XVI. Key Punch Operator. . Punches and verifies tabulating cards. May involve some coding.
- XVII. Tabulating Machine Operator Operates machine tabulators and sorters.

It will be noticed that the incumbents of many positions may be called juniors and seniors. Sometimes an intermediate classification may be used, as in that of the Boston Chamber of Commerce, which lists three classes of stenographers, designating them as Stenographer, Grade I, Stenographer, Grade II, and Stenographer, Grade III.

DESCRIBING THE DUTIES PERFORMED

Accompanying the standard position title for each class of position is a description of the duties performed in that position. This description may be simple and brief, as in the NOMA list given above; or it

may be more detailed, like that of the Boston Chamber for Stenographer, Grade II, for instance:

Stenographer, Grade II. A clerk with ability to perform ordinary stenographic work requiring ability to make and transcribe notes, a limited knowledge of the company's business routine, and ability to type with speed and accuracy.

The description of the duties of a stenographer in the classification of the Westinghouse Electric and Manufacturing Company is also simple and easy to comprehend:

Take and transcribe shorthand dictation.

Keep records and cast these into periodic or occasional reports.

File letters or mark for file.

Cut stencils.

Prepare copy for photostatic reproduction.

The description of the duties of a stenographer in the *Dictionary of Occupational Titles* of the U. S. Department of Labor is as follows:

Take dictation in shorthand of correspondence, reports, and other matter, and transcribe dictated material, writing it out in longhand or using a typewriter. May be required to be versed in the technical language and terms used in a particular profession. May perform a variety of related clerical duties. May take dictation on the stenotype.

The description of the duties of a senior stenographer by the Labor Relations Bureau of the Commerce and Industry Association of New York is as follows:

Takes and transcribes dictation of difficult nature involving varied vocabulary and frequent use of unusual words and expressions.

Requires considerable skill, accuracy, and speed.

May take dictation by shorthand or machine.

May also keep files, records, and perform related clerical duties.

Requires experience.

The description of the duties of a senior stenographer by the joint committee of the United States Congress is more specific and detailed:

To take simple, ordinary dictation, by a symbolical or mechanical process, at a speed of not less than 110 net words per minute; to transcribe such a record on a typewriter at not less than 40 net words per minute; to typewrite at not less than 55 net words per minute from plain manuscript, printed or typewritten matter, or from dictation; occasionally, to transcribe on a typewriter from a dictating machine; to act in a secretarial capacity when required; to cut stencils; to prepare routine and minor correspondence; and to perform related work as required

The description of the duties of a senior stenographer by the Personnel Classification Board of the United States Civil Service Commission is:

Under immediate or general supervision, to perform stenographic work of more than average difficulty, such as taking at a rapid rate of speed in shorthand and transcribing dictation with considerable variation in subject matter, in which technical and unusual words, expressions, and phrases occur frequently; occasionally preparing correspondence in cases which require the exercise of independent judgment and familiarity with the work of the organization; or assisting in the supervision of a section of stenographers and typists.

The description of the duties of a Grade II stenographer by the United States Railroad Labor Board is:

The preponderant duties of incumbents are to take and transcribe dictation; to perform difficult typewriting work requiring considerable ability in the use of a typewriter; and may involve, in addition, the performance of clerical work of a routine nature, requiring a knowledge of the branch of service to which assigned, or experience in the routine of the department or subdepartment in which engaged; and to perform related work.

An examination of these specimen descriptions of the duties of a stenographer will show the possibilities of variation. The analysis of the actual duties performed by the stenographers in any one office will probably reveal even more variations from those shown above. Since one valuable by-product of the analysis will be to show just what each office worker is really doing, subsequent standardization will usually make it possible to simplify and standardize the duties so that eventually all employees bearing the same job title will have substantially the same duties.

USE UNAMBIGUOUS TERMS

It will help to bring about this desirable result if clearly understood terms are used in describing the duties. Riegel urges that ambiguous terms like "assist," "handle," "prepare," "supervise," and "review" be avoided, and offers the following terms as helpful:⁷

Verbs Which Pertain to Information and Records. Keep, copy, post, secure, compile, allocate, originate, review, analyze, design, distribute, file, calculate, credit, debit.

Verbs Which Pertain to Equipment, Supplies, and Product. Operate, pro-

⁷ RIEGEL, JOHN W., *Salary Determination*, p. 86, Bureau of Industrial Relations of the University of Michigan, Ann Arbor, 1940.

cure, construct, store, maintain, transfer, design, plan, distribute, inspect, deliver, route, ship.

Methods. Devise, select, develop, install.

Personnel. Delegate duties, appoint, instruct, supervise, direct, judge, recommend, pay, discipline, reorganize.

Customer Relations. Inform, interview, telephone, write, visit, sell, advertise, negotiate, appraise, adjust.

Money and Valuables. Secure, deliver, store, guard, invest, speculate, collect, receive, pay, control.

In making the analyses of positions and in writing the descriptions, enough time should be allowed to do a good job, since the foundation for the plan of salary standardization is being established; if the foundation is weak, the superstructure will not endure. The detailed occupational description in Chap. XVII will bear considerable study as a model.

Many analysts use rating charts. One value in using a chart is that it reduces the likelihood of any features being overlooked and places all the analysis work on a uniform basis. A chart also helps to provide the information necessary to evaluate the position. The General Foods Job Rating Scale on pages 500 to 501 merits careful study.⁸

DETERMINE SALARIES FOR EACH POSITION

With the position classification, the job description, and the relative evaluation of each position ready, the next step is to determine the salaries to be paid in each position.

A number of considerations present themselves in determining what salaries are to be paid. Practically all these considerations are concerned with the relativity of the salaries finally established. Some of the considerations are external and some are internal.

For example, whatever salary figure is established for a certain position, it should not be out of line with the salaries paid by other offices in the same locality for the same position. It should never be lower than the local "market," and it should not be so far above as to be a conspicuous exception.

For achieving the best results in quantity and quality of output, sal-

⁸ Several excellent books and articles have been published in the field of job evaluation. *Industrial Job Evaluation Systems*, a manual for the field job analysts of the U.S. Department of Labor (1947), is an excellent general source of background information on job evaluation; it also contains a comprehensive bibliography of 291 annotated and classified items. *Clerical Job Evaluation* was published by NOMA in 1946 as *NOMA Bulletin* 1.

aries should be rather a little better than the current market rates, as this will help to attract the best help procurable, other things being equal. On the other hand, nothing is gained by paying unnecessarily high salaries.

Again, with respect to any given position, a reasonable question to ask is whether or not the salary paid to a beginner should be lower than that paid to a thoroughly experienced and competent worker. The answer is affected by whether or not experience in the particular job increases the value of the incumbent to the company, on the same job. On some jobs, quickly learned and mastered, experience does not increase the proficiency and value beyond a certain point. In other jobs, especially those where such elements as judgment, responsibility, and executive ability are concerned, experience may increase the value of the individual in the given position.

UPPER AND LOWER SALARY LIMITS

It is obvious that there should be a minimum salary for each position. This minimum is not concerned with the legal minimum for all positions, established by Federal or state laws; rather is it intrinsic in the job. The maximum would be the highest amount that the company can afford to pay for that kind of work; it represents the highest salary that any person could reasonably expect to receive in a particular position, regardless of how proficient he might be in the work of that position—as long as he stays in that position, his top salary is the maximum for that position. (This does not affect the question of bonuses or extra payments for especially good work, or to counter increases in the cost of living, or for the payment of additional compensation where the payment is on a measured-production basis.)

In other words, there is a minimum and a maximum salary for each position classification. An employee in any given position will never receive less salary than the established minimum or more than the established maximum for that classification. When his position is changed, his compensation will be determined by the established limits of the new job.

HOW MANY INTERMEDIATE RATES?

In addition to the established minimum and maximum rates set for each position, there usually will be intermediate rates as well. If, for example, the minimum salary for a certain position is \$30 a week, and

GENERAL FOODS JOB RATING SCALE
FOR JOBS VALUED UNDER \$4,000. PER YEAR

Title and Location		Title of Job		Rated by		NUMERICAL RATING	
<p>FACTORS</p> <p><i>Education</i>—this is the formal preparation required to perform the job. Need not be obtained in school but assume school standards in this rating.</p> <p><i>Previous Experience</i> in same or related work. This is the practical preparation required and includes essential experience in preceding jobs.</p> <p><i>Training</i> Time on job. Time to comprehend all aspects of job. Include time for understanding any other job which is part of duties.</p> <p><i>Physical or Mental Fatigue</i> in job due to requirements or to working conditions. This is the "wear and tear" resulting from the work.</p> <p><i>Duties</i> to organize and handle outside of routine or extra "frequency". Weigh importance and "frequency".</p>		Rate the job on the basis of 100% performance. Mark in column at extreme right the rating value which represents degree to which factor applies to this job.* Use odd number ratings as 1, 3, 5, 7 and 9 to express intermediate degrees of value.					
		0	2	4	6	8	10
		<p>0</p> <p>Crummer School OFFICE jobs—admission applicable. FACTORY jobs—ordinary labor or equivalent.</p>	<p>2</p> <p>2 Years High School OFFICE jobs—about min. FACTORY jobs—leader of small gang; simple figuring; semi-trades.</p>	<p>4</p> <p>High School Graduate at OFFICE jobs—ordinary clerical, typing, etc. FACTORY jobs—better clerical, supervisory and trades.</p>	<p>6</p> <p>H.S. plus Bus. or Voc. School OFFICE jobs—major cler., bkkg. or sec'y. FACTORY jobs—dept. heads and foremen.</p>	<p>8</p> <p>College Graduate OFFICE or FACTORY jobs—major superv., some advanced office, chemistry, engineering, necessary.</p>	<p>10</p> <p>College Grad. plus Technical OFFICE or FACTORY jobs—Reserve for places where grad. tech. spec. preparation is necessary.</p>
		<p>1</p> <p>None OFFICE jobs—posibly manager. FACTORY jobs—strictly common labor.</p>	<p>1</p> <p>1 Year OFFICE jobs—minor clerical or FACTORY jobs—important labor.</p>	<p>2</p> <p>2 Years OFFICE jobs—for a/c, cler., memo. FACTORY jobs—many proc. & machine tending.</p>	<p>3</p> <p>3 Years OFFICE jobs—for bats, cler., sten. or equiv. FACTORY jobs—some trades; min. for leader.</p>	<p>4</p> <p>4 Years OFFICE jobs—sub-stan back ground & knowledge. FACTORY jobs—trades and typical foremen.</p>	<p>5</p> <p>5 Years or More OFFICE or FACTORY jobs—Reserve for important supervisory or technical jobs.</p>
		<p>Very Little</p>	<p>1 Month</p>	<p>3 Months</p>	<p>6 Months</p>	<p>12 Months</p>	<p>18 Months or More</p>
		<p>Very Light</p> <p>For simplest case of mind or body; some easy routine job.</p>	<p>Moderate</p> <p>Where occupant is seldom extended; many ordinary routine jobs.</p>	<p>Average</p> <p>For normal activity at usual types of work under good conditions.</p>	<p>Active</p> <p>For busy jobs that keep occupant on his toes most of time—somewhat above average.</p>	<p>Strenuous</p> <p>For unusually busy or exacting jobs where endurance is taxed frequently.</p>	<p>Extremes</p> <p>Reserve for the most severe jobs.</p>
		<p>Very Few</p> <p>Simplest labor jobs or equivalent take this rating.</p>	<p>Recognized Factor</p> <p>For jobs that are well routinized, or directed but have some details.</p>	<p>Substantial Number</p> <p>About right for job on varied work—typical clerk or leader of small gang.</p>	<p>Important</p> <p>For jobs where details outside of routine control merit extra consideration.</p>	<p>Very Important</p> <p>For jobs where details constitute a big problem—should be important details.</p>	<p>Extremes</p> <p>Reserve for important jobs with mass of details that cannot be routinized.</p>

COMPENSATION OF OFFICE EMPLOYEES

FACTORS	Rate the job on the basis of 100% performances. Mark in column at extreme right the rating value which represents degree to which factor applies to this job. Use odd number ratings as 1, 3, 5, 7, and 9 to express intermediate degrees of value.					NUMERICAL RATING
	0	2	4	6	8	
Quality requirements—extent job demands care and skill. Weigh "care," "skill," "accuracy" and "frequency of application."	<i>Minor Consideration</i> For all low-grade jobs where there is little need or opportunity for care or skill.	<i>Recognized Factor</i> For jobs where quality is of enough importance to become a factor.	<i>Ordinary OFFICE job</i> — FACTORY job— many jobs and many tendencies.	<i>Important</i> Office and factory jobs requiring special care and precaution.	<i>Very Important</i> For jobs which require undivided attention and where failure would be a serious matter.	<i>Exceptional</i> Reserve for the most exacting jobs—great concentration plus high skill.
Responsiveness—extent to which initiative and energy are required on problems outside the control of routine or supervision. Weigh "importance" and "frequency."	<i>Very Little</i> For jobs where little or no resourcefulness is required.	<i>Occasional</i> For jobs particularly well routinized or directed.	<i>Frequent</i> For jobs requiring independent thinking and action possibly once a week.	<i>Daily Problems</i> For jobs requiring independent thinking and action almost daily.	<i>Great Deal of Independent Thinking</i> About right for many of the high-grade supervisory jobs.	<i>New Problems Constantly</i> Reserve for jobs where it is necessary to face and decide important matters constantly.
Versatility—number of major skills or operations required. Weigh number and quality of talents, recognizing that some might rate more and others less than 1 credit.	<i>1 Credit (Explain)</i>	<i>2 Credits (Explain)</i>	<i>3 Credits (Explain)</i>	<i>4 Credits (Explain)</i>	<i>5 Credits (Explain)</i>	<i>6 Credits or More (Explain)</i>
Cooperation and Personality—need for tact and agreeableness in working with others. Allow for outside contacts.	<i>Very Little</i> For jobs where contacts are unimportant.	<i>Below Average</i> For ordinary rank and file jobs where occupants merely work together in groups.	<i>Average</i> For jobs where occupant must contact others to some extent as well as the boss.	<i>Above Average</i> For important contacting jobs where factor should get some extra recognition.	<i>Very Important</i> For major contacting positions with customers or personnel.	<i>Exceptional</i> Reserve for jobs where personality and ability to cooperate are primary qualifications.
Responsibility—relation of job to company assets and success of business. Base on reasonable assumptions and include both tangible and intangible effect on product, equipment, and goodwill. Consider checks and supervision.	<i>No Direct Relation</i> For jobs that involve practically no loss or gain to the Company.	<i>Very Little Relation</i> For jobs where effect of gain or loss is estimated \$1,000. or its equivalent.	<i>Moderate</i> For jobs where effect of gain or loss is estimated not to exceed \$5,000. or its equivalent.	<i>Important</i> For jobs where effect of gain or loss is estimated not to exceed \$10,000. or its equivalent.	<i>Very Important</i> For jobs where effect of gain or loss is estimated not to exceed \$25,000. or its equivalent.	<i>Directly Affects Success of Business</i> Reserve for jobs where effect of gain or loss is estimated to reach \$50,000. or its equiv.
* For purposes of general uniformity follow the explanations on this rating sheet as closely as possible but do not interpret narrowly. † For factory jobs base on Light, Light Medium, Medium, Medium Heavy or Heavy work as explained in the Standard Practice Instructions.						TOTAL RATING FOR THIS JOB

FIG. 77.

the maximum \$36 (or 75 cents an hour and 90 cents an hour for a 40-hour week), there may be one intermediate salary of \$33, or there may be two of \$32 and \$34. (Reckoned on an hourly basis, there are 15 possible intermediate points between 75 cents an hour and 90 cents.)

Just how many intermediate points should be provided will depend largely upon how long it should take a beginner at the minimum rate to increase his worth to the company to justify the maximum rate. Also, the frequency of salary adjustment may be a factor. If salaries are adjusted twice yearly, the need of more intermediate rates is evident; if salaries are adjusted annually, fewer intermediate rates are called for.

Suppose, for example, that in the above position it was determined that it would take 2 years for a beginner to reach the maximum. Starting at \$30, the salary would be increased to \$33 on the first anniversary of employment, and to \$36 on the second, provided the services rendered were satisfactory. If salary adjustments were made semiannually, the first increase would be to \$32 in 6 months from the date of employment, to \$33 in one year, to \$35 in another six months, and finally to \$36 at the end of two years. If a concern's policy is to consider each new employee as temporary for a stated period, such as 3 months, for example, the first increase could be made effective, if desired, at the time the employment becomes permanent.

HOW THE PLAN WORKS

The fact that a certain position has a minimum salary does not mean that every employee who enters that position will receive the minimum at the start. A beginner would, but a beginner is one who meets the minimum qualifications.

Again, an employee in a stated position does not have to remain in it until he receives the maximum salary for the position before he can be promoted to a higher one. The limits are for the position, and when an employee is transferred or promoted to another position, his salary is immediately subject to the limits of the new position.

The salary limits for each position usually overlap those of the one next above and below. If, for instance, the limits for three positions in line are \$30-\$36, \$32-\$38, \$34-40, it is obvious that an employee receiving the maximum in the lowest position may actually be getting more than a beginner in the next higher one. This does not mean that when an individual receiving the maximum for his present classification

is promoted to the next higher one, he will receive only the minimum for that higher position. Not at all; there would be no object or advantage to anyone in such an arrangement. He will either receive the same salary that he has been getting or will be paid the next higher rate in the new position, depending on the circumstances. He would never receive less; and it is always a question as to whether a promotion is really a promotion unless it is accompanied by an increase in pay.

GRANTING SALARY INCREASES

Salary increases, other than with promotion, are ordinarily granted under three sets of circumstances:

- (1) when an employee asks for an increase and there is no reason for not giving it to him;
- (2) when the custom is to give increases automatically and periodically, such as every 6 months or year;
- (3) when deserved, as shown by the employee's performance on the job.

The first and second were discussed at the beginning of this chapter; they are generally unsatisfactory, even though too frequently the case. The first is unfair to the timid employee who, though competent, hesitates to ask for an increase. The second holds out no incentive to the employee except to be careful not to do anything that might sever his connection with the company; if he stays long enough and there is no top salary limit for his job, he will eventually be receiving more than either he or the job is worth.

The third circumstance—basing increases upon meritorious performance on the job—is obviously the most desirable, provided there is some satisfactory way of demonstrating that performance and measuring it. Since measurement of office work is explained in the chapter on that subject, we shall consider only the other aspect at this time.

RATING PLANS

A simple though not wholly satisfactory method involves rating the employee by his superiors. The value of any rating method depends upon three things: the factors to be rated, the opportunity for observation by the one doing the rating, and the excellence and fairness of his judgment. As far as possible, all bias should be eliminated; this is not an easy object to accomplish, but bias can be lessened, at least.

PERFORMANCE RATING

The method of rating an employee by his superiors is often called "merit" rating. Where an employee is rated for the purpose of evaluating his ability and performance on the job, in order to determine the money value of his services at the time, the term "performance" rating would seem to be more appropriate than merit rating. The factors on which performance is rated are quantity of work done, quality of the work, knowledge of the job, and attendance. An employee should be paid for what he knows or does. It is a question whether other than performance factors should enter into salary administration.

MERIT RATING

On the other hand, if an employee is being rated for the purpose of determining his potentiality from the viewpoint of promotion, personality factors should also be rated, in addition to performance. Employees who rate high in job interest, intelligence, and leadership usually accept increased responsibility more readily than those with lower personality grades. Since replacement of key employees is a constantly recurring problem in large corporations, the manager should know which employees are most likely to succeed upon promotion to more responsible positions. The term "merit" rating would seem more appropriate to this procedure, as distinguished from "performance" rating alone.

In other words, performance rating refers to performance on the job, desirable information to have when considering salary increases. Merit rating also includes performance on the job and in addition such personality factors as the management wishes to consider in connection with promotional possibilities.⁹

The rating chart shown here divides performance factors from personality factors, yet makes the rating of each essentially simple.

FREQUENCY OF RATINGS

How often ratings should be taken is another problem. Some concerns rate their employees every 6 months; others, once a year. In-between ratings may of course be taken at any time, whenever the need for a current rating arises. Too frequent ratings take more of a supervisor's time than would seem to be justified, since changes in an em-

⁹ For an excellent discussion of this point, see L. W. Ells, "Merit Rating That Really Works," in *American Business*, Vol. 16, No. 7, pp. 14, 15, 39.

ployee's performance and personality factors do not take place quickly over a short period. The rating sheets are kept in the employee's folder, for reference when desired.

Annual Performance and Personality Review							
NAME							
PRESENT JOB CLASSIFICATION							
A. PERFORMANCE FACTORS (for salary administration and promotion)							
1. Quantity or Volume	Very low output <input type="checkbox"/>	Below standard <input type="checkbox"/>	Required amount <input type="checkbox"/>	Higher than average <input type="checkbox"/>	Very high output <input type="checkbox"/>		
2. Quality of Work	Very careless—slovenly <input type="checkbox"/>	Many errors—untidy <input type="checkbox"/>	Normal mistakes <input type="checkbox"/>	Neat usually accurate <input type="checkbox"/>	Very exact <input type="checkbox"/>		
3. Knowledge of Job	Needs training badly <input type="checkbox"/>	Weak on fundamentals <input type="checkbox"/>	Enough for job <input type="checkbox"/>	Well informed <input type="checkbox"/>	Accurately informed <input type="checkbox"/>		
4. Attendance	Often late or absent <input type="checkbox"/>	Irregular <input type="checkbox"/>	Occasionally late or absent <input type="checkbox"/>	Seldom out or late <input type="checkbox"/>	Never late or absent <input type="checkbox"/>		
B. PERSONALITY FACTORS (for promotion only)							
5. Job Interest	Can't start any job <input type="checkbox"/>	Slow to get under way <input type="checkbox"/>	Satisfactory <input type="checkbox"/>	Eager to start job <input type="checkbox"/>	Initiates and starts job <input type="checkbox"/>		
6. Intelligence	Sees and hears little <input type="checkbox"/>	Mixes details <input type="checkbox"/>	Average analysis <input type="checkbox"/>	Good reasoning <input type="checkbox"/>	Genius <input type="checkbox"/>		
7. Leadership	Always follows others <input type="checkbox"/>	Indifferent—can't lead <input type="checkbox"/>	Average—gets along <input type="checkbox"/>	Satisfactory leader <input type="checkbox"/>	Willingly followed <input type="checkbox"/>		
8. Planning	Can't find answers <input type="checkbox"/>	Flounders—copies only <input type="checkbox"/>	Average for job <input type="checkbox"/>	Usually sound <input type="checkbox"/>	Always finds solution <input type="checkbox"/>		
9. Drive	Can't decide or organize <input type="checkbox"/>	Faulty—too late <input type="checkbox"/>	Adequate <input type="checkbox"/>	Sound and deliberate <input type="checkbox"/>	Accurate and fast <input type="checkbox"/>		
10. Follow-Through	Needs constant prodding <input type="checkbox"/>	Leaves loose ends <input type="checkbox"/>	Average—requires check <input type="checkbox"/>	Concludes without help <input type="checkbox"/>	Completes thoroughly <input type="checkbox"/>		
Graded by							
Approved by							
Date							
(Use reverse side for comments)							

FIG. 78. (Courtesy of American Business.)

ADVANTAGES OF SALARY STANDARDIZATION

With a salary-standardization plan carefully worked out and in operation, the following advantages may be expected:

1. Every individual knows that he is being paid as much as every other individual in the same position. This knowledge removes one very great source of discontent.

2. Every individual knows that he is receiving as much as or more than he would get for the same work elsewhere in the same community. This removes another source of uneasiness.

3. Every individual knows that his progress in his position and in the company depends on his own efforts; he knows what he may expect in

These questions provide a guide by which the management can gauge the adequacy of its office personnel policies. Formalization is not so important as the spirit in which the policies are administered.

1. Is the over-all industrial-relations program for white-collar employees sound, constructive, and effective?
2. Do the supervisors understand its objectives and the role they play in accomplishing them?
3. Is there a working two-way communication system between top management and its office employees?
4. Is there an integrated and comprehensive training program for supervisors?
 5. Does it include all levels of management?
 6. Does the training program stress the importance of human relations in the successful operation of a business?
 7. Is the effectiveness of the program measured periodically?
 8. Are personnel policies regarding office employees consistent in all departments, or left to the discretion of the executive in charge?
 9. Is the plan of promotion clearly defined and are the employees fully aware of how it operates?
 10. Is a comprehensive job-evaluation plan in effect?
 11. If there is a merit-rating plan in operation, are the supervisors trained to estimate the abilities of their subordinates as objectively as possible?
 12. Are both the job-evaluation and merit-rating programs understood by the supervisors and the employees?
 13. Is the salary structure sound and balanced, and is its administration properly coordinated?
 14. Is salary policy explained to the employee, or is it "top secret"?
 15. Is there an unfair differential between the office worker's pay and the pay of the hourly employee in the shop?
 16. When pay increases have been granted to hourly employees, have the office workers received similar pay raises?
 17. Are office workers often required to put in hours of overtime for which they receive no compensation when there is some question as to whether they can be properly classified as executives, administrators, or professionals?
 18. Are the vacation, holiday, sick-leave, insurance, and pension plans for office help consistent with those for the factory personnel?
 19. Do women receive equal pay as men for the same work?
 20. Is there a way for an office employee to express a grievance and for management to resolve it when it occurs?

(Courtesy of Associated Industries of Cleveland.)

his present position, and he knows what he must do to qualify for a higher paid position. This knowledge acts as a spur to ambition and a stimulus to sustained effort.

4. All secrecy with regard to salaries is done away with. The company and its employees know what to expect of each other, and what is expected, and can concentrate on the main business in hand—giving customers the very best service possible.

OFFICE UNIONS AND SALARIES

Within the last decade there has been a definite increase in the unionization of office and clerical employees. According to the president of the United Office and Professional Workers of America, the country's largest office union, successful union relationships are founded upon a plan of salary standardization and administration like that described in this chapter, worked out by the union and management jointly, under a contract.¹⁰ Since union contracts cover other points besides salaries, the office manager should be familiar with the background and general procedure involved in negotiations with office unions or other groups or individuals claiming to represent his office employees. These negotiations are called "collective bargaining."

Before the passage of laws affecting the relations between management and labor, negotiations of office workers with employers were on an individual basis, except in certain fields where the office workers were unionized, such as railroad offices, postal clerks, and other Federal and state government employees. In negotiating with an employer, an individual worker was at a serious disadvantage, for the employer had the final decision, which the employee could take or leave; since his livelihood was involved, he usually took it. Nor was there legal compulsion upon an employer to negotiate with groups of his office employees, in the absence of a specific agreement to do so.

COLLECTIVE BARGAINING

With the passage in 1935 of the National Labor Relations Act (the Wagner Act) and in 1947 of the Labor-Management Relations Act (the Taft-Hartley Act), a tremendous impulse was given to collective bargaining whereby employers and employees were compelled to negotiate with each other, under severe penalties for noncompliance with the law. No longer could an employer refuse to negotiate with his employees;

¹⁰ See *NOMA Forum*, Vol. 21, No. 3, p. 8.

nor could a union refuse to negotiate with an employer.¹¹ The two acts named are Federal laws, and many states have passed similar legislation in order to bring the requirements into force within state jurisdictions. Many protections are provided for the union, for the employer, and for the individual employee. Additional experience with the way the law works out will probably lead to further modifications.

The purpose of collective bargaining is to establish a definite understanding between an employer and his employees as to certain conditions of employment, to reduce that understanding to writing in the form of a contract, and to provide orderly methods for taking up and settling complaints, disputes, grievances, or any other differences that may arise between the employer and his employees, without prejudice to either party by reason of having made a complaint.¹²

An employee who complains of a grievance cannot be discharged for bringing it up. He must be heard, in the manner provided for in the contract. The likelihood of arbitrary action by either party to the detriment of the other is appreciably lessened.

FIRST STEPS IN COLLECTIVE BARGAINING

Two primary problems are presented in connection with the unionization of office employees: the determination of the "appropriate bargaining unit" and the selection of the "agency for collective bargaining."

DETERMINING THE APPROPRIATE BARGAINING UNIT

Ordinarily, all the office employees of one company would be considered an "appropriate bargaining unit" if the employees themselves so wished; supervisors would be excluded, as being part of management. If there is a dispute, the National Labor Relations Board will determine the appropriate bargaining unit for the clerical employees concerned.

The most frequent occasion for disputes arises when a group of non-

¹¹ Section 7 of the Wagner Act states that employees "shall have the right to self-organization, to form, join, or assist labor organizations, to bargain collectively through representatives of their own choosing, and to engage in concerted activities, for the purpose of collective bargaining, or other mutual aid and protection."

¹² The Taft-Hartley Act defines collective bargaining thus: "For the purposes of this section, to bargain collectively is the performance of the mutual obligation of the employer and the representative of the employees to meet at reasonable times and confer in good faith with respect to wages, hours, and other terms and conditions of employment, or the negotiation of an agreement, or any question arising thereunder and the execution of a written contract incorporating any agreement if requested by either party, but such obligation does not compel either party to agree to a proposal or require the making of a concession."

clerical employees within the company desires to have the clerical group combine with it to form an appropriate bargaining unit. If the other group is a factory group, the NLRB will not ordinarily approve the combination, especially if the Board considers that the office employees have distinct interests from the factory employees and that their status and function are dissimilar. Factory clerical workers, however, might, if they wished, be included with production workers to form an appropriate bargaining unit. If there is a question, the Board will require an election to be held to determine the desires of the clerical workers. The exclusion of office workers from joining a production group because of the confidential nature of their work would depend largely upon whether the Board decided that adequate evidence had been presented to justify their status as confidential employees.

SELECTING THE AGENCY FOR COLLECTIVE BARGAINING

After the appropriate bargaining unit has been determined comes the selection of the agency for collective bargaining, that is, the individual or group which will meet the employer and conduct the negotiations with him on behalf of the employees included in the bargaining unit. The agency for collective bargaining may be a union, it may be an independent organization, or it may be one person. Whichever it is, it must represent a majority of the employees in the bargaining unit. This may be determined, in the case of unions requesting such recognition, for instance, by checking the cards of union members against the payroll. In case the employer declines to recognize a group or individual as the agency for collective bargaining for the appropriate bargaining unit in question, the Board must hold an election.¹³

NEGOTIATING THE CONTRACT

The designated agency for collective bargaining will meet with the employers' representatives to negotiate a contract between the em-

¹³ For additional data about office unions and collective bargaining, as well as specimen contracts and contract clauses, see the *Handbook for Office Managers*, published by NOMA, 1947, pp. 251-278; and *Collective Bargaining in the Office*, published by American Management Association, 1948. Additional helpful references include *Survey of Personnel Practices in Unionized Offices*, AMA, 1948; *Office Unions*, NOMA, 1947; *Collective Bargaining Manual*, NOMA, 1948; *Group Bargaining Activities*, NOMA, 1947. The last two named have bibliographies, as well. The Bureau of Labor Statistics of the U.S. Department of Labor has prepared a revision of its *Bulletin 686*, "Union Agreement Provisions," containing hundreds of clauses from union agreements, classified by topic, well worth study by anyone desiring to master the subject.

ployer and the agency. This contract will usually cover wages, hours (including overtime, holidays, vacations, sick leave), seniority (including transfers, promotions, layoffs, and discharge), working conditions, and grievances. (See pages 390-391.)

QUESTIONS FOR DISCUSSION

1. What is the problem involved in establishing beginning salaries?
2. Is this problem confined to initial salaries? Explain.
3. Why is the straight-salary plan of employee compensation both inadequate and unsatisfactory?
4. "The desire to perform some work is inherent in all normal, healthy persons." Do you agree? Comment.
5. "No work is ever performed without an incentive of some kind." Do you agree? Explain.
6. Are *incentive-wage* methods valuable in the office? Why or why not?
7. Comment on nonfinancial incentives in office work, illustrating your answer.
8. Why are financial incentives more potent than nonfinancial ones?
9. "A high salary is not necessarily an incentive to put forth the best effort." Why not?
10. Are financial incentives always effective in bringing forth extra effort? Why or why not?
11. What are two defects of profit sharing as an incentive?
12. State and explain two principles underlying the problem of determining the amount of extra pay that will serve as an adequate incentive.
13. What were Frederick W. Taylor's recommendations as to wage increases?
14. What reward is recommended for extra effort by office workers?
15. Describe the Leffingwell bonus plan in detail and illustrate your answer. Do you think this is a fair plan? Why or why not?
16. What is the effect of the Leffingwell bonus plan on the cost per piece? Why?
17. On what basis should a clerk who works on both standardized and unstandardized operations be paid?
18. "The bonus should not be figured on the amount produced each day." Explain and comment.
19. State four basic requirements to be considered in rewarding workers for first-class work, and comment on each.

20. Should the standard output be set at the level of the average worker? Why or why not?

21. If not, how should the standard be set, and how high should it be?

22. Is rigid inspection necessary? If so, why? If not, why not?

23. Comment on the imposition of penalties for defective work.

24. How long should the standard remain after it has been scientifically set? Why?

25. How may the section head be rewarded if his group earns a bonus? Is this reasonable? Why or why not?

26. What are two main objectives of a salary-standardization plan? Do you believe that those are fair objectives? Why or why not?

27. Upon what is a salary-standardization plan based?

28. What is job evaluation?

29. Name the four basic systems of job evaluation and describe each briefly.

30. What two steps are necessary before a start can be made on a salary-standardization plan?

31. What is meant by job classification?

32. Why should all jobs in the office be grouped in classes, so far as possible?

33. Which of the several occupational descriptions of the position of stenographer do you prefer? Why? Do you think you could write one better than any of those given in the text?

34. "Eventually all employees bearing the same job title will have substantially the same duties." How can this be brought about?

35. Why do you think Professor Riegel urged that certain terms be used and that certain other terms be not used in occupational descriptions? Do you agree?

36. How much time should be allowed to analyze the office positions and write the occupational descriptions of them? Why?

37. What is the value of using a rating chart like that of General Foods, for example?

38. What factors should be considered in determining the salaries to be paid?

39. What is meant by "relativity of salaries"? Why is it important, if it is?

40. Comment on the maximum and minimum salaries for each position.

41. What is the value of intermediate rates?

42. Will every employee who enters a position receive the minimum for that position at the start? Explain.

43. Does an employee have to remain in a position until he receives the maximum salary for it before he can be promoted to a higher position? Explain.

44. Under what three sets of circumstances are salary increases ordinarily granted? Comment briefly on each of the three.

45. Explain the difference between merit rating and performance rating, and state the value of each.

46. How often should ratings be taken? Why?

47. What four advantages may reasonably be expected from the operation of a carefully worked-out plan of salary standardization?

48. What should an office manager know about dealing with office unions?

49. Upon what are successful office union relationships founded? Do you believe this? Why or why not?

50. What is collective bargaining, and what is its purpose?

51. What are the two primary problems in connection with the unionization of office employees?

52. What is an "appropriate bargaining unit," and how is it determined?

53. What is the "agency for collective bargaining," and how is it selected?

54. What will a contract with an office union usually cover?

PROBLEM

The Popular Priced Stores, Inc., is a chain-store organization. In its home office, where 500 clerks are employed, it is proposed to use incentive wage-payment methods. However, there are many operations which are not repetitive in the ordinary sense of the word, though naturally each situation is not entirely a new circumstance but repeats itself at irregular intervals. There are other jobs which are, with some difficulty, measurable but which are handled by very small groups of office workers, sometimes but one or two in a group. Just how far should this company go in installing bonus plans and, if completely, what is to be done in the two instances mentioned above?

“Scientific management means a constant search for the facts, the true actualities, and their unprejudiced analysis.”—ALFRED P. SLOAN, JR.

XXIII

SCIENTIFIC ANALYSIS

As set forth in Chap. II, the first principle of scientific office management is stating the problem, that is, defining the work to be done and stating its purpose. The second principle is analyzing the problem, so that we may be sure that we understand what the problem actually is—not what it seems to be. Scientific analysis, as the term is applied in scientific management, signifies a most careful consideration of a business problem, by following a definite mode of procedure. Its requirements are as follows:

1. *A definite objective.*

2. *The analysis of the problem through a careful study of the purpose or objective.* In actual practice, this second requirement is inseparable from the first.

3. *A series of exhaustive observations or experiments* and a careful collection of data, all, of course, having a practical bearing upon the objective and directly connected with it.

4. *A clear, complete, and thoroughly accurate record of all the experiments and observations* made and a record of the progress of the investigation, not in mere memorandum form, but written and classified in such manner as to be understandable by others, so that anyone may see the discovered facts in their true relationship.

5. *A thorough and exhaustive study of the facts* thus collected. Their mere collection is not sufficient for the solution of the problem, for in most cases the solution is by no means immediately obvious. It frequently happens also that the collector of the facts is not their interpreter; whether or not this is so, it is certain that the facts gathered must be studied and interpreted by someone.

6. *A permanent record of the results* of this interpretation of the facts, put in such shape that the knowledge thus gained may be used immediately or at any future time.

THE THREE MAJOR STEPS

The first three steps of scientific analysis may be called "scientific thinking." This scientific method of thought is an orderly, logical, mental process, which must be assiduously cultivated and is acquired only through much practice and experience; in other words, it is *trained thinking*.

1. *The Formal Definition of the Objective.* There must be a definite purpose, a definite objective.

Some method must be devised to make it obligatory to define in writing the purpose of each investigation. One way is to give each problem an assignment number. Then an assignment book can be kept, in which each assignment is entered in numerical order, together with its description in the form of a complete statement of the purpose of the investigation. This record can then be cross-indexed by subject for future use. If the objective is fully defined on the record of the problem itself, it may be briefed on the assignment record, but it should be written out completely somewhere.

2. *The Analysis of the Problem.* This analysis must be performed with great care and accuracy. Since each problem is divisible into many factors, it is especially necessary to guard against the intrusion of extraneous matter not covered in the definition of the purpose.

The analysis of the problem should begin by reviewing all the knowledge at present available on the subject, examining the best books and periodicals procurable. If there are in the office any previous records of similar work, these should also be studied. Experts should be consulted, that is, persons experienced in handling the particular problem to be solved. It will often be found that employees in inconspicuous positions are in reality experts on some particular subjects. Occasionally, experts outside of the office must be consulted; such experts usually pay their way. At times much valuable information can be procured from the representatives of the manufacturers of office devices and equipment, but such information, it should be remembered, is usually biased and therefore needs careful weighing and consideration.

No available source of information should be neglected. All this preliminary work should be done so that time will not be wasted in solving problems that are already solved, just as most inventions are afterward reinvented many times. But while it is advisable always to ascertain all that has been done before on any business problem, care must be taken that this does not lead the investigator into the insidious habit

of imitating what others have done, for mere imitation will not raise the standard of office management. Nevertheless, a study of what others have done will be of material aid in the solution of any problem, even if we only learn what to avoid.

It will simplify the analysis of problems if the investigator will, from time to time, frame skeleton outlines of the main factors. When thought is once applied to the subject and recorded in skeleton form, repetitive mental labor can be saved by using the original outline again and again, especially when considering equipment problems, for example.

3. *The Making of Observations.* The collection and interpretation of the related facts involves the gathering of statistical and other data, the making of observations and experiments; this work, which must be complete, accurate, and exhaustive, includes also the interpretation of these facts and the permanent use of such of them as are found valuable in the formation of standards to be established.

If the analysis has been carefully made, it will show clearly just what facts are to be observed; the observer should confine his attention to these facts only and observe them *one at a time*, a cardinal rule in all scientific observations. It is not possible to observe several factors simultaneously; hence, all scientific investigators, in any field, deliberately limit their observation so that they may fix their attention upon one thing at a time—this rule is as imperative for investigations in the office as it is in the laboratory.

It is, however, equally impossible for a trained observer of waste and inefficiency to overlook glaring defects which thrust themselves upon his notice while he is observing some particular factor or condition. These facts, while not directly germane to the subject in hand, are nevertheless valuable—too valuable to ignore or forget. It is good practice, in such cases, to stop the investigation long enough to record such facts, then dismiss them for the time being and resume the investigation. At the end of the day, these casual observations are recorded separately and filed as miscellaneous matter relating to the problem in general. In this form they constitute valuable leads to future work and in some cases may be found to have a bearing upon the problem being studied.

THE MAKING OF SCIENTIFIC EXPERIMENTS

There is relatively little literature available dealing with the fundamental principles underlying scientific experimentation, what consti-

tutes a scientific experiment, and the conditions governing its conduct. The office manager, therefore, who may not have had a scientific education will be at a loss to know how to proceed.¹

The result of this condition is that, on the one hand, while the subject itself is enveloped in comparative obscurity and is in a sense mysterious to the layman, on the other, much work that is heralded as scientific experimentation and accepted as such by the multitude would be scouted by the merest tyro acquainted with the fundamental principles involved in such work.

The chief difference between an ordinary experiment and a scientifically conducted one is that the latter is made under controlled conditions, and the results carefully recorded, while the former is not.

Scientific experimentation is popularly conceived of as connected with the term "laboratory," but that word, like its companions, "studio" and "atelier," is not usually conceived of as a workshop. Yet these three terms connote nothing more than a place where a certain kind of work is done, and the term "workshop" is applicable to all three.

Perhaps the classic example of the application of science to business is the extended experiment of Frederick Winslow Taylor to determine the laws underlying the cutting of metals. The genesis of the inquiry was Taylor's search to discover just what was a day's work for a machinist; he soon perceived that the difficulty in the way of its solution was the inability of anyone to say definitely and scientifically what could be expected of the machine under proper conditions. This difficulty had indeed been recognized before by other people, but Taylor set himself to solve it. He admits that he had no idea that the task would be as large as it ultimately proved to be, but nevertheless he began and conducted it rigidly along scientific principles of experimentation. One paragraph from his detailed description of the scope of the work may be quoted here, not only as showing the magnitude of the task, but as revealing the patience and minuteness with which it was wrought out. Mr. Taylor, after stating that the experiments covered a period of 26 years, adds the following:

The thoroughness with which the work has been done may perhaps be better appreciated when it is understood that we have made between 30,000 and 50,000 recorded experiments, and many others of which no record was kept. In studying these laws we have cut into chips with our experimental tools more than

¹ An excellent book on the scientific method is *The Elements of Research*, by F. L. Whitney, published by Prentice-Hall, Inc., New York, 1942. Although written primarily for graduate students in education, it can be read with profit by anyone who is seriously interested in scientific analysis.

800,000 pounds of steel and iron. More than 16,000 experiments were recorded in the Bethlehem Steel Company. We estimate that up to date between \$150,000 and \$200,000 has been spent upon this work, and it is a very great satisfaction to feel that those whose generosity has enabled us to carry on the experiments have received ample return for their money through the increased output and the economy in running their shops which have resulted from our experiments.²

But in a far larger sense the patience and thoroughness of this indefatigable scientist—for a scientist Taylor was in the very highest sense of the word—has been rewarded. The Bethlehem Company was not alone in enjoying the results of this scientific experiment, for, to quote Henry R. Towne, himself one of the foremost of America's industrial scientists, Taylor "has literally forged a new tool for the metal trades, which has doubled or nearly trebled the productive capacity of nearly all metal-cutting machines."³

That cynical philosopher of over 200 years ago, Swift, has one of his characters observe that he considered the greatest benefactor of his kind to be the man who made two blades of grass grow where but one had been known to grow before. Taylor has even more than qualified for this category.

There are probably no opportunities of such tremendous scope awaiting the scientific experimenter in office management, but there are innumerable places in that activity where scientific experimentation has never been attempted and where it would amply repay the effort expended.

Even where the subject studied does not involve any extended investigation, it is much better to employ the scientific method than to experiment in a haphazard yet costly manner, only to discover that the results are worthless.

DEFINITION OF A SCIENTIFIC EXPERIMENT

A scientific experiment may be defined as an observation or group of observations of a certain particular fact, made for a definite purpose, and under conditions which are controlled in such a manner as to permit the experimenter to observe the fact, unaffected by any variable factor or factors.

² TAYLOR, FREDERICK WINSLOW, "On the Art of Cutting Metals," *Transactions of the American Society of Mechanical Engineers*, Vol. 28, pp. 7-8.

³ Quoted by Frank B. Copley in his *Frederick W. Taylor, Father of Scientific Management*, as an introduction to the author's foreword, 2 vols., published by the Taylor Society, New York, 1923.

It naturally follows, then, that, if we propose to observe a particular fact, we must know with just what phase of that fact we are concerned. This implies our definition, or as it is sometimes called, the hypothesis. Also, if we are to separate the particular thing we wish to see and know from the things we are not concerned with, we must analyze the problem in order to discover all the factors and determine on ways and means to control them, if they interfere with our observation. Finally we must make and record the observations. This recording must be done at the time the observations are made, because it has been found that the records often contain elements which, if known exactly, are of great value in the solution of the problem; we cannot afford to trust our memory. Thus we perceive that a scientific investigation is a controlled and recorded investigation as to the truth or falsity of a hypothesis.

LIMITING THE PURPOSE OF THE TEST

After one has made a few preliminary attempts at scientific experimentation, he will soon discover that it is imperative to limit strictly the purpose of the test. Let us suppose, for example, that it is desired to test carbon paper. What do we want to know about it? One could almost exhaust the entire accumulated knowledge of science before one would know *all* there is to know about carbon paper. Do we wish to know of what it is composed? This means an exhaustive chemical analysis which may be either qualitative, that is, the particular elements of its composition, or quantitative, the amount of each element composing it. Do we wish to know how it is made? If so, this will involve another type of investigation.

For the purposes of the office manager, the most general need will be to know something of its use, or some particular fact concerning that use. And even here the purpose will have to be still further limited. We may wish to know whether or not a certain carbon paper will serve our needs. The question then arises, what are our needs? We need, let us say, a carbon paper which will (1) make satisfactory copies, (2) make a sufficient number of such copies, and (3) be economical in use. Even these simple needs require three distinctly different types of investigation and experiment.

First, what is a satisfactory copy? Is it one that can just be read by a person with good eyes, or a copy so conspicuous that it can be read even by a person with passably good but weak eyes? And what kind of light shall we use to make this test? There is a tremendous difference between daylight and weak artificial light, and little experiment is

needed to show that copy which cannot be read under artificial light can be easily read in diffused daylight, which may be several thousand times the intensity of the former.

Second, when we consider the number of copies we desire to secure, we immediately recognize that this will depend entirely upon (1) the thickness of the typing paper, (2) the thickness of the carbon paper, and (3) the strength or force of the impression made, as well as the particular grade of carbon coating on the paper.

Third, the economy of use at once brings in many other factors, such as price, longevity, manner of use, kind of persons who will use it, conditions under which the material must be stored and used, and so forth.

All this is a simple investigation, but to start it without a definite plan and a strictly limited objective would result in much wasted effort and little practical result; yet this is precisely the manner in which many tests are made under the pretense that they are really scientific investigations.

In order, then, to set the tests within the proper limits, it is necessary to make a preliminary survey of the problem to secure a correct perspective of it, to note what has already been done by others, to judge just what can be investigated and what is beyond the scope or possibility of investigation, with the means at the command of the investigator.

EXAMINING ALL THE AVAILABLE LITERATURE

When the problem has been stated in its simplest terms, and a rigid objective fixed, an exhaustive study should be made of the available literature on the subject. If there is a public library available, the problem may be taken to the librarian, who will get out the references on the subject, which should then be studied carefully. The matter may then be discussed with anyone who may be presumed on account of the nature of his knowledge and experience to be acquainted with the subject. All that has been published on it should be known before a single test has been made.

A word of caution is necessary here—one should be certain that the information given is correct. There are three ways to determine this: (1) Most scientific experimenters give not only the results of their observations but the method by which they were made, so that the reader can judge for himself whether the method followed was correct or admitted of a possibility of error; (2) the eminence and reputation of the authority must be considered—a popular story should not be given as much credence as the statement of a person known for his careful

research and investigation; and (3) the reader can frequently make a test to check the correctness of the observation described, though it is not possible to do so in all cases.

Misinformation is plentiful, rampant, and often very tenacious of life, even after its falsity is known.

DETERMINING THE METHOD OF MAKING THE TEST

Assuming that the problem has been correctly formulated, the previous work of others known, and all information verified, the method of making the experiment must now be thought out and decided upon.

Usually it is not possible to make a satisfactory experiment unless the conditions to be tested are magnified, diminished, or their proportions in some way changed for convenience in testing. For example, if it is desired to find, by means of a scientific experiment, how long in the ordinary course of use the mechanism of a filing drawer will last, it would be neither necessary nor practical to use such a drawer in the ordinary manner and record results over a period of years. This test—it has already been made—was carried out by constructing an apparatus which would mechanically pull open and slam shut a loaded file drawer; this was kept in action until the drawer mechanism collapsed. In this way the element of time was condensed by repeating the operation at short intervals, instead of comparatively long ones, as would be the case in ordinary use.

The purpose of this condensation, exaggeration, or magnification is to secure the control of some particular element of the problem, and to eliminate variables which are likely to creep in and destroy the validity of the results.

ELIMINATING OR CONTROLLING VARIABLES

In every problem subjected to experiment and test, there will be certain variable conditions which must in some manner be controlled, if that is possible, or if not, they must be allowed for, so as to leave a margin for safety and certainty; that is to say, the allowance should be somewhat greater if otherwise uncontrollable variables are involved, than if based on a supposed stable condition.

For example, in the test of the filing drawer, the variable of the manner in which a filed drawer is handled appears. It is obvious that if gently handled the construction will last much longer than if violently opened and shut. This variable—the manner of handling—was not,

and could not, in any scientific test, be eliminated, because at that point the human element entered into the problem. But it was allowed for by constructing the mechanical device so as to give the drawer rougher treatment than usual, thus allowing a large factor of safety. This test, however, did not take into account the variable of the effect of different atmospheric conditions upon the bearings; it was limited to the one variable feature of the operation of the drawers under normal conditions. The atmospheric conditions in the average office would not be appreciably harmful to the mechanism.

It is not necessary to test any elements which do not really affect the problem; at the same time, the greatest care should be taken to reduce to a minimum any possibility of error in observing the test of a single element.

In devising or determining the methods to be used for making any experiment, the above-described points must be carefully considered. Apparatus of some kind will probably have to be used; it is not advisable to construct special apparatus if instruments of the proper sort may be found, and at a reasonable price, for apparatus made by experienced instrument makers is usually much more accurate than any amateur or homemade device. While it is possible, for example, for anyone to make a simple photometer for measuring the intensity of light, it would have to be calibrated very carefully with an instrument known to be correct; otherwise the readings would have little scientific value. In such case it would be better to purchase a calibrated photometer from an instrument maker.

In considering apparatus, it is well also to remember that there are already in use many different types of devices for measuring weights, liquids, solids, electric currents, light, heat, strength of materials of all kinds under all sorts of conditions, and other objects and phenomena that at times must be subjected to test.

When the method of making the test has finally been determined upon, it should be put in writing, describing the apparatus to be used and the manner of observation, so that it will be possible for any subsequent observer to use exactly the same method of observation and verify the results.

AN IMPORTANT POINT

A word of caution is perhaps necessary here. The definite purpose of the experiment should never be lost sight of. There is a constant danger of shifting or changing the experiment to accommodate the apparatus.

If it is found that the apparatus used will not correctly determine the point or matter for which it was selected, then it must be discarded and replaced by one which will do the work and do it correctly. Under no circumstances must the experiment be sacrificed to the apparatus. This is one reason why the experimenter should secure beforehand as wide a knowledge as possible of the available means for making the experiment.

Before beginning the observations, a method for recording the results should be devised, so that it will be possible to record immediately and in final form to save copying, all observations *at the time they are made*. This is of primary importance, for if observations are not so recorded, they are unreliable, becoming less and less reliable the longer the recording is delayed.

The date of each observation should also be correctly recorded, as failure to do this may entail much useless work. Taylor recounts an instance of this omission, in the case of certain sets of experiments, some of which it was discovered afterward were made by the wrong method; because none of the record sheets was dated, it was not possible to distinguish the valueless records from the useful ones, the result being that the entire set of experiments had to be made over again. This is a common oversight, as at the time of making the observations the mind of the experimenter is not usually focused on such details, and it is dangerously easy to overlook them. Provide a place for the date on each sheet and see that it is filled.

In addition, every other detail that might conceivably affect the problem should be also recorded, such as the name of the observer—in some cases the sex and age, the type of apparatus used, a description of the material worked upon, if any, the tools, and so on. If atmospheric conditions are important, the temperature and humidity should be measured by a psychrometer. If the personal element enters into the problem—as it often does—the name, sex, age, experience, and any physical defects which may exist may have to be mentioned. If a machine is used, its name, make, model, and even serial number should be recorded.

It is always better to have more information than seems necessary, than to have less, for in the study that must afterward be given to the data thus accumulated, certain elements may depend upon information of this type. For example, if a test is being made of a dictating machine, it would obviously be necessary to know whether a man's or a woman's voice was being tested; if a test of something that required

reading was being made, the normality or otherwise of the eyesight employed would be an element of importance.

Even where great care is used in the making of observations, lack of knowledge of some underlying law relating to the subject may introduce errors, which in turn may be detected by making careful, detailed records which give all the facts.

ELIMINATING THE HUMAN ELEMENT

In all experiments the human element is present to a greater or lesser degree. It is notoriously variable and unreliable; wherever possible it should be eliminated or, if not, minimized to the smallest possible degree; in all cases it should be controlled or allowed for.

Only in some experiments upon or with automatic devices is it possible to eliminate the human element, and even here it is often present to an annoying degree. Even in experiments in mechanics, physics, or chemistry, where most of the laws are accurately known, the human element is present in the fallibility of the observer.

In all observation, even the simplest, there is the possibility of error attributable to this cause. If one were to weigh an object several times, even with most accurate scales, there would be slight variations in weight each time. These might be caused by air currents, or by the presence or absence of certain accretions such as dust or moisture, or by errors in observation. If this is true in such a simple, commonplace method of observation as weighing, it is much more true with observations the nature of which is not so well understood.

MAKE SEVERAL OBSERVATIONS

To eliminate, minimize, or control this possibility of human error in observation, there should always be a sufficient number of observations taken by a sufficient number of persons, so that the minimum of possible error can be achieved.

WHY VARIATIONS OCCUR

In comparing a certain number of observations made on one subject or object, we always find that no matter how carefully they have been made, they will differ slightly from each other. This variation is due

to two causes: the imperfectness of the instruments of measurement and of our own senses. These variations must not be confounded with palpable mistakes, such as occur in observations where a number is recorded incorrectly or the experiment improperly performed. Results due to the latter causes should, of course, be entirely rejected and not considered in any way in reaching our conclusions.

If we knew the true value and subtracted it from each of our measurements, the difference would comprise the total error, which can be divided into two parts. The first part is the constant errors, such as known imperfections in the apparatus, or tendencies on the part of certain individuals to estimate certain quantities either too high or too low. When we change the variables, these errors often occur also but generally according to some definite law. When we note that they alternately increase or diminish the results at regular intervals, they may be called "periodic" errors. If we know their magnitude, they do no harm, since we can allow for them and thus obtain a value as accurate as if they did not exist. The second part of the total error is due to some unknown defect in our apparatus. Such errors may be called "accidental" errors and are unavoidable.

STUDYING THE RESULTS OF THE EXPERIMENT

After the experiment has been completed, the recorded results must be studied to determine just what has been discovered. It may frequently be found that the results are negative, in the sense that they prove nothing. In such case the method of making the test may be called in question.

In order to discover any law that may be involved, it is often advisable to chart the results shown in the records. This will facilitate visualization and bring out points that would not be so instantly evident from an examination of the figures involved.

HOW TO ORGANIZE SCIENTIFIC ANALYSIS WORK

It cannot be expected that work of this nature can be performed in the spare time of any executive. Definite time must be allotted to it, and the amount so allotted will naturally depend upon several factors: (1) the necessity for it—in the reorganization of a poorly managed office, much more time should be allotted than would be considered necessary in an office that was functioning fairly well; (2) the availability of personnel—in small offices there may not be more than a

certain amount of time available for this work; (3) the size of the office—a large office can afford to spend much more for scientific research than a small one.

To be really effective, this work of analysis must be the responsibility of the management itself and should be an integral part of the organization. Really expert consultants, from outside the company, however, are valuable as guides or teachers to a member or members of the office organization who have been entrusted with this work; if the office is large enough, it would in most cases be more economical to consult them, but in no case is it profitable to allow an inexperienced person to carry on the work and purchase his training at the expense of his mistakes.

The work of the outside expert is profitable because of the teaching and guidance he gives the organization in helping it solve its own difficulties and assisting it in the development of a method of scientific control especially adapted to its particular conditions. When such a consultant is employed, it is best for the organization to arrange his services on some basis that will enable him to spread his work over a long period of time, rather than to try to concentrate it into a short period. The best consultants prefer a plan which enables them to serve a client 52 days in the year, 1 week apart, rather than 52 successive days, for the simple reason that far better service can be given.

WHAT RESULTS MAY BE EXPECTED FROM SCIENTIFIC ANALYSIS?

Conducted in the manner outlined in this chapter, scientific analysis may be expected to produce the following concrete results:

1. A better handling of the general work of the office, improved co-ordination of all the functions of the business, and, in consequence, the production of a better and more profitable organization.
2. A much more economical handling of the work, through the better training of clerks and the elimination of superfluous effort.
3. The creation of a superior morale, since well-trained clerks, working in a well-organized office, have a contented environment for their activities and consequently develop interest, ambition, and pride in their own work and that of the organization as a whole.
4. The development of the scientific control of the office activities in every department.

These results may be confidently expected from scientific-analysis work, carefully planned and organized, and thoroughly carried out in actual practice.

QUESTIONS FOR DISCUSSION

1. What does "scientific analysis" signify, and what six requirements are involved in its execution?
2. What is "scientific thinking" and why it is so called?
3. Why is it necessary to define one's objective formally?
4. Comment on the formal definition of the objective.
5. How would you proceed to analyze a problem?
6. What does the collection and interpretation of the facts involve?
7. Can an executive do this work in his spare time? Why or why not?
8. If an analysis of the problem has been carefully made, what will it show?
9. What should an observer do about glaring defects which he notices during his observations? Why?
10. What is the chief difference between an ordinary experiment and a scientifically conducted one?
11. What is the classic example of the application of science to business?
12. How many recorded experiments did Frederick W. Taylor make in trying to find out what constituted a day's work for a machinist? What is the significance of that fact?
13. Define or explain the term "scientific experiment," and comment on it. Why must the purpose of a test be limited?
14. Explain in detail how you would test carbon paper scientifically.
15. Why is a preliminary survey necessary before making a test?
16. Would it be well to examine the available literature on the subject of an investigation? If so, why? If not, why not?
17. How would you determine whether the information in the literature is correct?
18. Why is it sometimes necessary to magnify, diminish, or change the proportions of some of the conditions to be tested? Illustrate your answer.
19. How may variables be controlled or allowed for? Why?
20. Which is better, to make one's own testing apparatus, or to buy one made by a craftsman? Why?
21. Comment on the recording of the results of an experiment. When should this be done? Why?
22. "It is always well to have more information than seems necessary." Why?
23. Why should the human element, present in all experiments, be

eliminated, minimized, controlled, or allowed for as much as is possible? How may this be done?

24. Comparison of all the observations made on the same subject or object will always show some variations. To what are these variations due?

25. Explain the term "total error," and state the two parts into which it may be divided. Why is total error important?

26. How and why are the recorded results of an experiment studied?

27. How should scientific-analysis work be organized?

28. Comment on the use of outside expert consultants.

29. What results may be expected from scientific analysis?

PROBLEM I

It is a well-known fact that forms printed on blue paper are difficult to read under certain circumstances. How would you proceed to make a scientific experiment to determine just what is the best color or tint to use for forms upon which there is much writing and reference?

PROBLEM II

The Western Pencil Company has been having trouble with its filing system. Department managers declare that frequently they cannot find previous office correspondence. The office manager states that he has had three different file clerks in the past three months, but that each resigned after working a few weeks.

How would you proceed to analyze this situation to determine what, if anything, is wrong?

"There is no office work that cannot be measured with more or less accuracy."—H. A. HOPF.

XXIV

THE MEASUREMENT OF OFFICE WORK

It has been well said that the possibility of measurement is the beginning of all science; the science of management is no exception. When management depends upon such unstable and indefinite things as off-hand judgments, "hunches," and luck, there can be no science and but little progress; but when results accomplished can be measured and compared with a definite standard, when the accomplishments of an executive can be definitely measured and the efficiency of a worker can be compared, not with other workers who may or may not be efficient but with a definite standard or unit of measurement, then and then only can science in management be said to appear. Until then there is no foundation upon which to construct a science.

THE PURPOSES OF MEASUREMENT IN OFFICE WORK

There are four main purposes of measurement in office management:

1. *To Measure the Over-all Efficiency of the Office Management Itself.* That this is needed is too obvious to require argument.

2. *To Measure the Efficiency of Some Particular Department or Feature.*

3. *To Measure the Efficiency of the Office Workers.* It is not sufficient to know that Mary Smith is a fast worker and seems to keep busy all day, or to know how many letters are written, or invoices, postings, and so forth, are made, unless at the same time one knows how many should be made.

4. *To Control the Work by Sections and Departments.* For this purpose there is required a method of measuring the work on hand, the work received, and the work performed.

MEASUREMENT DIFFICULT, BUT NOT IMPOSSIBLE

It may be admitted at the outset that office work is difficult to measure, much more so than work on a machine in a factory, more difficult perhaps than any other kind of productive work. Possibly for this reason mainly, few office managers attempt its measurement.

Among the various excuses, objections, and explanations offered to extenuate neglect of such measurement are the varied character of the work, the different times required per piece for the same kind of work, the cost of measurement, and the apparently utter impossibility of measuring certain kinds of office work. These objections must be given consideration, for all contain some truth.

Varied Character of the Work. It must be admitted that the varied character of office work makes measurement difficult, but this is by no means an admission that it is impossible. It may, for example, be claimed that no two letters are alike, unless they happen to be form letters, or that a clerk may be required to do 50 different things, and perhaps 8 or 10 different kinds of work in a day; it must be agreed that such work is difficult to measure, but not necessarily impossible.

Different Times per Piece. Again, in many cases, though the worker may be engaged on the same kind of work, each piece will require a different time to do. Thus, such work as typing invoices seems at first glance to be readily measurable, but when we count the entries upon different invoices we find that they vary from 1 to perhaps 100 items. Even so, the work is entirely measurable.

Cost of Measurement. This objection is based upon the assumption that the cost is high, an assumption made simply because the subject has been given no consideration. Superficial observation may seem to show that it would require as many clerks to count the work as to do it, an utterly unfounded apprehension. The work of counting can be done easily, inexpensively, and profitably, also.

Impossibility of Measurement. Finally, it may at once be admitted that there are certain kinds of work which in their very nature cannot, and never will, be measured. Thus, it is impossible to discover how long it will require a person to think out a plan, compose a difficult letter, or draft a report, and we cannot conceive of any device being invented to measure these or similar kinds of work. They must be frankly admitted to be immeasurable, but at the same time it should be remembered that they form but a very small part of the general office work.

THE IMPORTANCE OF MEASUREMENT

While all these objections are admitted for what they may be worth, the stubborn fact remains that if the amount of work done is not known, the office manager cannot compare it with what should be done; this in turn means that he cannot know whether he is managing the office efficiently, or keeping on the force more clerks than are actually required. Neither can he know, in such case, what volume of work there is to do; and not knowing this, he cannot judge what working force is needed.

Finally, he has no reliable method of judging between good workers and poor ones. If he must discriminate between them by casual observation and guesswork, the clerks will accuse him—though perhaps not openly—of favoritism, and many of them will feel that their work is not appreciated. They will, in short, consider that he does not know, and they will be correct.

These are the conditions that confront the office manager when the problem of measurement first comes up for consideration; they constitute real, not imaginary difficulties, and to some seem impossible to overcome. So formidable do they appear that it is not surprising that office work is rarely measured, or that such work as is done is either produced by driving and needless exertion, or that some office managers attempt the solution of the problem by having a surplus of clerks.

Yet in another sense, it is equally surprising that so few office managers have attempted to overcome these difficulties by some approach to a scientific procedure. Those who have done so have discovered that the problem, though difficult in parts, is nevertheless to a very large extent possible of solution; they have not only made great progress by their attempts in this direction but have also found it most profitable besides.

THE NEED FOR A UNIT OF MEASUREMENT

Measurement of any kind must be in terms of a unit, the kind of unit to be used depending, of course, upon the purpose of the measurement and the end to be achieved. It is true that a single unit may be used for many different kinds of measurement, but such use is not always convenient. In some cases a very minute and accurate measurement is needed; in others one less fine will serve equally well for the purpose and be much more convenient besides. In short, the end to be achieved determines the kind of unit to be used.

For very fine measurements of length, the engineer or scientist may use either the metric system with its millimeters, or the inch scale divided into thousandths or even millionths. The unit in such cases is either the millimeter or the inch or some definite fraction thereof.

For ordinary measurements, such as those used by a carpenter or cabinetmaker, working by hand and with hand tools, the inch and foot are sufficiently accurate, and the divided foot rule is an adequate instrument. A carpenter relies mostly on his eyesight for the measurements he needs. He does not know how to use a micrometer, and if he did,

EARLY UNITS OF MEASUREMENT

Archaeologists, by studying Egyptian monuments and tablets, tell us that the ancient mathematicians decreed that the distance from a man's elbow to the tip of his middle finger was to be known as Cubit. This was approximately 18 inches in our present measure.

This was the first known unit of measurement.

The space from the end of the thumb to the end of the little finger, when extended, was called a Span; equal to nine inches as we measure.

The width of the hand at the base of the fingers was called a Palm, or three inches. A Digit was the width of a finger, three-quarters of an inch today.

Later someone added the unit known as the Hand. It was about four inches. Ask any horseman about that. He'd know immediately what you meant. The term still lingers in that field. His horse might stand 15 hands high, which would be 60 inches or five feet.

From that era we can jump down to the time of early Britain. It was decreed that the distance between a man's fingertips when his arms were fully extended would be a fathom, or six feet.

There are so many men in our factories who have previously followed the sea that I will mention one more measurement with which they are familiar; a ship's Cable is a chain, usually about 120 fathoms or 720 feet long.

Now in those days so many different units of measurements were in common use that the highly practical British decided to do something about it. King Henry I, about the year 1110, ruled that the distance from the tip of his nose to the end of his thumb, with his arm extended, was to be the legal yard. Many of us have seen our womenfolk measure a piece of cloth this way.

In 1324, Edward II decreed that "three barley corns, round and dry, taken from the center of the ear, placed end to end, equaled an inch." A foot ranged from $9\frac{3}{4}$ to 19 inches.—Henry J. Cudworth.

(Courtesy of Pratt & Whitney Aircraft.)

he would have no need of it in his work, the foot rule with divisions of inches and fractions of inches being sufficiently accurate for all his purposes.

In surveying, measurements of hundredths of an inch are occasionally used, but ordinary measurements are made in feet, yards, rods, and miles, according to the nature of the object to be measured.

REQUIREMENTS OF A UNIT OF MEASUREMENT

1. *Standard and Unchanging.* To qualify for acceptance as a true unit, the unit decided upon must be standard and unchanging. In early times, before the importance of accurate measurement was understood, thumbs, hands, and feet were used as units of measurement of length—most changeable and indefinite forms of units. Only after standard units were adopted did the foot and the twelfth part of a foot have any fixed meaning. That is why the unit must be scientifically determined, recorded, and made known.

2. *Comparable.* Next, a unit of measurement must be comparable, that is, one unit must be capable of comparison with another. One hand is not comparable with another on any basis of accuracy, nor is one human foot with another, but the yard measure used in the United States is measured from and based upon a standard yard in the Bureau of Standards in Washington.

3. *Exact.* It is not necessary for every unit of measurement to be mathematically exact in all cases, but it must be sufficiently so to serve the purpose for which it is used. An astronomical measurement of the sun or planets will be sufficiently accurate for all practical purposes if it comes within even a hundred million miles of being exactly true, while an airplane part may have to be machined to 1/10,000 inch.

THE UNIT FOR OVER-ALL MEASUREMENT

When the general efficiency of the *office management* is to be measured, some standard unit of accomplishment must be used. Office management is a subject of very wide scope if we consider all the things comprised in it; but if we remember that its purpose is to secure certain results, it is evident that it is the *results* that are to be measured, and not the means used to get them.

For example, the arrangement of an office has a very decided effect upon results; so, too, have equipment, and light, heat, and ventilation. If, however, we can determine a unit by which to measure the results,

whether with good or bad arrangement, equipment, light, heat, or ventilation, we shall be able also to determine the general effect of the improvement of whatever defects may exist, or the loss incurred by their continuation.

As we have seen, this unit must be standard, unchanging, comparable, and sufficiently accurate for the purpose desired.

THE ORDER AS A UNIT OF MEASUREMENT

In most offices, the order, or some similar unit, satisfies all these requirements. In a mail-order house, a manufacturing company, or a sales office, the main purpose of the office is to handle orders; practically all the work of such offices will revolve around the order. It is true that the mail-opening, stenographic, bookkeeping, and some other departments will be engaged only indirectly upon orders, but the fact remains that if the quantity of orders were reduced, there would be less work in these departments, and if increased there would be more.

Since the order in a mail-order house may be entirely different from that in a manufacturing establishment, it will be necessary for each company to consider its own orders and its own routine, when using the order as a unit. That is to say, no arbitrary figure can be taken, borrowed, or imitated from others. This, however, does not prevent comparison with others, for in a general way the routine of handling orders in all companies is similar in essentials.

It may be objected that, as orders even in the same establishment are not alike, the order is, therefore, an unstable unit, and at first glance it might seem so. The exceptional order with many items will always be brought forward to sustain this objection, but if the orders are critically examined it will be found that the mode is usually an order of but two or three items.

Very frequently mail-order institutions build up a large amount of routine which is apparently only remotely connected with the handling of an order; notwithstanding this fact it is true that almost all the essential work of the office is dependent upon the order. No orders would mean no clerical work except that devoted to endeavoring to get orders. There would be little mail to open, no invoicing to be done, no credits to be examined, no accounts to be posted, and very little correspondence. Therefore, in those offices which exist for the purpose of handling orders, it is evident that the order is the logical unit of measurement.

In many offices will be found several classes of orders, requiring different amounts of work to handle; in such cases the relative difference

in the amount of work involved must be determined and the various classes weighted accordingly. That is, Class 1 may be taken as the standard unit; one order of Class 2 may equal 1.5 of the standard, and one order of Class 3 may equal only 0.5 of the standard. So if there were 100 orders of each class, there would be 100 plus 150 plus 50, or 300 units.

In other lines of business where the order does not qualify as the proper unit, or where there are no orders to be handled, some other unit—the most important—can be found. Thus in an insurance office, the policy might be used as the unit; in a department store, a sales transaction might serve the purpose, though a sales transaction is essentially an order but does not involve the extensive routine of the written one.

But whatever the unit may be, all work should be measured by it. If, for example, there is an estimating department, where estimates are prepared for prospective orders, but where all estimates do not result in orders, the unit would be the orders received, whether on an estimate or not. The management could thus determine how many clerical minutes per order received were spent in the estimating department. All special work should be included in and measured by the same unit. Thus the number of clerical minutes required to handle such an order becomes the definite form of measurement of efficiency of such office organizations.

CLERICAL MINUTES PER ORDER

If an office handles 100 orders a day and requires 100 clerks to perform all the operations on them, it is evident that 1 order requires 1 day's time of 1 clerk. But since the working day is not identical in all offices, a smaller unit should be used—say, the hour or the minute. With a working day of 8 hours, the above example would require 480 clerical minutes per order.

When one considers all the steps in even a complicated routine, it does seem extravagant for any order to require 480 minutes to put through. But it will usually be found that much more office work is expended on the *indirect* operations connected with a routine than upon direct ones. The National Office Ratios Survey, under the chairmanship of Mr. Leffingwell, revealed a variation in the clerical minutes per order of from 18 minutes—the best record—to 3,456 minutes—the worst. There are many offices where 480 minutes are expended on each order.

It is evident that the clerical minutes required for the order unit will fluctuate as the number of orders varies from day to day. This is not

because the unit varies, but because it is usually necessary to keep on hand a force sufficiently large to handle the peaks; when there are fewer orders, there must be a certain amount of idle time.

A UNIT TO DETERMINE THE COST OF CERTAIN FEATURES

By computing the number of clerical minutes expended in the bookkeeping department and dividing it by the standard order unit, the number of clerical minutes per order devoted to bookkeeping can be determined. By dividing the office into sections, the clerical minutes per order expended in each section can readily be determined in the same manner. In other words, the order or similar unit will serve as a unit of measurement for all activities of the office, provided it is remembered that the measurement refers only to a section of the office and not to all of it.

Thus the management can at all times determine just how much a certain portion of the work is costing; when this is done, attention is immediately attracted to those portions which seem to be costing proportionally too much. This is one of the most valuable features of the method of measurement by units. But it must be remembered that the knowledge of what any specific work is costing gives no indication of what it *should* cost.

WORK-UNIT PLAN FOR MEASURING CLERICAL OUTPUT

In devising a unit for measuring *clerical* output, it will be found that the order unit, satisfactory as it is for over-all measurement or the measurement of any particular feature, is not at all suited to this purpose. It would, besides being inaccurate, be most unwieldy and inconvenient, for instance, to measure an operation which required one minute to perform, by making it as one four-hundred-eightieth of a unit.

For this purpose the method described below has been found perfectly satisfactory. By its use the relative efficiency of each clerk can be quickly obtained, and the work of a stenographer may be compared with that of a file clerk or a bookkeeper. Some definitions are necessary, since without them some of the technical phrases used would be meaningless.

Time Unit. A time unit is one hour. An eight-hour day, therefore, contains eight time units.

Standardized Operations. Operations are considered standardized

when they have been analyzed, improved, established, and time studied, and when a standard rate of production for them has been set.

Unstandardized Operations. Operations which have not been studied as above, or which are not considered sufficiently important for such study, are called "unstandardized operations."

Work Unit. By this term is denoted the standard production in one hour on an operation. Thus, if standard 1 demands performance at the rate of 1,000 an hour, 1,000 is 1 work unit for this operation; 5,000 is 5 work units, and so on. If standard 2 demands but 500 per hour, then 5,000 is 10 work units.

Rules for finding the rate of efficiency:

1. One hour's production at the standard rate equals one work unit.
2. The actual production, divided by the standard production per hour, equals the number of work units produced. Thus, if 2,000 of standard 1 are produced and the rate on this standard is 1,000 per hour, it is clear that the production is equivalent to 2 work units.

3. The number of work units produced, divided by the number of time units (i.e., the number of hours worked), equals the percentage of average efficiency throughout that period. If, for example, the standard rate is 1,000 per hour, and 2,000 are performed in 2 hours, the method of figuring would be as follows:

$$\begin{array}{l} \text{Work units produced} \dots\dots\dots 2 \\ \text{Divided by time units} \dots\dots\dots 2 \end{array} = 1 \text{ or } 100 \text{ per cent}$$

Or take another example:

$$\begin{array}{l} \text{Work units produced} \dots\dots\dots 1 \\ \text{Divided by time units} \dots\dots\dots 2 \end{array} = \frac{1}{2} \text{ or } 50 \text{ per cent}$$

In order to eliminate as much figuring as possible, tables should be prepared for different rates of production.

With this method it is unnecessary to account for any time except that expended on unstandardized operations or in idleness, it being assumed that the balance is expended on standardized work. Thus, if an operator worked two time units—2 hours—on unstandardized operations, and was idle one-half a time unit— $\frac{1}{2}$ hour—it is assumed that the balance of the day— $5\frac{1}{2}$ hours—was occupied on standardized work. It makes no difference on how many standardized operations the employee worked, the method will show exactly what the percentage of efficiency was. Each operator keeps track of the amount of work done, using special slips of paper.

For timekeeping on unstandardized operations, a slip similar to that shown in Fig. 79 is used. This slip is taken to the head of the depart-

ment, or some person delegated for the purpose, who punches on it the hour the operator begins on the unstandardized work; when the work is finished, the slip is again punched. The space shown upon it between the time of starting and finishing the work is easily figured in tenths of an hour, such figuring to be done by the operator so that it may not have to be done by someone else. One of these slips should be provided daily for each operator and should be turned in at night.

Date _____

Name _____

	6	12	18	24	30	36	42	48	54	60	
	1	2	3	4	5	6	7	8	9	0	
8											9
9											10
10											11
11											12
12											1
1											2
2											3
3											4
4											5
5											6
6											7
Total Units											

FIG. 79. Slip for time on unstandardized work.

At the end of the pay period, the figures shown on these slips are totaled, and the entire amount of time spent on unstandardized work and in idleness, figured in time units, is deducted from the number of time units in the pay period. It is assumed that the remainder represents the total time units expended on standardized operations. Inasmuch as the relative efficiency is reduced as the proportion of time units to work units increases, it is incumbent upon the operator to report the duration of all periods of waiting for work, in order to get full credit for efficiency while working. This procedure, therefore, acts as a valuable control of this most difficult problem.

This plan, it will be readily seen, enables the efficiency of any worker to be accurately compared with that of any other. In addition, it furnishes a ready means for payment by results.

THE START OF MEASUREMENT WORK

The measurement of office work must, of course, start with those things that can be definitely measured; from thence proceed to those more difficult to measure, but still measurable; and stop at those things which are clearly immeasurable. With these limits established, there is nothing to prevent the full extent of possible measurement.

In the necessary preliminary analysis of measurable and immeasurable work, the heretofore timorous office manager will discover—possibly to his great surprise—that the measurable work constitutes from two-thirds to three-quarters of all the work done in his office; effective control of this major portion of the office work will mean definite progress and a most decided improvement in conducting the activities of his office.

It should be distinctly understood, in this connection, that control, in the scientific sense, is impossible without measurement.

DIFFERENT WAYS OF MEASURING

Office work may be measured in three different ways: (1) by actual count of pieces, (2) by the use of a scale of some sort, and (3) by measuring the average time required.

COUNTING THE NUMBER OF PIECES

In using the first method—the actual count of pieces—a survey must first be made of all the pieces of work in the office which are equal to one another and can therefore be counted.

A large part of the repetitive work can be measured in this manner. Thus, when the mail is being opened in the morning, the pieces can be counted; after it is opened and sorted into different classes, the number of pieces in each class can be counted—and this, by the way, can be used as an effective control figure to indicate the amount of work that comes in. Mention could well be made here of the mail-order houses, which weigh their mail before opening and estimate the volume of work therefrom.

Envelope addressing is another task that can be readily counted, as can the making of invoices, bills, entries on cards, and similar jobs. It

may be urged that addresses on envelopes are not the same length, or, with more reason, that one invoice may have more entries than another. The answer to this objection is that the items on a month's invoices can be counted and the figure divided by the number of invoices, to obtain the average number of items on each. The result of counting of this kind is generally surprising, for while there will be a considerable number of invoices containing from 20 to 30 items, it will make but a small difference in the average, because of the far greater number of invoices containing but 1 item. An analysis has shown the average number of items per invoice to be from 3 to 5, according to the type of business. In a music-publishing business there was an average of 15 items per invoice, though the management had thought the average would be nearer 25 or 30 items.

Circular-letter writing, folding circulars, enclosing and stamping them, and repetitive tasks of such nature present no difficulties in counting.

FOUR WAYS OF COUNTING

There are several ways of counting, first, of course, being the actual, numerical count. Second, if the finished work is stacked in piles each containing an equal number of pieces, as 10, 25, or 50, the stacks can be counted and the labor thus greatly reduced; envelopes come as a rule in boxes of 250 or 500, and the work can be counted by the box if desired. Third, there are many cases in which measurement with a scale or inch rule will give a satisfactory count. Thus, cards or sheets of paper can be piled, first counting 50 or 100 in one pile, and then making equal piles of the remainder. A fourth method, weighing, will often give a more accurate count than any other method, if the weight of 1 or 10, or some other unit, is known. On one device made especially for counting by weighing, the actual numerical count of any quantity weighed can be read directly from the scale, without further computation.

HOW TO MEASURE TYPEWRITTEN MATTER

Typing is ordinarily measured by counting the work in one of three ways: the number of keystrokes, the number of square inches, or the number of standard-length lines. Keystrokes are counted by a device which, when attached to the typewriter, counts the actual strokes as they are made by the typist. This is the most precise method of counting typewriting, since every stroke registers. The device is geared to

show one figure for 10, 100, or 240 keystrokes, in order to simplify the computations.

COUNTING LINES WITH A SCALE

To count by the number of lines, a scale is used which can be easily made by typing on a strip of paper or cardboard the figures 1, 2, 3, and so on, in a vertical line, single or double space, as desired. By laying this scale on the sheet of typed matter, the number of lines can be read at a glance. A standard line may be of any desired length; 6 inches is frequently used. Since varying lengths of line will vary the output record, typists should be instructed always to use the same length of line. This is difficult in letter transcription, since typists are taught to place a letter on the page so that it will look well; a long letter, written in long lines, will fill the page; a short letter will look better if short lines are used. Thus the line-counting method may offend the aesthetic sense of the operator.

A SCALE FOR COUNTING SQUARE INCHES

The square-inch method is also widely used. One square inch of typewritten matter is the equivalent of a 6-inch line—60 spaces or keystrokes of pica type, and 72 spaces or keystrokes of elite. To count the number of square inches, the Leffingwell typewriter scale was devised. By laying the upper left-hand corner of this transparent celluloid scale over the upper left-hand corner of the typewriting, the figure over the lower right-hand corner of the typewriting is the number of square inches of typewritten matter. Two square inches are added for the date line, name and address, salutation, complimentary close, and signature, and one square inch deducted for each space between the paragraphs in single-spaced letters. While this allowance is only an estimate, it will average out in the long run, and the actual difference either way is insignificant. The work is quickly done, from 5 to 10 sheets a minute being measured. This scale can be used for measuring the square inches of any kind of work, such as statistical tables or other tabulated matter. A separate standard of measurement will, of course, have to be used for each kind of work.

The figures on the Leffingwell square-inch scale are computed for single-spaced matter; double-spaced matter is therefore one-half the figure shown on the scale. If the typed lines vary in length, the average-length line is used instead of the longest or shortest lines. This fact means, of course, that the square-inch method is only approximate.

IS APPROXIMATE MEASUREMENT ACCEPTABLE?

To the possible objection that approximate measurement is not measurement at all, it may be answered that one is warranted in measuring within satisfactory limits, no matter what is being measured.

.08	.17	.25	.33	.42	.50	.58	.67
.17	.33	.50	.67	.83	1.00	1.17	1.33
.25	.50	.75	1.00	1.25	1.50	1.75	2.00
.33	.67	1.00	1.33	1.67	2.00	2.33	2.67
.42	.83	1.25	1.67	2.08	2.50	2.92	3.33
.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00
.58	1.17	1.75	2.33	2.92	3.50	4.08	4.67
.67	1.33	2.00	2.67	3.33	4.00	4.67	5.33
.75	1.50	2.25	3.00	3.75	4.50	5.25	6.00
.83	1.67	2.50	3.33	4.17	5.00	5.83	6.67
.92	1.83	2.75	3.67	4.58	5.50	6.42	7.33
1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
1.08	2.17	3.25	4.33	5.42	6.50	7.58	8.67
1.17	2.33	3.50	4.67	5.83	7.00	8.17	9.33
1.25	2.50	3.75	5.00	6.25	7.50	8.75	10.00
1.33	2.67	4.00	5.33	6.67	8.00	9.33	10.67
1.42	2.83	4.25	5.67	7.08	8.50	9.92	11.33
1.50	3.00	4.50	6.00	7.50	9.00	10.50	12.00
1.58	3.17	4.75	6.33	7.92	9.50	11.08	12.67
1.67	3.33	5.00	6.67	8.33	10.00	11.67	13.33
1.75	3.50	5.25	7.00	8.75	10.50	12.25	14.00
1.83	3.67	5.50	7.33	9.17	11.00	12.83	14.67
1.92	3.83	5.75	7.67	9.58	11.50	13.42	15.33
2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00

FIG. 80. The Leffingwell typewriter scale, a part of which is shown above, may be easily made by ruling $\frac{1}{2}$ -inch squares on a stiff sheet of clear celluloid or plastic, about 9 by 12 inches. It is not necessary to insert all the fractional numbers, unless desired.

Limits in one case, however, may be entirely different from those in another; for a carpenter to measure within one-sixteenth of an inch may be close enough for most work, while a machinist must often have his work accurate to a ten-thousandth of an inch. On the other hand, in some astronomical measurements, as has previously been stated, the observer may be satisfied if his calculations prove correct within the

limits of a hundred million miles. In measuring typewritten work, the slight variations in each of the three methods described are of little importance, and the cost of more accurate measurement may be more than the effort is worth. It is far better to measure by the grossly inaccurate line method, than not to measure at all, as a trial will demonstrate.

MEASURING THE AVERAGE TIME REQUIRED

A job may be so full of small details that it would be unprofitable to count them; besides, many of these details might be different on jobs of a generally similar character. In such cases, the job itself should be measured by the time required to do the work; in setting standards, the average time for each job should be figured. Thus, the work required to get out some particular report may include the copying of certain statistics from several different sources, and then making this up on a standard work sheet for the typist to copy from. Since such work may involve many miscellaneous details which cannot be counted, the work in all its details, up to the making of the work sheet, should be counted as one job.

WHEN TO DO THE MEASURING

The point at which work should be measured will vary with the character of the work. If, for example, it is the addressing of envelopes or folding of circulars, or other similar repetitive job, the work can be counted when it is assigned; that is, the worker can be given sufficient material for one hour's work. If it is a single job which may take several hours to finish, the time can be estimated on the assignment sheet, and the estimated time checked up against the actual time when the work is completed. If it is work consisting of the transcribing of letters from stenographic notes or machine dictation, or the copying of a piece of manuscript on the typewriter, the work must be measured after it is completed. For planning purposes, however, the amount to be done will have to be *estimated* beforehand.

SHOULD INDIVIDUAL OUTPUT BE MEASURED?

For control purposes, the work done may be measured and recorded in one of three ways, as follows:

1. *Individual Output.* Wherever possible, the work done by each

individual should be measured and recorded, thus facilitating a comparison of the relative efficiency of each individual with that of other individuals doing the same work. In all work in which one person does a completed operation, such as the work of typists, stenographers, transcribers, entry clerks, and the like, the measurement and recording should be done individually.

2. *Groups on Routine Work.* In all work which passes successively through the hands of a number of persons, as in a routine, the measurement will be done automatically by each individual recording on a route sheet the time received and the time finished. Where there is a steady flow of work, there is practically no opportunity for the clerk to make a dishonest report—indeed, there are probably few clerks who would think of attempting it—hence this measurement will suffice for all clerks working on routine.

3. *Groups on Special Work.* Where work is done by a group, and it is difficult to determine the amount done by any one individual, or where the spurting ahead of an individual would have no effect in hastening the completion of the work, the measurement should be done by the group, and the efficiency of each individual in it recorded as the same as that for the group. But there are few occasions in office work where group measurement like this is necessary.

REDUCING THE LABOR OF RECORDING

Methods should be devised to reduce the labor of recording as much as possible. If bonus is paid on the work, it should be figured on the number of standard hours in the pay period, whether that be one week or two, for the reason that bonus is to be paid on the average efficiency for that period and not on the efficiency shown for a few hours. The sheet upon which this report is kept should, therefore, contain sufficient space for keeping it up to the time of the pay period.

One Card for Each Clerk. A card should be provided for each clerk, on which the efficiency record by pay periods is kept; space should be provided for at least a year's record. The results should be copied periodically on the employee's card in the personnel department.

In devising statistical reports for keeping track of the units of measurement, care should be taken to devise them so that the amount of time required for their compilation does not involve too much labor.

Recording Clerical Minutes per Order. On the clerical-minutes-per-order unit, the record can be extremely simple. Daily records are unnecessary and in fact inadvisable. Weekly records can be compiled by

taking the standard number of minutes in a week, multiplying this figure by the total number of clerks, and dividing the product by the number of orders received for the week. Let us say that the office works 480 minutes a day for 5 days, which would mean 2,400 minutes worked by each clerk each week. If there are 100 clerks, they will work 240,000 minutes, and if 2,000 orders are received in a week the number of clerical minutes per order will be 120. A similar record can be kept for each section of the office.

A record of this kind enables the office manager to measure the overall efficiency of his office from week to week and from year to year. Any improvement will at once be apparent, and a falling off in efficiency can be instantly detected. Moreover, the manager will be able to place his finger on that section of his office which is falling behind. Such a measure of progress is in itself a continuous spur to ever-better management.

Recording Individual Efficiency. For the measurement of individual output, a simple weekly record of the percentage of efficiency of each operator can be made with little effort. This record should be available at all times for inspection by the worker concerned, and can thus be used as an incentive by the office manager continually to induce the operator to do more and better work.

Recording Departmental Efficiency. Departmental records will enable the office manager to see just what progress he is making. The total work units, divided by the time units worked, will show the average efficiency of the department on standardized operations; the number of time units on standardized operations will serve as a measure of the progress toward standardization, and the number of idle time units will be a measure of the flow of the work to and through the department.

CONTROL FIGURES

In addition to the efficiency record of the individual and the measuring of the work in general as it is done, certain control figures should be kept in the planning department. For example, if a certain number of orders were received in one day, this figure could be used to control the work done in the order routine, the shipping records, the invoices made, and the charges posted. Some offices also keep a control figure showing the unit around which the work of the office revolves, which, for example, may be considered as an order. Every order will then mean a certain volume of work to be done in all departments; this figure will serve as a control.

QUESTIONS FOR DISCUSSION

1. Comment generally on the measurement of management, and upon its relation to management as a science.
2. What are the four main purposes of measurement in office management?
3. What are some of the excuses given by office managers for not measuring the work of their offices? Comment on these excuses.
4. Why is a unit of measurement needed?
5. How accurate should the unit of measurement be? Illustrate your answer.
6. State three requirements of a unit of measurement and comment on each.
7. In the over-all measurement of office management, "it is the results that are to be measured, and not the means used to get them." Comment.
8. Would the sales order make a good over-all unit? Why or why not?
9. What would you do if there were several classes of orders?
10. If, in some businesses, the order did not qualify as the proper unit of over-all measurement, what would you choose? Why?
11. "Whatever the unit, all work should be measured by it." Explain.
12. What is "clerical minutes per order," and how is it figured?
13. "Much more office work is expended on the indirect operations connected with a routine than with the direct ones." Comment.
14. What did the National Office Ratios Survey show as to clerical minutes per order?
15. Why should the clerical minutes required for the order unit fluctuate from day to day?
16. How can the office manager determine at all times how much a certain part of the work is costing? What relation does this bear to what the work should cost? Explain.
17. "For measuring clerical output, the order unit is not suited." How would you measure clerical output?
18. Define or explain:
 - a. Time unit.
 - b. Standardized operation.
 - c. Unstandardized operation.
 - d. Work unit.
19. How would you find the rate of efficiency? (Assume any figures necessary for the purpose.)

20. Show how time may be kept on unstandardized operations.
21. What are the two main advantages of the work-unit plan?
22. Where should the work of measurement start?
23. In what three ways may office work be measured?
24. Give several illustrations of work that can be measured by counting.
25. Describe four ways of counting work.
26. State three ways in which typewriting may be measured and describe each method in detail, stating its advantages and disadvantages.
27. Describe the measurement of typewritten work by counting the lines. What are the advantages and disadvantages of this method?
28. Explain fully the square-inch method of counting typewritten matter. What are the advantages and disadvantages of this method?
29. "Approximate measurement is not measurement at all." Comment on this statement.
30. How would you measure a job so full of small details that it would be unprofitable to count them?
31. When is the best time to measure work? Why?
32. Should work be measured by individuals or by groups? Explain.
33. Comment on methods of reducing the labor of recording.
34. What control figures should be kept? Why?

PROBLEM I

The Wollaston Knitting Company has 110 clerks, consisting of the following:

Stenographers	14
Invoicing section	13
Accounts receivable	6
Order section	24
Accounting department	6
Statistical section	15
Credit department	10
Cost section	6
Traffic section	4
Export department	6
Filing section	6

They receive an average of 240 orders daily. How would you figure the number of clerical minutes per order?

Which section or sections seem to be overmanned?

PROBLEM II

In the office of the Brown Knitting Mills there are 14 typists, 7 of whom are stenographers. The work consists of typing form letters, addressing envelopes, transcribing shorthand and machine dictation, making statistical reports, and typing credit information on cards. It is proposed to use a keystroke counting device on each typewriter, which records 1 point for each 100 keystrokes.

Can this device be used satisfactorily and with justice to the employees? If so, what kind of system should be set up? If not, what other method can be suggested for measurement of the work?

"There is nothing more important in business than setting standards."—H. S. McCORMACK.

XXV

THE SETTING OF STANDARDS

The use of old methods of thought to cope with new tendencies and conditions is the sheerest economic waste. New ones must be evolved; for this purpose a highly satisfactory method, tried, tested, and found eminently practical, has been evolved by modern business itself—that of scientific standardization.

Though essential to scientific control of business, standardization is far from being thoroughly understood.

DEFINITION OF A STANDARD

A standard is defined as follows by Morris L. Cooke:

A standard under modern scientific management is simply a carefully thought out method of performing a function, or carefully drawn specifications covering an implement or some article of stores or product.

The idea of perfection is not involved in standardization. The standard method of doing anything is simply the best method that can be devised at the time the standard is drawn. Standard specifications for materials simply cover all points of possible variation which it is possible to cover at the time the specifications are drawn.

Improvements in standards are wanted and adopted wherever they are found. There is absolutely nothing in standardization to preclude innovation. But to protect standards from changes that are not in the direction of improvement, certain safeguards are erected. These safeguards protect standards from change for the sake of change.

All that is demanded under modern scientific management is that a proposed change in a standard must be scrutinized as carefully as the standard was scrutinized prior to its adoption, and that this work be done by experts as competent to do it as were those who originally framed the standard. Standards adopted and protected in this way produce the best that is known at any one

time. Standardization practiced in this way is a constant invitation to experimentation and improvement.¹

In addition to what is said above, a standard is often referred to as a level of accomplishment which has been set for attainment and by which the degree of accomplishment is measured. Familiar instances of this are the salesman's quota, indicating the volume of sales expected of him in the sales period ahead; the production quota, fixing the output assigned to and expected from a manufacturing unit. Frederick W. Taylor used the term "standard task" to indicate the output which could reasonably be expected within a given period of time from a first-class workman using the standard method and working steadily.

When "setting standards" is referred to in management practice, then, what is meant is the determining of levels of accomplishment, *after* all factors which affect accomplishment have been standardized. Those factors include working conditions, equipment, materials, methods, and personnel. Until those factors have been standardized, their lack of standardization results in so many "variables," as the Gilbreths termed them, that satisfactory control is practically impossible. In short, before we can have control, we must be able to measure accomplishment; before we can measure accomplishment, we must have standards; before we can have standards, we must have standardization of the factors just mentioned.

In previous chapters, we have taken up the standardization of working conditions, equipment, and personnel. We have also discussed methods generally and specifically, largely from the standpoint of effectiveness and simplicity through routines and work simplification. We are now concerned with the standardization of methods from the standpoint of the individual who is to use those methods to attain levels of accomplishment set for him as the basis of possible attainment—that is, standards of performance. The procedure by which standards are established is called "standardization."

THE IMPORTANCE OF WORK HABITS

In doing any kind of work, a worker is either awkward or deft, according to his familiarity with the work and the amount of practice he has had in it; the more practice, the more deft. This deftness is the result of habit, which in turn is the result of repetition. Repetition of any act is the beginning of habit; continued repetition results in fixed

¹ *Bulletin 5*, The Carnegie Foundation for the Advancement of Teaching.

If there are several motions in any one operation, these motions should, in order to get the highest efficiency, always be performed in the same order. Otherwise there is some waste, for constant repetition of the same sequence of motion establishes rhythm, and rhythm increases speed and lessens errors.

In one case a clerk used a rubber stamp, then a pencil, then a numbering machine; then she pinned the sheets together and laid them aside. Sometimes the clerk used the pencil first and sometimes the rubber stamp. At other times she would do the pinning before the rubber stamping. This lack of sequence led to her placing the rubber stamp and the numbering machine in different places each time; though the time thus lost could only be measured by hundredths of a minute, it amounted to considerable in a day. She was taught to perform the various operations in the same sequence, with the result that her efficiency was increased 25 per cent.

habits, shown by facility of performance and resistance to change. When one has formed a habit of doing work a certain way, he not only finds it easier to continue doing the work that way, but he finds it is more difficult to change to a different method. Change is not impossible for him; it is simply difficult; the same is true of habits of thought. That is why the formation of correct work habits is so important.

If methods are haphazard and the result of chance instead of careful thought, much waste is certain to occur. On the other hand, when methods result from the exercise of careful, deliberate thought, the office manager can guide and direct the formation of correct work habits so as to eliminate or lessen waste, thereby increasing output. When a method has thus become fixed through standardization, work becomes easier to perform and quicker to get out, with less effort, energy, fatigue, supervision, and, of course, cost. It is easier to control an office which has been standardized, because so many variables have been eliminated.

HOW TO FIX WORK HABITS

The office manager should, therefore, continually direct his efforts to having each operation, and the various actions and movements which constitute it, always done in exact accordance with the manner he has prescribed. He should insist on this, even when a different method would accomplish the same results. The constant and rigid insistence

- | | |
|---|--|
| <p>I. Arrangement of office
 Economical use of space
 Direct flow of work
 Adequate light, daylight and artificial
 Adequate circulation aisles
 Reduction of noise
 Adequate ventilation
 Adequate drinking fountains
 Adequate cloak rooms
 Adequate toilet facilities
 Adequate reception room
 General appearance</p> <p>II. Equipment (desks, etc.)
 Adequacy for purpose
 Sufficiency in number
 Standardized as to size
 Condition
 Standardized as to appearance</p> <p>III. Use of office machines
 Best machine for purpose
 Machines profitably used
 Machines used where needed
 Machines of modern type</p> <p>IV. Correspondence
 Clearness
 Composition
 Courtesy
 Grammatical construction
 Appearance
 Production</p> <p>V. Filing
 Economy of space
 Work up to date
 Accuracy
 Value of filed material
 Sufficient space
 Adequate systems
 Adequate custody</p> <p>VI. Stockkeeping
 Economy of space
 Location system
 Order
 Neatness
 Issuing system
 Control
 Classification
 Storage methods
 Inventory system</p> <p>VII. Intercommunication
 Telephone service
 Clerks at desks
 Messenger system
 Necessary mechanical devices</p> <p>VIII. Forms
 Economy
 Effectiveness for purpose
 Suitable quality of paper
 Suitable colors</p> | <p>Color schemes
 Uniformity in size
 Uniformity in color
 Uniformity in shape
 Uniformity in typography</p> <p>IX. Routines and methods
 Routines:
 Directness
 Simplicity
 Uniformity
 Expedition
 Methods:
 Effectiveness
 Simplicity
 Uniformity</p> <p>X. Clerical output
 Quantity performed
 Division of labor
 Interruptions</p> <p>XI. Control of output
 Uninterrupted flow of work
 Scheduling
 Handling peaks
 Working force well balanced
 Adequate planning
 Adequate records or reports</p> <p>XII. Salary standards
 Salaries not unnecessarily high
 Standard rates for like positions
 Salaries not below market</p> <p>XIII. Turnover of employees
 Length of service
 Rate of turnover</p> <p>XIV. Organization
 Clearly defined lines of authority
 Functionalization
 Not too many departments under one head
 Organization chart
 Organization write-up
 Standard practice instructions</p> <p>XV. Personnel
 Progressive records of performance
 Methods for testing ability
 Training methods
 Employment methods
 Discharging methods
 Promotion methods
 Methods of developing versatility
 Records of reasons for "quits"
 Plan for determining causes of dissatisfaction
 Vacation policy
 Bonus, profit sharing or like plans</p> |
|---|--|

This is a list of 93 points on which an office manager may rate the efficiency of his office organization.

on the specified routine of performance quickly results in the formation of correct working habits on the part of all clerks; this will reduce errors to a minimum, while making certain that standard methods of work are carried out. When clerks are trained and taught to perform work in a standard routine manner so that they have formed a fixed working habit of doing so, constant reference to the instructions for the permanent maintenance of the standards is no longer required, for there is no force so strong as habit.

IS THERE A UNIVERSAL STANDARD?

The entire trend of modern office management is undeniably toward standardization of the work—the elimination of chance and uncertainty, wherever possible, and the substitution therefor of known and tested methods. This process, as a matter of fact, is one outstanding proof that office management is becoming a more exact science, for, as we have seen, science itself is merely organized, classified, and standardized knowledge.

There is not, and cannot be, any universal standard in office work which will be applicable under any and all conditions. Standards must be devised for particular situations; yet these can be primarily determined only when the basic principles are known, keeping in mind the influence of local conditions such as the physical conditions of location and plant, the particular quality and mental attitude of personnel, the particular kind of tools used, and, lastly, the work itself.

OPERATIONS THAT CAN BE STANDARDIZED

In discussing the measurement of office work, it was admitted that there are certain operations that are immeasurable; with respect to standardization a similar admission must be made—there are some operations that cannot be standardized as to *quantity* to be produced. However, as in measurement, they are a minor portion of all office operations.

It is also possible that there may be a few operations that should not be standardized, though capable of standardization; this should not be assumed as a fact, as it has never been shown that standardization brings any evils that outweigh its advantages. It should also be remembered that where one person fails in his efforts to standardize any operation, another may succeed, for no doubt there are persons undertaking this work who are so constituted that they surrender too quickly

to difficulties; it will often be assumed without sufficient investigation that because of the number of variables in some particular operation, it is not capable of being standardized.

MEASURABLE WORK CAN BE STANDARDIZED

All work which can be measured as to quantity and quality can be standardized, though not, perhaps, with equal ease. The very fact that such work can be measured proves that the variables it contains are not a barrier to standardization, since the variables themselves have been determined. There may be cases where it would not pay to standardize, but that does not mean that standardization is impossible.

We have seen that while it is desirable to measure work by individual performance wherever possible, it is not vitally essential in all cases; some kinds of work must be done by groups of two or more persons; as we have also seen, such work is measurable. The work of a group can also be standardized, even though the presence here of the variable human element increases the difficulty of measurement.

Work which is not measurable, either before or after its performance, cannot be standardized as to *quantity*. The advantage in making a study of such work, with a view to partial standardization and consequent improvement, is that the *quality* of such work can be standardized, at least to some extent. For example, the work of the standardizer himself is fully as varied as that of any of the operations with which he deals, yet, though it is impossible to standardize his work as to quantity, it is highly advisable to discover the best methods of performing each element of the work and to teach these methods to the persons who undertake standardization. So in jobs of a similar char-

Most office work consists of several different operations, performed by different persons. If care is used, it is usually possible to divide the operations so that each requires approximately the same time. The short ones can be combined to make one operation, and the longer ones either divided or additional help placed on them. The ideal condition is present when the work travels regularly and smoothly with no waits between operations. If it is found upon analysis that one operation requires more time than another, that particular operation should be studied carefully to see if it can be shortened or divided. If not, extra people should be put on that particular work so as to keep the line moving regularly.

acter, the standardizer can seek and specify the best methods of performance, which will of themselves result in immediate improvement.

HOW TO BEGIN STANDARDIZATION

In the development of scientific management in an office, it is not advisable to begin at once the work of standardization; neither is it good practice to select at random some operation and standardize that. Before beginning to standardize, there are several indirect, though important and necessary, steps to be taken.

PRESTANDARDIZATION WORK

This "prestandardization work," as these steps are called, involves a preliminary investigation into the working of all departments with the object of determining what work is being done at present, and how it is being done, as well as its purpose. Each existing routine should be outlined, the present or current practice recorded, and maps or charts prepared to show graphically the route that any particular work follows. Next the general duties of each section, as at present performed, should be recorded, and finally the duties of each individual.

Anything that has to be rewritten should be carefully studied to see if there is not a better way. Reuse is one of the fundamental sources of efficiency. Do not rest until a way has been discovered to reuse the labor that went into the making of the first copy.

In this investigation the observer looks for those wastes which creep into every organization; he analyzes the routines to detect any useless steps; he examines the forms for the inclusion of useless and unnecessary items and uneconomical arrangement; he studies reports to discover those which are not serving an adequate purpose; and so on. The observer should give particular attention to all points where the flow of work is obstructed or interfered with, so that the causes may be removed.

An investigation like this, made in a thorough manner, will amply repay the effort it costs. One very important reason for conducting this investigation before the regular work of standardization begins is to so survey the ground that effort may not be wasted on standardizing operations that may later be abandoned. It will give the necessary

basis from which to start the work of standardization and will show any obvious wastes which can be eliminated when the time comes.

WHERE TO START STANDARDIZATION

After the prestandardization work has been completed, the regular work of standardizing can begin. Standardization should be begun on that section of the work that is most important, or which involves the largest portion of the office, and should be gradually extended in accordance with a logical, carefully thought-out plan.

It is generally preferable to standardize the main routine first, so that it may be placed under control, but this is not obligatory, for the work can actually be started anywhere. The factors determining where to begin are the general condition of the work to be handled, the strategic or psychological factors, and so forth. Thus, if the order department is engaged at the time with an extra rush of work, it would be poor policy to disturb it by taking time off to standardize. Again, if the manager of a certain department is not inclined to cooperate, it is not wise to force standardization upon him; it would be much better to begin in another department where cooperation is assured, and let the force of example win the objector.

Aside from main routines, such detached operations as stenographic work, mailing, and similar work may be studied and standardized, but tasks should especially be selected which offer the greatest opportunities. Thus, if there were a large mailing force, standardization of the operations would yield good results, while if there were but one mailing clerk, that operation might be postponed until other and more important work has been done.

Before beginning the work of standardizing the operations in a routine, the routine itself should be thoroughly studied and standardized—that is, the purpose and necessity of each step it involves should be thoroughly known, approved of, and definitely fixed. It should not be assumed that the routine as it stands is satisfactory, for certain operations in it can often be entirely eliminated, and, still more frequently, so can parts of certain operations.

Throughout the process of standardization, it is vitally important to record all progress and to establish the means of having the standardization work carried on at all times. Not only is it a long job to standardize the work of an office; in its very nature it is work that, in reality, is never finished. If it is left to be done by the office manager in his spare time, little will be accomplished, and that slowly. If, however,

There are millions of unnecessary motions; when one begins to investigate an office with an eye for them, he comes to believe that most of them are in the office. Watch a girl jogging paper or cards; watch a clerk rushing through his work, tossing papers in a disorderly heap as he proceeds; watch a clerk sealing and stamping a few envelopes; watch a clerk enclosing printed matter in envelopes. A trained expert will do as much as four or more untrained workers, yet only half the difference is in speed, the other half being in the elimination of waste motions.

some one person who is qualified for the work is selected and delegated to perform it, and arrangements are made to enable him to devote an adequate amount of time to it, the work will soon take shape, and its value will speedily become apparent and will increase from week to week.

THREE STEPS IN SETTING STANDARDS

The following three necessary steps should always be taken in standardization work:

1. *Analyze the Existing Method.*² The existing method must be thoroughly analyzed in order to reveal its strong and weak points. This study will involve

- a. The operation
- b. The equipment
- c. The working conditions
- d. The method used
- e. The employee

2. *Devise a New Method, If Needed.* From his study and analysis of the existing method, the observer may possibly be able at once to suggest a better method, in which case he will devote his attention to devising the new method, one which will retain all the valuable points of the old method and eliminate the weak ones. The devising of a new method is seldom achieved until after a careful study of the information obtained in step 1.

Whether or not it is possible to improve upon the old method, the observer should always make an earnest effort to do so, based upon the information obtained, for very rarely will an operation be found which cannot be improved. It should be remembered, however, that

² It will be helpful to reread Chaps. V and VI on Office Routines and Flow of Work, as well as pages 393-402 above.

the method should not be changed just for the sake of change; that is waste. Nevertheless, since there is always present a natural tendency to let well enough alone, and since that inertia must be overcome before any progress is made, the observer should at least make the effort and make certain that the operation is really well enough to be let alone, instead of merely assuming that it is so. Then again, there are some observers who will constantly suggest changes without having given them sufficient consideration; to guard against this, each new method suggested should, before being adopted, be demonstrated by actual test to be better than the old one.

3. *Set Standards of Output.* After the new method has been devised, the next step is to set standards of output.

HOW STANDARDS ARE DETERMINED

The two forms of analysis commonly used in determining standards are "time" study and "motion" study; these are so closely linked together that they are often spoken of as "time and motion study," giving the erroneous impression that it is a single piece of analytical work.

Time study is the analysis of the times required to perform the units or elements of an operation. It is usually made *after* the motion study, although it may be used for setting rates on operations independently of motion study and where there has been no alteration in the method. That is unusual, however.

Motion study is an analysis of the motions performed, to determine whether or not the method used is the best that can, at the time, be devised. It is usually made *before* the time study is made.

Motion study commonly eliminates as much as 70 per cent of the time required for completing a job cycle.—Charles W. Lytle.

Micromotion study, developed by the Gilbreths and furthered by the work of A. B. Segur, Allan H. Mogensen, Ralph M. Barnes, and others, is a method of recording on motion-picture film not only the motions made, but also the unit times, as shown on the face of a clock with a rapidly moving sweep hand.³ This method actually combines time

³ With this clock as many as 115 exposures a second can be recorded, thus giving accurate time to nearly 1/2000 minute, recorded on the motion-picture film. Professor David B. Porter of New York University has developed a device called a "wink counter," used in place of a clock to make readings even more accurate. This counter records on the film 1/2000 minute (called a "wink") in multiples of 10 winks.

In many offices there is waste motion due to lack of sufficient equipment—not necessarily office devices—but supplies like rulers, pens, scratch-pads, pencils, and the like. These are not expensive, yet some office managers economize on them and compel clerks to waste that intangible factor, time, borrowing what they should have on hand. Clerks will waste from 5 to 10 minutes a day—not that it takes as long as that to do the actual borrowing—but it furnishes conversational opportunities. A loss of 5 minutes a day from the time of a \$28-a-week clerk is over \$15 a year—enough to buy quite a stock of supplies.

study with motion study. There is little doubt that in the course of time, when business is more thoroughly standardized, micromotion study will come into more universal use, though many office managers have not yet eliminated even the obvious wastes that can be observed with the naked eye.

In the determination of standards, therefore, the order is, first, motion study, for the purpose of discovering opportunities for improvement; and second, time study, for the purpose of fixing both the method decided upon and the elemental times for doing the work by the approved method.

MOTION STUDY

Though motion study is a purely observational analysis, it requires considerable training of a special character. Many operations which appear at first sight to be skillfully and efficiently performed will afterward be found considerably below the first estimate. The motion-study analyst should not try to watch all the motions in an operation at one time, but should proceed in a definite, systematic manner to observe certain specified things, as follows:

1. *The Manner in Which the Work Comes to the Operator*

- a. Does it come steadily?
- b. Does it come at regular times?
- c. Does it come in equal- or unequal-sized batches?
- d. Does it come at irregular times?
 - (1) To what extent does this interfere with the flow of work?
- e. Does the work come in such shape
 - (1) That work can be done immediately on it or is preparatory work necessary before the operation begins? (Is it possible to have the work come in such a manner as to avoid preparatory work?)

2. *The Workplace*
 - a. Is it satisfactory?
 - b. Is there too little room?
 - c. Is there too much room?
 - d. Are the work, materials, accessories too high or too low (causing the operator to work in a fatiguing position)?
3. *How the Work Is Arranged in the Workplace*
 - a. Is the layout defective?
 - b. Can the layout be improved?
 - c. Are frequently used objects placed nearer to the worker than those less frequently used?
 - d. Is there a definite place for all tools (pens, pencils, erasers, reference books, and so forth)?
4. *Apparently Superfluous Motions*
 - a. Are such motions really necessary?
 - b. If not, can they be improved or eliminated?
5. *The Slow Motions*
 - a. Need slow motions be made slowly? (Frequently slowness is only a habit.)
 - b. Can the speed of the motion be increased (thereby increasing the output)? (Speed is also a habit and, once acquired, is no more fatiguing than slow, leisurely motions.)
6. *The Difficult Motions*
 - a. Can these be simplified?
7. *Motions Apparently Performed Unskillfully*
 - a. Are these motions necessary? (Bungling, skips, stops, fumbles, and other clumsy and awkward motions are not only unnecessary, but add to the fatigue and lengthen the time necessary to do the work.)

Many clerks waste time because they do not have a desk system. The loss from this source in some places reaches huge proportions. A clerk can easily waste 30 minutes a day because of disorder. The danger of the loss of important papers, as well as the incalculable loss of time searching for them, can be greatly reduced by insisting upon a desk system.

In making these observations it is advisable to use a check list like that on page 560, or at least to put all observations in writing.⁴

During the course of the observations, ideas for improvement will occur to the observer. He should make a note of them in passing, but

⁴ See pp. 607ff. for additional office-management check lists.

SUGGESTED CHECK LIST FOR ANALYZING OPERATIONS

1. Describe the operation
2. How often is it done?
3. Where is it done? Number of persons doing it?
.....
4. Source Preceding operation
Following operation
5. Purpose of operation
6. Is purpose justifiable?
7. Is it accomplished?
8. Can it be accomplished otherwise?
9. Are other records available to serve the same purpose?
10. Can any portion of this operation be eliminated and still accomplish
the same purpose?
11. Does any part of this operation duplicate work on any other?
12. Can operation be combined with another to advantage?
13. What is the unit of work?
14. What is total time per day devoted to this work?
- Number of units done?
15. What is net time required for present method (time for one times
number done)?
16. Describe the equipment used
17. Can equipment be changed to better operation?
18. Is flow of work continuous or interrupted?
- (a). If interrupted, can this be prevented?
19. Are workers well adapted to work?
20. Are workers interested?
21. Are they expert?
22. Do all workers use same method?
23. What incentives are used to encourage production or quality?
24. Are there unnecessary motions or fatigue of following sorts?

Walking	Lifting	Sorting	Talking
Standing	Bending	Rubber stamping	Noise
Stooping	Reaching	Writing	Use of eyes
Twisting	Handling	Filing	Repairing

should not interrupt his observations to make actual improvements, for it is far more important to make the first observations in a systematic manner. Motion study should not be confined to observations of one worker if there are several on the same operation, as sometimes elements may be taken from the work of several operators and combined in one ideal motion cycle.

ANALYZING THE CYCLE OF MOTIONS

Every operation consists of a cycle of elementary motions. A cycle of motions consists of all the motions made from the beginning of one piece of work to the beginning of another. Thus, the cycle on addressing envelopes would be

1. Insert envelope in typewriter
2. Read address
3. Type address
4. Remove envelope

At first the observer may not easily be able to separate the motions distinctly, especially if the work is being performed by a rapid, skillful worker. It will help, however, if one considers that practically all office work consists of the following standard elements:

1. *Preparatory Work.* In practically every operation there is a certain amount of preparatory work, which differs in volume according to the operation. Thus, in running a stencil on a duplicating machine, the stencil must be put on the machine which must, itself, be cleaned, inked, and adjusted for use. If a letter is to be typewritten, the preparatory work may apply either to all the letters written within the day (such as cleaning the type or putting on a new ribbon) or to the mere setting of the machine for writing, and the insertion of the paper.

2. *Sorting or Arranging Work.* This is an especially important element in all office operations.

3. *Searching and Finding.* This applies to every operation; in some it is a minor matter, in others, as in filing of all sorts, a very important one.

Insufficient filing space causes waste motion in many offices. Files may be so crowded full of papers that the actual labor time necessary to file papers properly is doubled or trebled. In many instances doubling the number of filing cabinets has halved the number of filing clerks.

4. *Performing the Work.* This applies to the actual motions only, such as typing a letter, making an entry, or putting a letter into the files. Few examples of this element, of course, will be comparable in different kinds of work.

5. *Removing Work, or Returning to Position.* This also applies to most office operations.

6. *Adjustment* for next operation.

Many of these units may repeat themselves within a cycle of motions, and they need not necessarily be performed in the order given.

TIME STUDY

Time study should never be used in an office except for analytical purposes or for the setting of standards. A time study is an analysis of the time required to perform each *element* of an operation. Since the length of time required to perform the entire operation is not being considered except as the individual studies are combined, the timing of an operation "to see how long it takes a clerk to do it" is in no sense a time study.

Every operation, as we have seen, consists of a cycle of elementary motions. The time required to make one of these elementary motions is called a *unit time*. If we knew the time required to perform each of the elementary motions in office work, we could synthetically construct a standard time for the whole operation by adding these unit times together and making the proper allowances for delays, as explained later on in this chapter.

There are hundreds of motions in office work which are common to all offices. When making time studies, if the office manager will start making a collection of unit times, adequately classified, he will find them quite helpful. Thus, the time it takes to insert a sheet of paper in a typewriter closely approximates the time required to insert an envelope or card; when this time is known, it will render the construction of standards much easier.

USE OF THE STOP WATCH

The instrument used for time study is usually a stop watch with a dial showing divisions of 1/100 minute on the main circle and divisions of 1 minute on the small circle. The large hand usually makes three movements between divisions, or 300 movements in one revolution, while the small hand moves 1 minute division with each revolution of

the large hand and requires 30 minutes to make one revolution. When one is skilled in the use of the watch, it is possible to read quickly and accurately without stopping the mechanism; experienced time-study men rarely find it necessary to resort to the use of a split-hand device.

Before an observer is placed upon any definite time-study work for the purpose of setting standards, he should spend considerable time in practice. Any operation can be timed for this purpose, but the results should not be used for setting standards. Most important in this practice work is the development of the ability to read quickly and accurately; this can be done without timing any person. The observer should start the watch and let it run continuously, then at intervals endeavor to read the time shown by the large hand, by a quick glance at the dial, then quickly write down what has been read. After some practice in this, he will be able to make a quick "decision" as to the position of the hand and may proceed to time an actual operation. At first he should time total times on short operations and then gradually proceed to the recording of unit times.

The introduction of a stop watch in any office should be approached with exceeding caution. Since the stop watch has no place in scientific management except for purposes of analysis, any analysis is valueless without the full knowledge and cooperation of the worker. Under no

STANDARD SYMBOLS

To avoid unnecessary writing when taking time studies, Mr. Leffingwell originated the following standard symbols to describe the office operations the observer is timing. They also help to avoid using different terms to describe the same operation. Others may be invented as occasion requires.

A	Assort	M	Match
Ar	Arrange	P	Pick up
At	Attach	Pp	Pick up and place
C	Checking	R	Review
Ca	Carbons	S	Stamp
Cm	Clear machine	Sa	Set aside
Co	Calling off	Sp	Separate
Cp	Compare	St	Staple
Ct	Count	T	Type
F	File	Tp	Turn pages
Fg	Figure	V	Investigate
Ft	Finger through	W	Write
G	Get work	X	Out
L	List		

circumstances should any person be permitted to make secret studies or use the watch in any way without the knowledge of the worker. Such procedure is in reality spying and will be so considered by every worker and rightfully resented as an affront or an encroachment on his personal liberty. It need hardly be added that such procedure is particularly destructive of good will and office morale.

SELECTING THE SUBJECT

The person whose work is to be studied should be selected with the greatest care. If the study is being made of an operation that is already being performed by a number of clerks, the very best clerk available should be studied. If the method is a new one, the study should not be made until at least one clerk has learned to perform the work skillfully, and he should then be selected as the subject. Even if it is necessary to make allowances afterward, nevertheless the best worker should be selected, for analysis work should never be expended upon an inferior worker.

PREPARING THE SUBJECT

Before beginning any time study, it is of the highest importance that the subject be prepared for the ordeal, for it is an ordeal to most clerks approaching it for the first time, with little definite idea of what it really means.

It should be carefully explained that the purpose of the study is to discover, in a scientific manner, the best method of performing the task in question, and that to do this, it is necessary to use a watch, not for the purpose of timing the clerk to find out how fast *he* can perform it, but to discover the elemental times for the various portions of the task—a matter that is in no sense personal, but an actual scientific experiment in which he is taking part. The worker's confidence should be secured before any study whatever is made; it may sometimes be a good idea to leave the watch with him, after explaining its use, and let him time these motions for himself, as an experiment. Familiarity with the instrument, combined with a knowledge of the process in general, will help to overcome the first strangeness of the procedure and dispel any nervousness which might otherwise appear.

After this, a few preliminary studies should be made—which need not be used—that will serve to increase his interest in the work. Experience has shown that one good way of securing interest and cooperation

is to go into an extensive explanation of the method of making the study, showing by actual demonstration how certain elements are segregated and timed separately, and how one is likely to perform them at one rate at one time and at a different rate another time, a fact that emphasizes the need of a careful study. It should be explained that many studies must be made, before any definite conclusions can be drawn.

THE NUMBER OF STUDIES TO MAKE

In making time studies for the purpose of setting standards, it is necessary to time a sufficient number of operations, the judgment of the time-study man being left to decide what is a sufficient number. It may be stated as a rule, however, that the longer the operation, the fewer the number of studies required, and vice versa. Based on experience, the following are suggested as a minimum:

Length of time of operation, minutes	Number of operations to be studied
5 or over	10
2	15
1	30
$\frac{1}{2}$ or less	60

It is better to err on the side of making too many studies than too few; beginners in this work are advised to double the above figures.

THE TIME-STUDY SHEET

It is wise to use a form like Fig. 81, especially designed for recording observations of elemental times; if a standard form is not used, many details will be omitted that may afterward be found to be necessary. As in any scientific experiment or observation—for that is what a time study is—it is imperative that every necessary detail be recorded.

ALLOWANCES FOR DELAYS

If the unit times of any operation are added together, the total will be found to be less than the over-all time it takes to perform the operation as a whole. This difference in times is caused by delays of various sorts that are bound to occur in the actual work. That is why the sum of the unit times of an operation cannot be used as the total time to be

When card indexes do not have enough guide cards, much time is wasted. Watch the average file clerk in the average office trying to find the right card. She will make several attempts, each of which is lost motion, much of which can be prevented. Sufficient guide cards of the right sort will often increase the output from 50 to 200 per cent.

allowed. These delays are of two general types, avoidable and unavoidable.

Avoidable delays are those which occur because of some failure on the part of management. Work may not be delivered on time, machines may break down, and so on. A small allowance should be made for avoidable delays, but it is preferable that they should be noted, recorded, and steps taken to avoid them.

Unavoidable delays are those inherent in either the work or the worker. One cannot reasonably expect that work will always and at all times flow smoothly. Even in the best organized offices, there are bound to be unavoidable delays. Nor can a clerk be expected to work at top speed every minute of the day, if for no other reason than that no clerk exists who can possibly do that. It cannot be expected that clerks will have no occasion to stop work for reasons other than fatigue; frequent stops from other causes are unavoidable. Although no one knows definitely how much fatigue is produced by mental effort, the unavoidable-delay allowance should be liberal enough to take care of fatigue and other causes. It has been well demonstrated that the unavoidable-delay factor varies in accordance with the length of the operation. As a result of many years of observation, Dwight V. Merrick, an associate of Frederick W. Taylor, worked out a series of curves on this subject. They are shown on page 568.

REST PERIODS

Rest periods are very desirable in office work but should not be used until the work of standardization has been firmly established. The reason for their desirability is that it is a well-demonstrated fact that, in all physical exertion, fatigue is cumulative and that, if frequent rest periods are taken, the fatigue resulting from the work is easily overcome by a short period of rest; if the work is prolonged until much fatigue is accumulated, the period of rest required will be correspondingly greater. It was found, as a result of many tests, that the greatest volume of work is secured when the clerk works 9 minutes and rests 1

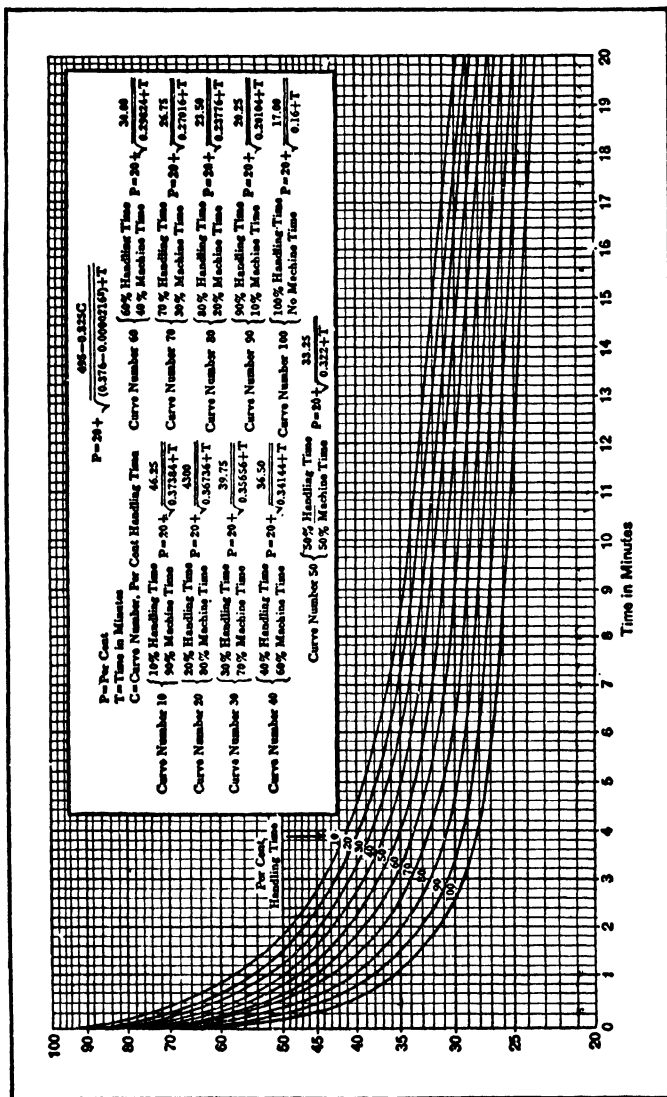


Fig. 82. Curves of unavoidable delay factors.

minute. The introduction of such a rest period is, however, not possible as a rule in an office, for where it is tried, it will be found that the workers take more than the minute allowed, because they are not aware of the passage of time. It is possible to control a rest period of 5 minutes each hour, however, and good results will be obtained. In the beginning, when fixing rest periods, it will, perhaps, be found still better simply to allow 10 minutes in the morning and 10 in the afternoon.

Despite the fact that in all athletic sports the rest period is a well-established feature, few businessmen have as yet perceived the possibilities of the rest period in business, most of them regarding it as merely a gratuitous concession, a piece of "welfare work," by no means necessary.

But office work requires concentration to a very high degree for effective results, and few individuals can concentrate steadily for hours at a time, as they are ordinarily assumed or expected to do. As a matter of fact they do not do so. Unauthorized "rest periods" are taken at all times within the limits of the working day, and naturally in an unorganized manner in every office. They are usually not noticed unless they become too flagrant, through frequency and length, when their abolition is attempted by the issuance of some drastic rule, which is never by any chance wholly successful.

If organized rest periods are introduced in an office where neither standards nor measurements of output exist, they will almost certainly be ordered discontinued at a later date by some higher official. But if, on the other hand, the office manager waits until standards are set on many of the operations and the work definitely measured, he will find that output is greater with the rest periods than without them and will have little difficulty in installing, defending, and maintaining them in consequence.

THE STANDARD-PRACTICE GUIDE

Every operation which has been standardized should be written up on a sheet, which must be properly classified, filed or bound, and on which each element of the process is listed, with the time allowed for performing it.

These elements will be listed in the order in which they are performed in the standard method of doing the work; opposite each will be given the unit times. If so desired, each of these units may also be placed in columns, showing elementary units which would bear these headings:

- | | |
|--------------------|---------------|
| 1. Preparatory | 4. Doing work |
| 2. Arranging | 5. Removing |
| 3. Search and find | 6. Adjusting |

In addition, there should be a record showing the unit times found on each element, in different kinds of work. For example, all the units found in element 1 should be listed together, and so on. This will enable the person reading the standard-practice cycle of motions to analyze readily, and especially to note whether the actual time required in practice for any particular unit is longer than previous studies show to be the time for a similar unit in other operations.

In element 4 there will of course be a wide variation of times, in accordance with the nature of the operation; wherever possible, this time should be given on the basis of doing one unit of the work. Thus, in addressing envelopes, the time required for writing a name and address should be given as element 4. This, in turn, may be compared with the writing of a name and address on a form-letter fill-in, or a name and address on a routine letter. In like manner in invoicing, the time required for writing one item should be recorded, and so on. The value of bringing together such unit times for the purpose of checking the accuracy of time studies will, of course, be obvious.

QUESTIONS FOR DISCUSSION

1. What is Morris L. Cooke's definition of a standard?
2. "The idea of perfection is not involved in standardization." Explain and illustrate your answer.
3. What is a standard method?
4. What are standard specifications for materials?
5. Are standards unchangeable? Explain fully.
6. Comment on a standard as a level of accomplishment.
7. What is a standard task?
8. Are standards set before or after all factors which affect accomplishment have been standardized? Explain.
9. How does the presence of "variables" affect control?
10. What three steps are necessary before control is present?
11. What are work habits?
12. Why is the formation of correct work habits important?
13. Why should the office manager rigidly and constantly insist on work being done in the specified way?

14. What does the trend toward standardization indicate with regard to office management as a science?
15. Is there a universal standard in office work? Explain.
16. Can all office operations be standardized? Explain.
17. Comment on the standardization of measurable and unmeasurable work.
18. How soon should the work of standardization be begun? Why?
19. Explain fully "prestandardization work," and state the reason for it.
20. What factors determine where standardization work should be begun?
21. Why should a routine be studied and standardized before the operations in it are standardized?
22. List three steps in the setting of standards and comment on each.
23. What does the analysis of the existing method involve a study of?
24. Should one always try to improve upon the existing method? Why or why not?
25. When a new method has been devised and described in writing, what is the next step? Why?
26. Name the two forms of analysis used in setting standards and explain each.
27. What is time study?
28. What is motion study?
29. What is micromotion study?
30. Seven suggestions are made for conducting a motion study. Name them and comment on each.
31. What five questions should be asked about the manner in which work comes to the operator?
32. What eight questions should be asked about the workplace?
33. Comment on superfluous motions, slow motions, difficult motions, and unskillful motions.
34. What should the observer do about ideas for improvement that occur during the observations? Why?
35. Should motion study be confined to observations of one worker? Explain.
36. "Every operation consists of a cycle of elementary motions." Define, describe, or explain "cycle of motions," and illustrate your answer.
37. Name six standard elements of office work and comment briefly on each.

38. When and why should time study be used?
39. Describe the stop watch and explain how it is used?
40. What is the purpose of W. H. Lefingwell's standard symbols of office operations?
41. How should the subject for time study be selected?
42. How should the subject of a time study be prepared?
43. How many time studies should be made of the same operation?
44. What is the purpose of the time-study sheet, and what does it show?
45. What allowances should be made for delays? Why?
46. Comment on the two classes of delays.
47. Comment on "fatigue allowance."
48. Comment fully on rest periods in office work.
49. What is the standard-practice guide, what does it contain, and how is it prepared?

PROBLEM

Observe a clerical worker on some simple operation such as addressing envelopes, and then standardize the work, the workplace, and the methods. Time study it, and determine a standard of output. If there is no clerical operation simple enough, apply the same methods to any repetitive task that comes under your observation.

Work out on paper the successive steps to be taken. Then make the study suggested.

"Office planning is the predetermination by scientific study and research of the best methods for speedily and economically handling the various work-routines of the office."—H. C. PENNICKE.

XXVI

PLANNING AND SCHEDULING OFFICE WORK

Planning is concerned with *what* is to be done, *how* it is to be done, *who* is to do it, and *where*. Scheduling is concerned with *when* it is to be done.¹

RESULTS OF UNPLANNED WORK

Work can be done without either planning or scheduling; the results of work so done are more likely to be haphazard than if the work were properly planned and scheduled. Less important work may have been done ahead of more important work, with consequent delays; two or more pieces of the same kind of work may have been done by different methods, with resulting lack of uniformity; some work may have been unnecessarily repeated, with resulting waste of time, money, and material; less capable employees may have attempted work requiring greater competence, with delays or ineffectiveness; simple work may have been done by employees capable of handling more difficult tasks, resulting in a waste of ability; work may have been done at one location to the neglect of work which should have been done at another place; work which should have been completed by a certain time may not have been started early enough possibly to be completed at the desired time; operations which could have been performed concurrently were handled consecutively, resulting in delays or in failure to meet other parts of the work when expected.

Wherever results ensue like those just mentioned, either the planning was defective or absent, the supervision was inadequate, or some unforeseen obstacle arose to block the desired accomplishment. Frequently

¹ See pp. 584-588 for a detailed explanation of scheduling.

all three causes are present. Adequate planning would provide for effective supervision and would anticipate possible obstacles to accomplishment by arranging to meet them if they arose or by devising alternate courses of action if the obstacles were insurmountable.

It might be contended that no work can be done without some planning, since someone has to determine *what* is to be done, and someone must also determine *when* it is to be done; therefore, there is planning. What is overlooked is that the person who determines the time of doing the work in a poorly organized office is frequently the worker instead of the manager. Under such circumstances, which are by no means rare, there is not only inadequate planning, if it can be called planning, but there is an absence of control. Small wonder the results of such a condition are unsatisfactory, whether the cause is recognized or not.

ORGANIZED AND UNORGANIZED PLANNING

Organized planning requires that the things to be done shall be foreseen and provided for adequately, as far in advance of their performance as is practicable; it also presupposes sufficient knowledge and experience to provide for the avoidance of adverse contingencies, both probable and possible. In most offices there is little scientific planning of this kind, in the sense that it is done at the proper time in advance of performance, and by some person qualified to do it. Such planning is designated by students of management as preplanning, to distinguish it from the so-called "planning" that accompanies all work.

Planning, as done in many offices, proceeds somewhat as follows: The amount of work is not known precisely but is usually estimated roughly from past experience in handling a certain quantity of orders. As the volume of work fluctuates from day to day according to the mail received, sufficient help is maintained to get the work out in peak seasons without so much delay as to draw criticism. Work is divided as far as possible into routines, each of which may be compared to a hopper into which the work is poured as it arrives. The work emerges from the other end of the pipe more or less irregularly, being urged along its course by an abundance of section heads, each charged with the responsibility of pushing the work forward, as it were, with a stick, which they do with more or less success.

SCIENTIFIC PREPLANNING

Preplanning of a scientific nature always carries with it the presumption that an adequate amount of scientific thinking has been devoted to the subject planned; when this requirement has been complied with,

better work is the invariable result. If the method has been scientifically studied, the one best way found, and the work planned to be performed in this one best way, such planning must inevitably produce a better result than the ordinary or traditional method. Again, if careful study is given to the problem of finding the person best fitted to do the work, that person will naturally perform the task better than one selected in a haphazard manner. Following the same line of reasoning, it will be readily seen that if the same quality of study is given to the problem of *where* and *when* a certain piece of work is to be done, the work will flow more smoothly and evenly than if it is permitted to drift or squeeze itself through.

MASTER PLANNING FOR THE BUSINESS

Let us first consider the master planning of the executive heads of the business, which includes the major factors in the organization.

This planning will deal with policies, which are essentially standardized plans for the handling of repetitive conditions; and with the formation of policies, which will in most cases involve extensive research work and the compilation of statistics. Master planning will also deal with the product and will include not only the study of the product manufactured or sold by the company, but also a study of the product of its competitors. In like manner, master planning will deal with each of the main functions of the business, all of which are comprised in the master planning of the executive heads, and all of which are most important items, involving the very highest type of office work. A well-organized system of reports will be designed, extensive research work will be conducted, many data will be collected, and many statistics will be compiled.

The office manager in charge of the collection and classification of this planning material, while recognizing its importance, will nevertheless consider whether or not the material thus gathered is being properly utilized, for it frequently happens that an executive demands extensive reports which he cannot or does not use. In such cases, if the office manager presents the executive with a statement showing the cost of gathering and classifying this material and preparing it in the form of a report, the executive will generally decide to eliminate it.

DEPARTMENTAL AND INDIVIDUAL PLANNING

Similar work on a smaller scale will often have to be done for the various departments or sections; while this work is as indispensable as

the master planning work of the executives, it is necessarily more limited in character, even though the combined actual volume of such planning work done in the departments will be usually greater than that done by the executives.

Reports and statistics concerning the office organization will also form part of the planning work of the office manager. Thus he must study the seasonal fluctuations in order that he may be able properly to regulate and proportion his working force to provide for peaks in the business, such peaks requiring considerable study in advance of their arrival. He will also need reports showing what has been accomplished by the clerical force under his control, and statements of the relative efficiency of the workers.

At special periods or on special occasions, certain parts of the work of some particular department or departments may, for some special reason, need very close observation; reports must be devised for this purpose. In such cases great care must be exercised to prevent these becoming permanently fastened on the routine, a condition likely to ensue if not closely watched.

The worker's planning relative to his own work affords many opportunities for improvement, for as a rule it is poorly done and is always more expensive than when done under organized planning. It may, in certain circumstances, involve more time than all other kinds of planning combined.

HOW LARGE AN OFFICE CAN PLAN ITS WORK?

The usual "reason" given for failure to plan work in an organized manner by the small office is that it would involve unwarranted expense, while the same condition in a large office is explained by the statement that the work is so varied and complicated that centralized planning is impossible or, if possible, would also involve unwarranted expense. Of course, neither of these reasons is sound; they are merely plausible excuses, without substantial foundation.

An office consisting of one person would, of course, have individual planning; in one containing two persons, the planning can be organized. As offices increase in size, organized planning is not only possible but decidedly efficient and economical. The only difference between the planning in a small office and that in a large one is that in the large office it is economical to have one or more persons who specialize in only one or two functions; while in the other, one person may handle a number of functions. However, inasmuch as the volume of work to

be planned would be smaller in the smaller office, and the possible losses correspondingly less, this is no handicap.

In the large office the planning would be the special function of a department, possibly employing a number of people; while in the small office it might be the part-time duty of some competent individual. But the things to be done and the principles underlying the work are identical, be the office large or small. Any office, regardless of size, can and should plan its work in a scientific, organized manner.

PRINCIPLES WHICH GOVERN PLANNING

Since planning may be said to be "thinking out" in advance just what is the right course to pursue, it is subject to the same principles which govern all conscious, constructive thought, and involves much more than merely deciding to do a certain thing in a certain way. The decision arrived at as a result of scientific planning must be based upon logic and reason; emotion, sentiment, guesswork, or "hunches" have no place in this process.

Preplanning, as carried out in scientifically managed offices, requires scientific thinking, the principles of which have been previously stated as

1. A definition of the purpose
2. An analysis of the problem
3. A careful and diligent search for all the facts bearing upon it

Without exception, all scientific planning must be based upon these three principles.

In applying these principles, the planner must know whether or not the means are available for accomplishing the result he is planning; if they are not available, he must know how to devise them. Planning, therefore, requires not only the ability for scientific thinking, but initiative as well.

The actual accomplishment of the clerical tasks involved in planning is, of course, subject to the same rules as any other office task; the office manager who possesses a general knowledge of the principles of planning and their application to clerical work will find this knowledge of great assistance. To plan any kind of work, these facts must be known:

1. *The Work to Be Done.* This includes what the work is, how much there is (*i.e.*, the quantity), the best way of doing it, and how much time is available for doing it.

2. *The Capacity of the Force Available to Do the Work.* A knowl-

edge of the capacity of the force available for doing the work can, in a general way, be discovered by observation and experience, although knowledge thus acquired is not so accurate as that given by the establishment of standards. The more completely standardized the work, the easier it will be to ascertain the capacity of the force.

3. *The Preferential Order of Doing the Work.* This information is so easy to obtain when an analysis is made that it is surprising how little attention is paid to this very important factor in the planning of office work. Orders, or some other major unit, are usually attended to first, constituting practically all the preference shown; outside of this, clerks are kept on unimportant tasks, when work of far greater importance may be held up.

DUTIES OF A PLANNING DEPARTMENT

Wherever the terms "planning room" and "planning department" are used here for the sake of convenience, it should be understood that there may be neither a room nor a department actually devoted to the work, desirable as that may be. If desired, it may be called a "planning and methods department." The duties of such a department, whether handled by one person or by several, are as follows:

1. *Completely analyze all work to be done.* This means all work, whether special, routine, or periodical, for the purpose of determining

- a. What work there is to do
- b. How it is to be done
- c. Who is to do it
- d. When it is to be done

On the routine and periodical work, this analysis, once made, will not have to be repeated, unless changes in the method or organization are devised, with the exception that *b* and *c* will depend upon conditions covered under duties numbered 3, 4, and 11 below.

On special work, the making of an analysis will be aided by standard and current-practice instructions, so that the planning can be done quickly and efficiently. Thus, a piece of special work may consist of preparing a report on some subject. In this work, *a* will be covered, partially at least, in the requisition for the report, and the planner, from his knowledge and experience, will add the rest; *b* will be provided for mostly by the standards already in use; while *c* and *d* will depend upon the volume of work there is to be done and the capacity of the working force.

These four points must eventually be decided, even in the most inad-

quate planning, though each may receive insufficient consideration; with an organized planning department, they are analyzed deliberately, and due knowledge is obtained of all the factors and variable conditions which may exist. This constitutes the great difference between organized and unorganized planning: investigation and analysis are required in advance in an organized planning schedule.

2. *Set standards.* This is a logical part of the work of planning and includes all analysis and research work previously covered. In the beginning it requires a large proportion of the total time.

3. *Know the present status of all work.* Whoever does the planning must know at all times the quantity of work in process, the quantity to be done, and the capacity of the working force. He must also assume the responsibility of assigning all work. If it is found that certain types of work are best assigned by section or department heads, it should be understood that the assignment is made not for the job but for the general work; it should be further understood that the responsibility for seeing that the work is done in accordance with standards, as to both method and volume, will rest upon the individual who makes the assignment.

This may appear to be a departure from the principle of organized planning, but closer analysis will show that it is not so, for the manner of doing the work is always controlled by the standards, and the volume of output can nearly always be broadly specified, these two conditions being controlled by the planning department; what remains beyond this is the responsibility of the section or department head.

An example of this sort of assignment of duties may be found in the work of the private secretary. Thus, it would be manifestly absurd for the executive to request the planning department to ask the secretary to answer the telephone; but it is reasonable, practical, and highly profitable for the planning department, after having made a scientific analysis of the multitudinous duties of a private secretary, to devise the best standards for the conduct of such work, and then definitely to assign these duties, either temporarily or permanently, to some individual who has been scientifically selected and trained.

4. *Anticipate fluctuations in the volume of work.* The planning department must keep statistics on the volume of work to be expected, judging from past experience with seasonal or other fluctuations. When properly organized, this department should never be taken by surprise, by either a large or a small volume of work.

5. *Keep information classified properly.* It will be charged with the responsibility of devising and keeping up to date a proper system of

classification, so that the valuable knowledge and information accumulated by the company will be at once available.

6. *Improve systems, routines, and standards.* It will be charged with the duty of developing improvements on routines, systems, and standards, and it will accordingly be the final judge and arbiter as to suggestions made by employees and will control any suggestion system that may be established.

7. *Maintain systems, routines, and standards.* It will be its duty to maintain all systems, routines, and standards as established, so that unwarranted changes may not be made and the work and study of years wasted.

8. *Act as the source of all information about methods, routines, standards, equipment, machinery, and similar office activities and accessories.*

9. *Maintain and control office service functions.* It will maintain and have direct control of such office service functions as intercommunicating systems (including messenger delivery), janitor work, repair work, maintenance and upkeep of office, and so forth.

10. *Supervise all organized training work.* All organized training work shall be under its direct supervision, whether such work is done by individuals or a training section, so that it may carry out its responsibility of maintaining standards.

11. *Handle special and rush work.* It will be charged with the responsibility for getting out all the "out-of-ordinary" and "rush" work, and for this purpose, it should develop a flying squadron, described on page 462, or some similar method, and it shall have supervision over these special workers.

12. *Calculate all bonus payments or other special methods of incentive payment.*

These twelve duties constitute the work of an organized planning department. It will be admitted that the responsibility of such a department is great, and the duties numerous and diverse, yet every one of them must be performed or their performance attempted, for the omission of any of them is paid for by a loss of some sort, in every office, large or small. A careful study of these twelve tasks will disclose to the office manager the origin of most of his trouble.

ON WHAT WORK CAN PLANNING BE ORGANIZED?

Routine Work. All routine work can be planned. This is so obviously indisputable that it needs no argument in support.

Nonroutine Work. On nonroutine work, by which is meant jobs that are special as to time, conditions, methods, and so forth, it will rarely be found that they are entirely original or contain any elements that have not previously existed. The "special" character of such work is in reality a matter of small consideration. As has been mentioned before, those occupations which contain a large number of small jobs of varied character can be permanently or temporarily assigned by the planning department.

Work Requiring Much Initiative. Work of such character as to require a large amount of initiative should not, on that account, be assumed to be altogether outside the scope of organized planning. In such work there is much opportunity for standardization; the more the work is standardized the greater will be the amount of initiative to be devoted to the balance. Thus, the standardization of the duties of a private secretary, previously mentioned, solves many problems which otherwise would require for their solution the expenditure of initiative on the part of the person occupying that position.

Such planning is thus done far in advance of the actual performance of the work. The preparation of model letters, or a paragraph system, constitutes the preplanning done in the work of a correspondent, even though it has not been done by the personnel of the planning department.

FORMS AND MECHANISMS USED IN ORGANIZED PLANNING

The forms and mechanisms used in organized planning should be adapted to the work of the particular office concerned, for it is not likely that those used in one office will be wholly applicable in another. Experience has demonstrated, however, that certain types of mechanisms are valuable in many places and therefore applicable to a wide range of office needs.

THE ROUTE SHEET

The use of the route sheet in office work is different from its use in the scientific management of production work. In production work, the route sheet is a form from which time tickets, stores issues, move tickets, and so forth, are made up; it remains in the planning room and finds its greatest use in work in which special orders are manufactured. In office work the greatest use of the route sheet is on routines where work is identical or repetitive; the route sheet travels with the work.

Regular Routine Work. Regular routine work, such as orders and

invoices which pass through several hands, are divided into units or "blocks" of 10 or 20 pieces, or enough pieces to require, say, 15 or 20 minutes' work on the part of each person through whose hands the block or unit will pass. It may be necessary, in some cases, to have these pieces of work placed in a special envelope (of sufficiently durable quality to be used repeatedly), to which the route sheet is pinned or clipped. The route sheet should be prepared for as many steps as can be taken in a single direction, without division.

Divided Routines. If a routine is so constructed that at a certain point part of the work goes one way and part another, the route sheet, when that point is reached, should be returned to the planning room, which will designate the desk at the point of division as a subplanning station, the clerk there being required to originate a new route sheet to each destination starting from his desk. In cases like this, it is well to have the sheets showing the paths of the divided track distinguished from those which originate in the central planning room.

Special Cases. In some cases it may be advisable to introduce a route-sheet form of planning in some section of the office work which is handled independently of the central planning room. This might occur in a case where time was the chief element in the service rendered, when to have the work done in the central planning room would entail delay; but even in such cases, the planning room would have supervisory control over the substation.

RECORDS

The planning room should maintain a record of the time each route sheet leaves the room, and the time it is returned.

There should be a graphic record showing the available time units each day and the work units assigned, so that at all times the planning room may know what available time exists at each point in the office.

Temporary Special Assignments. These should be covered by daily work sheets or assignment tickets. In the case of a clerk assigned special work for a definite period of days or weeks, these daily tickets need not be made out, but a memorandum should be placed in the tickler, to be taken out a few days before the completion of the task, so that it may be known how near the task is to completion.

Permanent Special Assignments. Clerks who are permanently assigned to special work are not considered among the available time units, but the head of the section or department where such persons are working should be charged with the responsibility of reporting to the

INSTRUCTIONS


Each clerk handling the orders on this Route Sheet will be held responsible for the orders supposed to have been enclosed in the envelope. Therefore, it will be necessary for each clerk before commencing work to check over the orders carefully. If any are missing immediate search must be begun. If any are deducted for any reason, draw a horizontal line opposite Route Sheet number to column headed "Reasons for Deductions" and explain why deducted.


ENTER CLOCK NO. ON THIS LINE	58	32	75	77	84	91	74			
R. S. NO.	INVOICE NO.	CODE	ADV. R.	ROUTE	TYPE	INSPECT	DUPLICATE	INSPECT	SNIP	REASONS FOR DEDUCTIONS
15401	129654	✓	✓	✓	✓	✓		✓		
15402	5	✓	✓	✓	✓	✓		✓		
15403	6	✓	✓	✓	✓	✓		✓		
15404	7	✓	✓	✓	✓	✓		✓		
15405	8	✓	✓	✓	✓	✓		✓		
15406	9	✓	✓	✓	✓	✓		✓		
15407										
15408										
15409										
15410										
15411										
15412										
15413										
15414										
15415										
15416										

ROUTE SHEET

Outfit ORDERS NO. 15400

THIS ENVELOPE CONTAINS 24 ORDERS.

PLANNING DEPARTMENT RECORD
 LEFT

 MAY 31

RETURNED

 MAY 31

DEPARTMENT <i>CL. 20</i>	OPERATION	ARRIVED		COMMENCED		DELAYED		LEFT		SHOULD TAKE		TIME TAKEN	
		HOURS	MIN.	HOURS	MIN.	HOURS	MIN.	HOURS	MIN.	HOURS	MIN.	HOURS	MIN.
58	CODE	10	20	10	30		10	10	42	12		12	
32	ADV RECORD	10	42	10	54		12	11	07	12		12	15
75	ROUTE	11	08	11	08			11	19	12		11	
77	TYPE	11	20	11	25		05	11	44	18		18	10
84	INSPECT	11	44	11	44			11	55	12		11	
91	DUPLICATE	11	55	1	00		09	05	1	20	23		15
74	INSPECT	1	20	1	20			1	29	09		09	9
	SNIP	15	5/21/16					0	32	1	57		130

REMARKS:

FIG. 83. This shows the front and reverse side of one route sheet. One of these sheets is put on the outside of an envelope containing the batch of pieces indicated by the numbers on the reverse side of the sheet. Each batch of pieces is known as a unit. The form of the route sheet is immaterial, except that space should be provided on it for a statement of the number of pieces enclosed or attached, the time the sheet left the planning room, the time scheduled for its return, the time it arrived at each point, and the time work was started and finished. The sheet should also provide space in which the time can be indicated when, for any reason, the piece of work was taken out of the routine. In order to avoid delaying other blocks or units of similar work. Each person receiving a route sheet is expected to count the number of pieces received and record this number on the sheet in addition to the above information.

central planning room when there is a lull in the work and when any of these clerks on special work is temporarily available for other duties to fill in the time. It will be found that where this principle is established, the clerks themselves will suggest to the planning room that they are available for a few hours of work elsewhere, for no normal person will deliberately loaf.

OFFICE SCHEDULING

As used in scientific management, the word "scheduling" evidently comes from railroad terminology where published timetables are really lists of trains and the time at which they are due to arrive at and depart from particular stations. If, therefore, we consider office scheduling as a statement of the times that work is supposed to arrive at and leave a particular station on its course through the office, we shall have a fairly definite idea of its meaning.

The necessity of determining the time at which any particular piece of office work is to be performed is not yet so fully recognized as in some other branches of business, but it is fully as important there as elsewhere, since, as we have seen, the product of an office is as real and tangible as that of a factory. Most offices schedule some things, but very few schedule all the work that can be profitably scheduled. The mere listing of things to be done—a process which in itself touches only the fringe of scheduling—frequently shows at once whether or not the tasks listed can be accomplished in the time available, and usually indicates also the relative importance of the items, but an executive who thoroughly schedules his work is always able to accomplish much more than one who does not.

Scheduling also involves the determination as to whether or not the time selected for the performance of any task is the best time; this furnishes the true answer to the "do it now!" slogan which has led so many executives into confusion and chaos in their efforts to avoid procrastination, a vice that is automatically eliminated by scheduling.

SCHEDULING THE FLOW OF OFFICE WORK

Scheduling the flow of work is the application that is most neglected. Most of the general work of an office flows through definite routines; all such work should be scheduled—that is, all orders which leave the planning room at a certain hour should be scheduled to pass through all the necessary operations and be finally disposed of at a certain hour.

Special, unrelated tasks, which are not part of any routine, should

be assigned and a time for completion set; with all scheduled work there should be a follow-up to see that the work is done on time. Approximately 75 per cent of all work in the average office can be scheduled.

AVOID UPSETTING THE SCHEDULE

Naturally, a schedule on which a large amount of careful thought has been expended will give the most important work a preferred place. In the preparation of such a schedule, it is very important that all the work that is to be done be known and to arrange to have all work scheduled from a central location such as the planning room explained in this chapter. It is futile to plan and schedule certain work to be done at a stated time, and then permit the plan to be ignored and upset by some department manager who thinks it should be set aside for work of his own that he assumes to be more important; yet this is exactly the condition that confronts many an office manager who attempts to plan and schedule work. In such case the only alternative is to arrive at a distinct understanding with department managers, since permitting the upsetting of the schedule defeats the entire object.

It is presumed that all department managers will be taken into the plan and their needs duly considered. This will involve allowing a certain leeway to each, so that if decidedly important work happens to come up, it may be handled without upsetting the schedule. A lesson in this way may be taken from the railroad train schedule. The running time between two terminal points, with an allowance for stops, is not the schedule, for if this were established, the trains would be constantly late. An allowance is made to provide for unforeseen contingencies; this allowance is added to the running and necessary waiting time (and each other element of the schedule) so that if the train is held up at a bridge or any track obstruction a little longer than provided for, the engineer can make up the time by traveling a little faster to the next station.

PRINCIPLES WHICH GOVERN SCHEDULING

1. *How much work and time are involved?* Before any schedule can be correctly made, it is necessary to know how much work and time are involved; without this knowledge it is a waste of time to attempt to construct any schedule. Estimates based upon previous knowledge are permissible in some cases, but guessing is never adequate for this purpose.

2. *What work has already been scheduled?* It is necessary to know

what work has already been scheduled, in order to avoid assigning one person to do two tasks at the same time; to avoid this error, coordination is required in the scheduling function. It is not possible for each of several individuals or heads of departments, whose work is interdependent, to do his own scheduling.

3. *How many clerical hours are available?* To perform the work of scheduling correctly, the person engaged upon it must also have a knowledge of the clerical hours available, in order that work that cannot be done in the scheduled time will not be attempted. This involves a knowledge not only of the total number of clerks present, but of the number capable of performing each kind of clerical work scheduled.

FACTORS TO BE CONSIDERED

In preparing an office schedule the following factors must be considered:

1. The actual time required to do the work
2. The actual time required for the work to travel between points in the office
3. An allowance for *probable* delays which can be foreseen
4. An allowance for *possible* delays which cannot be foreseen

Factors 1 and 2 are simple, for here we are dealing with either known facts or facts which can be readily ascertained. Factor 3 requires study over a considerable period of time to determine the delays which have occurred during this time, so that an average allowance can be calculated for them. In calculating this, the office manager will take into consideration the probable demands of a particular department manager for extra time or work and make allowance for it.

For example, if the orders pass through the sales department in the order routine, that department will most likely desire, as a regular thing, to have certain statistics taken off the orders, which of course can be allowed for in factors 1 and 2. But in addition, the sales-department head may, on certain occasions, request some extra work from the clerks who have been compiling these statistics, amounting to an hour or so. He cannot say definitely when he will want this work, for it depends upon certain information that may be asked for by the president, but he would like an allowance of one hour daily to be made on this kind of work as it passes through his department. If, after due discussion and planning, the work requested is thus provided for, it will not in any way interfere with the schedule. Both the office manager and the sales manager have considered it, and to the best of

their knowledge this daily allowance of one hour will be sufficient. If no further allowance is made, and a short time thereafter the sales manager has something important arise which will require more than an hour, it would not have been possible for him to foresee this. The office manager will provide for part of this extra work through the allowance made for factor 4. If the time required is still greater than his allowance, he will have to secure extra help from his flying squadron, or delay the schedule, the former step being preferable.

NONROUTINE WORK AND PERIODICAL WORK

The nonroutine work must be provided for by allowing certain clerks for its performance, but the periodical work, such as reports, statements, balances, and the like, can and should be definitely scheduled as to the day and hour each part is to be begun and date finished. A piece of periodical work can usually be scheduled just as closely as can the daily routine work.

FOLLOWING UP THE SCHEDULE

It is, of course, not sufficient to schedule work and then trust to luck or chance that the schedule will invariably be carried out. Means must be provided by which it is definitely known that it is being carried out every day.

HOW THE MAIL-ORDER HOUSES DO IT

In the mail-order houses, work is put through in "blocks," each block being the amount of work that can be done in 10 minutes. As a block of work comes to a certain station, it is known that 10 minutes only is allowed to handle it, and that it must be done in that time, for by then another block will come along. At every interval of 10 minutes, a block arrives, and this keeps up as long as the day's volume of work comes through. Of course, some blocks will require 11 minutes, and some only 9, or even 8, but in a general sense they come along regularly and must accordingly be done regularly.

Despite this irregularity, however, unforeseen delays will at times occur. Each department, therefore, is allowed a leeway of one-half hour; that is, it may be less than half an hour behind schedule, but directly that period is exceeded, the department manager must report the fact to headquarters. Such a delay may occur because the depart-

ment is shorthanded; for that matter, if the work is started with fewer people than are actually required, it is the department manager's duty to notify his superior, who will endeavor to make up the deficiency. In mail-order-house management, it is considered very serious to fall behind schedule; as each department manager realizes this, he makes heroic efforts to keep up, despite all difficulties. His job is to overcome difficulties, not surrender to them; if he finds this is not possible, he calls for help.

SHOULD THERE BE MORE THAN ONE PLANNING ROOM?

The decision as to whether there shall be one central planning room, or several small ones under a central management, will depend largely upon the character of the work. If the work originates in the department, as in a central stenographic section, or through requisitions made upon the department from other parts of the organization, it may be well to have the planning of that work done in that section, subject to the control of the central planning room. It would be a manifest waste to make it necessary first to notify the planning room to notify the stenographic department; the purpose of organized planning is to eliminate waste, not to increase it.

PLANNING-DEPARTMENT PERSONNEL

The head of the planning work should possess organizing as well as analytical ability, also tact and discretion, as there will be many occasions to exercise these qualities.

The time-study work and the setting of standards should be done by an understudy to the chief of the planning department; he should possess qualities similar to those of his chief.

Such clerical work as there is to be done in the planning department should be performed by a high-class clerk, one with some mathematical ability being preferable.

THE PLANNING DEPARTMENT MUST PAY ITS WAY

In no sense should the planning department be regarded as an extra "frill." It should pay its way almost from the very beginning. It is assumed that the planning department will make its value evident by organizing the planning and by demonstrating that organized planning is better and cheaper than individual planning.

Of course, there will be a period during the organization of the plan-

ning and the development of standards when there will be no visible financial return, but this expenditure should be regarded as an investment to be put on a profitable basis as soon as possible. When the work is well started, however, returns should be regularly available for an indefinite period.

Standardization will result in immediate improvement and substantial savings. The latter should be calculated not upon a weekly but upon an annual basis. A clerk who is paid \$30 a week receives \$1,560 a year; the saving of one \$30-a-week clerk should, therefore, pay for \$1,560 worth of planning-room work.

If the savings in clerical work do no more than balance the cost of the labor of planning, there is still an advantage in planning, because the service is improved, which in itself may be a very large, if not calculable, saving. In the beginning of the standardization work, there will be extensive savings of clerical help which should be all credited to the planning room. The head of the planning room will, of course, record these savings and bring them to the attention of the office manager as they are made, so that the record will be available for future use.

The work of setting standards, though never finished, will, however, finally reach a point where it is merely a matter of upkeep; when that time arrives, the help in the planning room should be reduced.

QUESTIONS FOR DISCUSSION

1. What is the difference between planning and scheduling?
2. What are the usual results of unplanned work?
3. Explain the difference between organized planning and unorganized planning?
4. Comment on the way planning is done in some offices.
5. Explain fully "scientific preplanning."
6. Explain master planning for the business.
7. Explain departmental and individual planning.
8. How large an office can plan its work?
9. What are the usual "reasons" given for failure to use organized planning in an office?
10. What are the three principles which govern planning?
11. What three facts must be known in order to plan any kind of work? Comment on each.
12. Why, in planning, is it important to know the preferential order in which work is to be done?

13. Explain "planning department" functionally. Who may exercise the functions of the planning department?
14. What are the duties of a planning department?
15. Why should the planning department analyze all the work to be done?
16. Why must the planning department at all times possess knowledge of the amount of work in process, the amount to be done, and the capacity of the working force?
17. Comment fully on the assignment of work by the planning department, and illustrate your answer.
18. Why should the planning department keep statistics of the volume of work to be expected?
19. "A careful study of the twelve tasks of the planning department will disclose to the office manager the origin of most of his trouble." Explain.
20. On what three classes of work can planning be organized?
21. Comment on the forms and mechanisms used in organized planning.
22. What is the route sheet, and how is it used?
23. What is a divided routine?
24. How should special assignments be covered?
25. What records should the planning room keep?
26. Comment on office scheduling generally.
27. What percentage of work in the average office would you say could be scheduled?
28. What steps should the office manager take to avoid upsetting the schedule?
29. What information is necessary before a schedule can be correctly made?
30. Name and comment on the four factors which must be considered in preparing an office schedule.
31. Comment on the scheduling of periodical and nonroutine work.
32. How is the office schedule followed up?
33. Should there be more than one planning room? Why or why not?
34. What personnel should the planning department have?
35. "The planning department must pay its way." Why?

PROBLEM I

The General Manufacturing Company makes a commodity that is sold to wholesalers, jobbers, syndicate stores, and large retailers. Al-

though an average of 200 orders is received daily, the amount received each day fluctuates considerably either above or below this figure. Many of these orders are for future delivery. A glance at the main workroom of this office gives the impression that it is very busy—workers are rushing about from one desk to another, and there are always several clerks waiting at the office manager's desk to ask questions. Yet despite this apparent hustle, a study shows that there are about 50 per cent more clerks than their leading competitors have, handling a similar volume.

It is evident that this office lacks effective planning and scheduling. What, in your opinion, are the elements that need planning? What should be scheduled?

PROBLEM II

The Maxfield Button Company has an office of 125 persons, divided unevenly into five groups, as follows:

- Accounting
- Order and billing
- Advertising
- Production control
- Statistical

Although the work of these groups is more or less coordinated, it is quite dissimilar. There are many periods when one of the groups may be overworked, while another is producing less than capacity. A study shows that this lost capacity in the whole office amounts to about 20 per cent.

How would a planning department proceed to recover this lost capacity? How would it be organized? What type of personnel should it have, and approximately how many persons would be required?

"No business, no matter what its size, can be called safe until it has been forced to learn economy."—H. S. FIRESTONE.

XXVII

KEEPING OFFICE EXPENSE DOWN

It costs money to do business. The return from the money spent in getting sales is obvious, also from that spent in producing what is sold. But the office does not sell anything, and it does not make anything which can be sold. Small wonder that accountants considered the cost of office work as "unproductive expense." Many still do.

Such an attitude puts upon the office manager the burden of demonstrating that instead of the office's being an unproductive expense it is really a money maker and a money saver. It is a money maker when it contributes to the giving of better service to customers and to other departments, since customers like to deal with those concerns which give them good service. The office is a money saver when it reduces the cost of rendering service without decreasing the excellence of the service itself.

There is no secret about saving money. It is largely a matter of habit, just as continued good work is a matter of habit. Over two hundred years ago an American named Benjamin Franklin told the world how to get rich. The fundamental philosophy of Poor Richard can be stated in four words: Waste not, want not.

The sin of American business is waste. Extrayagance in both large and small concerns is so obvious and manifest as to reflect the lack of prudence on the part of the management; perhaps it is indifference; or it may be ignorance. Whatever it is, the failure to curb it is unjustifiable. Any management engineer can put his finger upon fifty places where money can be saved—not at the expense of the business, but simply by reducing waste.

What happens during a so-called "economy wave"? Usually two things: some employees are let out, and a few miscellaneous expenses are "cut." When the wave passes, as all waves must, the payroll begins

to increase again, and the whole organization gradually resumes its old wasteful habits until the next economy wave comes along.

No, that is not the way to save money. Saving is a habit; it might almost be said to be a state of mind. It does not mean parsimony, which spends little or nothing. The manager with the saving habit is not afraid to spend money where the results will be commensurate with the amount spent. But he sees no justification for, and he will not condone, spending which has no justifiable purpose.

INEXCUSABLE WASTES

Perhaps it will help to examine some of the forms of waste which are to be found in almost every organization.

There are certain glaring wastes which are inexcusable—placing on the payroll employees who are not needed; buying services which do not contribute to the effective operation of the business; paying more for physical features than the business warrants, often for the sake of appearances, and frequently at the expense of other items which would contribute more to the concern's well-being. As someone has wisely said, "It isn't keeping up with the Joneses that causes the trouble; it is trying to pass them on a curve."

Everybody will admit the indefensibility of the items mentioned in the preceding paragraph and will condemn their continuance, even if nothing is done about them. But there are other items, not so conspicuous, which also deserve attention. During any period of retrenchment, lists of possible savings appear in many places and are presented to various groups. The virtuous feeling with which we start to carry out some of the suggestions—it would be too much to expect us to carry them *all* out—would be humorous if it were not a bit tragic. For the experienced observer knows that the suggestions will fall, one by one, until not even the memory is left. *Sic transit*.

In effect all wastes may be divided into three classes:

1. Waste of money
2. Waste of time
3. Waste of effort

Since time is money, the single waste is of money in various forms. The waste of supplies is a waste of the money paid for them. A waste of effort is a waste of time.

HOW TO PREVENT THESE WASTES

First, waste can be prevented by a control over the expenditure of money. The time to exercise that control is when the expenditure is

proposed. Afterward, when the approved proposal has become a commitment, may be too late. A carefully prepared budget, properly administered, will help to control unwise expenditures. But even with a budget a definite attitude is essential to the best results. Many people feel that the fact that an item is in the budget is sufficient justification for spending the company's money. Others believe that no more money should be spent than is allowed in the budget. In order that a budget may be flexible, as all budgets should be, some leeway must be provided for necessary adjustments.

A budget furnishes a guide. Properly constructed, it is more than an estimate of income and expenditure for the coming period; it should show what we expect to do and what it will cost to do it. To carry this viewpoint a step further, the responsibility for budget results should be definitely placed on named individuals, so that each individual who is responsible for results knows what his responsibility is and may be held to it.

While a budget is a guide, it is also a means of checking on performance. The budget says we expect to do so-and-so; actually we did thus-and-so. Why? The comparison of budgeted figures with actual results and the seeking of reasons for any differences, are valuable features of budgetary control. They also help in making plans for future action.

The second method of preventing wastes is by a control over the procurement and use of materials, equipment, and services for which money is being spent.

Standard specifications should be prepared for all materials and supplies used in the office. These items should be packaged in easily dispensable quantities and their use supervised and checked to prevent waste.

Equipment should be used with care and kept in first-class condition. Dirt and improper operation of a machine will shorten its life measurably; many a new typewriter has been ruined within one month after purchase, because of neglect.

There should be no waste of services. Certain utilities are so handy that it is easy to abuse their very convenience. The telephone is probably the outstanding example. It may be abused in three ways: personal calls; inefficient use for company business; and unnecessary and extended toll calls. When the toll calls of one company amount to nearly a million dollars a year, the money-saving possibilities are immediately apparent.

Another utility which is abused is the telegraph. One company saved

\$2,000 a month in its telegraph costs by studying the services offered by the telegraph company and adapting its requirements to them, assigning the responsibility of sending outgoing messages to one person in each branch and department, and showing how to cooperate to get the desired service at lower cost. Simply editing telegrams to bring them within the 10-word base has saved many dollars for many concerns.

The waste of electricity is appalling. Lights left burning, fans left running, machine motors not switched off (where not automatic), and so forth—all contribute to unnecessary expense—waste.

THE WASTE OF HUMAN EFFORT

Finally, there is the enormous waste in human effort. Thousands of office employees are doing unnecessary work. Thousands more are doing necessary work inefficiently. If the principles, methods, and suggestions presented in this book lead to better office management, many of these human wastes will be eliminated. But a conscious effort must be exerted by the office manager. He must abhor waste in any form, visible or invisible, and he must get the habit or state of mind which will constantly measure results against costs. Let him remember that it is important to make savings in good times as well as in bad; that economy waves are undesirable because their advantages do not offset their upsetting effect on the organization; that good management endeavors to eliminate waste wherever it is found, whether in high or low places; and that he must not be satisfied until he eliminates all waste and *keeps it eliminated*.

POSSIBILITIES OF PERMANENT SAVINGS

The Research Committee of the National Office Management Association (NOMA) made a comprehensive survey at the beginning of the Second World War to promote the elimination of waste and conservation in the office as a contribution to the war effort. Excerpts from the report of that survey are presented, since many, if not all, of these savings, can be made permanent. Attention is called to the statement of the committee that "many of these practices would not be considered practical under normal conditions but are justified only by the emergency." One good criterion by which to distinguish such an emergency measure from others is the effect it would have on the efficient handling of the office work. For example, the use of the two sides of a letter-head for a letter is obviously an emergency measure, designed to save

paper. However, the distraction of continually turning the sheet over in order to grasp what is written on both sides is not conducive to clear thinking; the time lost may offset the saving of paper.

SPECIFIC OFFICE CONSERVATION PRACTICES¹

This section of the report presents a compilation of conservation and waste-elimination practices that have been used effectively by companies included in this survey. They have been grouped under logical headings and constitute a practical check list for use by individual companies. All these practices are not applicable to all companies, of course. It should be remembered, also, that many of these practices would not be considered practical under normal conditions but are justified only by the emergency.

ECONOMY IN PAPER UTILIZATION

1. Stationery

- a. Use both sides of paper for correspondence extending beyond one page. This applies to both original and copies.
- b. Use lighter weight paper for all stationery requirements. A number of companies have reduced letterheads from 20-pound to 16-pound stock.
- c. Provide half-size stationery for short letters, memorandums, etc. By running the letterhead across the short dimension rather than the long dimension about 50 per cent more writing surface is secured.
- d. Use back of letter being answered for carbon copy of reply. This saves filing space as well as paper and eliminates the need for stapling.
- e. Eliminate extra file copies of correspondence. Where two copies had been provided, one for the files of the originating department, and the other for the general correspondence files, the latter may be dispensed with during the emergency.
- f. Type or note answer on original letter or memorandum received and return where no file copy of reply is required.
- g. Minimize the need for formal memorandums for notices of meetings, conferences, etc., by using the telephone.
- h. Use small printed letterheads instead of multigraphing regular letterheads.
- i. Use both sides of paper for bulletins, notices, etc., prepared by mimeograph, multigraph, multilith, or similar processes.
- j. Appraise the need for all duplicated material, and discontinue any not fully justified under present conditions.
- k. Control closely the number of copies of duplicated material prepared. Eliminate over-runs. Run off in smaller quantities and more frequently to minimize waste.

¹ *NOMA Forum*, Vol. 17, No. 5, pp. 6-17.

- l.* Centralize responsibility for approval of all duplicating work with authority to prescribe quantity, size, and quality of paper to be used.
- m.* Use 13-inch mimeograph stencils to reduce multipage work.
- n.* Reduce size of stationery. By reducing its letterheads from 8½ by 11 to 8 by 10 inches and buying mill runs of paper to accommodate the new size, one company saved 13 square inches of paper on each of 7,000,000 sheets.
- o.* Eliminate cover memorandums for transmittal of self-explanatory material. A notation directly on the material may serve in place of a separate routing tab or memorandum.
- p.* Substitute postal cards for letters where practicable. Single and double penny postcards have been substituted for letters, saving paper, carbon, envelopes, and postage.
- q.* Use obsolete or spoiled paper and forms with a blank side for scratch paper, second sheets, rough drafts, etc. Employees can be trained to save much of the material that normally finds its way into the waste basket and to use it for scratch-paper purposes. A folder on each desk is an effective way of assembling this.
- r.* Use smaller size scratch pads and ration more strictly.
- s.* Reuse customer statements by pasting a small patch over the addressographed name and reprinting.
- t.* Eliminate monthly statements of accounts to customers where practicable.
- u.* Adopt the army procedure of endorsements on the original letter rather than writing a separate reply. This has special application to internal correspondence.
- v.* Use narrow-width adding-machine tape wherever possible, double space only when required, break off tapes close to listing, put supplementary figuring and notations on reverse side of tape rather than using a fresh section, and make sure that rolls are carefully inserted to prevent binding, wrinkling, or tearing.

2. Envelopes

- a.* Use lighter weight and smaller size envelopes.
- b.* Standardize on a smaller number of varieties.
- c.* Eliminate envelopes for internal and intercompany mail. Where master envelopes are used, enclosure envelopes should not be necessary. Confidential letters can be folded and stapled or fastened with a small label.
- d.* On intercompany mail leave envelopes unsealed so they may be reused.
- e.* Make maximum use of messenger or chain envelopes. Some companies use these for as many as 50 trips.
- f.* Save incoming envelopes in good condition for reuse. This applies particularly to large kraft envelopes. If opened carefully these will serve many purposes for housing forms, supplies, etc.
- g.* Eliminate return envelopes from advertising mailings.

- h.* Save incoming envelopes, open carefully, and use inside for scratch paper. One company saves all incoming envelopes and sells them as waste paper, the funds going to the Red Cross.
- i.* Eliminate the transparent window covering on window envelopes.
- j.* Consolidate in one envelope all mail for one destination.

3. *Forms*

- a.* Carry out a form reduction and elimination program. Call for a justification of every copy of every form.
- b.* Standardize and simplify on the physical specifications to reduce waste in cutting and minimize varieties.
- c.* Revise existing forms only when vitally necessary.
- d.* Reduce the quantity and increase the frequency of ordering to minimize the danger of obsolescence and deterioration.
- e.* Establish centralized control of all printed forms.
- f.* Make use of combination runs in printing forms.
- g.* Use blank back of obsolete forms for miscellaneous purposes.
- h.* Use both sides of tabulating-run paper.
- i.* Pull ledger sheets for closed accounts and use on back.
- j.* Eliminate cardboard backing wherever possible. Side banding may be substituted on many form printing orders.
- k.* Use one-color printing so far as possible and eliminate colored stocks.
- l.* Minimize use of numbered forms.
- m.* Use mimeograph paper for all office forms.

4. *Filing material*

- a.* Reuse file folders, index folders, and file guides. Reversing and relabeling often permits such reuse.
- b.* Salvage filing material released through the weeding of active files for reuse.
- c.* Survey inactive or dead file to locate material for more active use.
- d.* Use the backs of 3- by 5-inch index cards.
- e.* Limit file-folder prongs to thick or unwieldy files only.
- f.* Reuse storage binders formerly destroyed.
- g.* Question more strictly as a means of reducing filing requirements, the necessity for filing material.

5. *Waste paper*

- a.* Provide for systematic collection, baling, and sale of waste paper. Both utilization and price are improved where some method of sorting is employed.
- b.* Waste paper is shredded and used for packing materials.
- c.* Save and reuse cardboard and corrugated paper for packing.
- d.* Use obsolete cardboard signs as backing for forms and scratch pads.
- e.* Save shipping cartons received for reuse.

6. *General*

- a. Paper economy has resulted from the reduction of margins, use of single-space typing, circulating copies of correspondence rather than providing individual copies, encouraging brevity in correspondence and reports, and correcting errors on the original rather than rewriting. One company has prohibited the rewriting of letters and manuscripts except where specifically authorized.
- b. All periodic and special reports are surveyed and the need for each one definitely established. Unnecessary reports not only waste paper but also time in their preparation and use. Reports justified under normal conditions may have outlived their usefulness, might be consolidated or modified as to frequency of issue or number of copies, or might be dispensed with entirely as an emergency measure. Routing the original may serve in place of individual copies. The exception method of reporting has economy possibilities.
- c. Keep mailing lists and general distribution lists clear of "dead wood."

ECONOMY IN THE USE OF OTHER OFFICE MATERIALS AND SUPPLIES

1. *Typewriter ribbons*

- a. Eliminate combination red and black ribbons. Experience shows red section often still good when ribbon is discarded. Infrequent need for red characters is met in some cases by inserting a piece of red carbon or red ribbon behind the black ribbon. One company using combination ribbons uses the red section for all internal correspondence as a means of equalizing the use.
- b. Turn one-color ribbons at intervals to ensure full use.
- c. Alternate with two ribbons week by week to extend their life.
- d. Wind ribbon completely on one spool before leaving at night.
- e. Use reinked typewriter ribbons.
- f. Require empty spool and box to be turned in before new ribbon is issued. Spools and boxes are returned to supplier.
- g. Keep a card record of ribbons and other supplies issued for each machine.
- h. Revive old ribbons by winding against a cloth dampened in typewriter oil. An extension of life of 8 weeks was secured by this means in one case.

2. *Pencils*

- a. Replace wooden pencils with mechanical pencils to secure longer service.
- b. Reduce the number of varieties and grades of pencils issued.
- c. Issue new pencils only on the return of stubs.
- d. Use pencil lengtheners for wooden pencil stubs.
- e. Use harder grades of lead to increase life.
- f. Keep pencil sharpeners repaired. Dull and inefficient sharpeners chew up a lot of pencils.

- g.* Salvage the lead from stubs of drawing pencils for use in mechanical pencils.

3. Carbon paper

- a.* Salvage one-time carbon for use with teletype and tabulating forms. Some companies use these in lieu of regular carbon paper where only one or two copies are required.
- b.* Prolong the life of carbon paper through care in handling and use. Issue in smaller quantities. Prevent wrinkling and tearing in storage cabinets and desk drawers.
- c.* Turn carbon paper frequently. By judicious placement and trimming, all space on the carbon can be used.
- d.* Where multiple copies are required put used carbon on first copy and new sheet at the back.
- e.* Provide for central examination of carbon paper before disposal to ensure full utilization.
- f.* Use hectograph in place of typed copies to save carbon paper.
- g.* Substitute carbon-paper ribbons for carbon sheets to secure greater utilization. This has special application to one-time carbons in continuous forms.
- h.* Print instructions for proper handling of carbon paper on the wrapper in which it is issued.

4. Clips, pins, staples, rubber bands, etc.

- a.* Remove and reuse all clips, pins, rubber bands, and other fasteners from material before filing, and from all material weeded from files.
- b.* Replace clips and pins with staples. Staples use far less metal.
- c.* Use paper fasteners for metal staples.
- d.* Do not use several rubber bands or staples where one will do.
- e.* Issue supplies more frequently and in smaller quantities to minimize loss and deterioration.
- f.* Ration miscellaneous supplies to control excessive use.
- g.* Salvage obsolete rubber stamps.
- h.* Require the return of worn-out rubber finger tips.
- i.* Use string in place of rubber bands. String-tying machines have been employed in this connection.
- j.* Use paper bands and gummed strips for rubber bands. One company saves the business reply envelopes it receives, opens them and cuts them into strips with a gummed section on each one to use for binding papers.
- k.* Use a sewing machine for fastening papers before filing.
- l.* Save mimeograph stencils and hectograph masters for reruns.
- m.* Use one stencil for two short mimeograph jobs.
- n.* Substitute glue or mucilage for rubber cement.
- o.* Substitute clorox for ink eradicator.
- p.* Launder dust cloths instead of buying new ones.

7. Substitute cotton-sheeting mill ends for cheesecloth and wiping cloths.
- r. Use duplimats instead of aluminum plates on the multilith.
- s. Save screws and rings of discarded binders.

General

- a. Provide for a thorough inventory of all office supplies on hand and arrange for the return of surplus stocks. A 15-minute inventory of desks in one company resulted in finding about a month's supply of paper, obsolete forms, etc. After a similar survey and the institution of a strict system of rationing another company reports that it hopes to make present inventories last for 10 years.
- b. Institute a periodical follow up for the return of unused and surplus supplies to stores. Some companies provide for this monthly.
- c. Put more definite restrictions on the issuing of supplies by requiring a written requisition, formal approval of superior, etc. A number of companies have raised the approval level for issuing supplies as a means of tightening control.
- d. Centralize the distribution of all supplies.
- e. Substitute new products that economize on critical materials wherever possible.
- f. Simplify and standardize all office supplies to reduce number of varieties and permit purchasing in larger quantities.
- g. Provide for frequent checking of waste baskets to locate wasteful practices and economy suggestions.

ECONOMY IN THE USE OF OFFICE MACHINES, FURNITURE AND EQUIPMENT

1. Take an accurate inventory of all machines and equipment to establish location and extent of use.
2. Shift machines and equipment between departments to coincide with needs and to meet requirements for additional equipment.
3. Set up a central pool from which departments borrow to meet peak demands and part-time requirements. This practice is followed quite frequently with typewriters.
4. Centralize operations involving machines to permit greater utilization of equipment.
5. Provide for multiple shifts as a means of utilizing equipment, machines, and facilities more fully.
6. Provide for staggered working hours of departments using the same equipment.
7. Standardize and simplify varieties of office machines, furniture and equipment to provide greater flexibility and facilitate maintenance.
8. Substitute wooden equipment for metal.
9. Revise systems and procedures to eliminate the need for special equipment. One company reported a saving of approximately \$10,000 in annual machine

- rental through a change in its order entry and billing procedure. Another company reported an annual saving of \$5,000 in equipment and forms and \$3,000 in labor through a change of its sales-analysis procedure from a machine to a manual operation.
10. Adopt a policy of more intensive care and maintenance of existing equipment. A number of companies formerly employing self-service or service on call have changed over to service contracts, sometimes at additional net cost. This is considered justified to permit longer use and reduce service interruptions.
 11. Instruct all employees in the proper care and use of furniture, machines, and equipment.
 12. Modify standard trade-in or retirement policy to secure longer use. Because of the emergency, equipment is being retained in service even when it becomes a high-cost item from the maintenance standpoint.
 13. Rehabilitate old equipment previously retired from service as obsolete or uneconomical.
 14. Centralize files and adopt a files-purging system.
 15. Inventory all partly used file cabinets and partly filled drawers as a basis for reassignment and reallocation of equipment.
 16. Reduce filing-space requirements by a revision of the record retention schedule. One company reported a saving of 6,945 standard filing drawers through this means.
 17. Inactive records microfilmed to reduce storage-space requirements.
 18. Program for the periodic examination of storage shelves in effect.
 19. Repair and repaint old furniture about to be discarded to make usable.
 20. Substitute chairs with writing arms for small salesmen's desks.
 21. Extension of counters in cashier's office to replace two desks.
 22. Cover all office machines before leaving at night. This not only protects the machines from office dust but makes the ribbons last longer.

ECONOMY IN THE USE OF SERVICE FACILITIES

1. Designate monitors to be responsible for extinguishing lights at noon and evening.
2. Place caution cards on light pulls and switches.
3. Distribute special instruction bulletins on methods of economizing in the use of light and power.
4. Conduct an educational campaign to use more daylight—keeping blinds up, lights off.
5. Hold employees responsible for turning off lights when leaving desks or room.
6. Equip desks with fluorescent desk lamps to eliminate large overhead lights where only spot illumination is needed.
7. Paint ceilings and walls a light color.
8. Keep windows and light fixtures clean.

9. Take a daily record of meter reading for comparison purposes.
10. Shut off motors on office machines when not actually operating.
11. Disconnect water coolers at night.
12. Have elevator stop at floor where last passenger leaves and wait for next call rather than returning to ground floor each time.
13. For offices not involved in war work:
 - a. Give consideration during winter months to getting employees out of the building at an earlier time to save power and coal.
 - b. Arrange hours of work to utilize greatest amount of daylight.
 - c. Provide thermostatic control of heating—factory controlled.
14. Reuse, for heating, the steam used to generate power and light during the period from September to May. The chief engineer of one company has installed many devices to control the use of fuel and to secure the maximum energy from the steam generated.
15. Rearrange office to secure maximum use of light.
16. Have janitorial work done during off-peak daylight hours, before the office opens, at noon hour and on Saturdays and Sundays to conserve light.
17. Use reducing nipples on steam radiators to save fuel.
18. Reduce the wattage or size of electric-light bulbs to a minimum and remove unnecessary bulbs.

LABOR ECONOMIES

1. Scheduling of work and consolidation of functions serve to eliminate idle time.
2. Eliminate unnecessary motions in routine operations through time studies.
3. Centralization of work and budgeting of daily work time was estimated to save \$3,000 per year by one company.
4. Set standards of a reasonable day's work and measure production.
5. Develop flow-of-work and process charts by a planning department to eliminate backtracking and superfluous operations.
6. Develop a flexible staff that can be shifted to meet peak loads.
7. A general increase in working hours and salaries was advocated to meet increased volume of work without additional personnel and thus make more workers available for war industries.
8. Careful job analysis and redefinition of jobs to permit use of less skilled employees.
9. Closer supervision of time spent out of the department and the use of matrons in women's rest rooms to discourage loafing.
10. Use of salesmen for office work when not on the road.
11. Provide additional time clocks to avoid congestion and delay in both entering and leaving the office.
12. Provide safe and healthful working conditions to minimize lost time due to sickness and accidents.
13. Require justification and prior approval for all overtime.

14. Many of the economical practices listed in the preceding sections carry with them corresponding labor economies, *e.g.*:
- a. Reduction in the number of sheets of duplicated material reduces the labor of collating, stapling, punching, trimming, wrapping, stocking, etc.
 - b. Notation of replies to correspondence in the form of longhand memorandum or footnote conserves the time of typists and file clerks.
 - c. Making minor corrections and editorial changes on manuscripts and correspondence by hand saves the time of stenographers and typists.
 - d. Eliminating or reducing the number of reports and forms saves time in both the preparation and subsequent handling.
 - e. Photostating records in place of typing is a time saver.

SAVINGS ACCOMPLISHED

There is no accurate basis for estimating the total savings that these economies have produced. Actually, of course, many of these practices were inaugurated with the primary purpose of conserving irreplaceable materials and equipment rather than producing dollar savings. Practically, however, top management tends to appraise such efforts on a monetary basis and some such measurement of accomplishments would probably be helpful in securing executive interest and support.

Several companies reported savings of from 10 to 25 per cent in the consumption of paper. One company reported a saving of 2,000 pounds of paper and another 50,000 pounds of paper per year. One company saved 9,000 pounds of paper on public-utility bills alone. Another saved approximately 250,000 letter-size sheets of paper due mainly to consolidation and elimination of printed forms. One company estimated savings of over a million sheets of 8½- by 11-inch paper annually and another saved 916,000 copies per year as a result of a reduction in forms prepared and copies distributed.

In the field of office supplies savings of 40 per cent in typewriter ribbons, 20 per cent in carbon paper and 10 per cent in pencils were reported.

One company stated that through standardization and simplification of procedures it was saving 1,700 man-hours per week.

Evidence that some of the economies resulting from a waste-elimination campaign are measurable is furnished by the following citation of reductions accomplished in one office organization during the month of January.

Telephone reduction in number of calls—8,000
representing savings of \$400 or 25 per cent

Stockroom withdrawals showed savings of \$1,200 or 20 per cent

Messenger service—reduction in number of calls 2,210 or 20 per cent

Factual material along these lines should prove highly effective in selling the value of a waste-elimination program.

CONCLUSION

The results of this survey permit certain definite conclusions. These are summarized as follows:

1. A program of conservation and waste elimination in the office provides an

excellent opportunity for office organizations (both executive and rank and file) to take an active part. It is doubtful if there is any other single activity that would be more helpful.

2. A successful program calls for a carefully planned campaign on a continuing basis—not just sporadic efforts.
3. Some form of cooperative approach seems indicated that will tie in rank-and-file employees and make them feel that it is just as much their problem as the management's. Encourage suggestions from employees.
4. Making employees "waste conscious" and getting them to actually carry out waste-elimination practices is largely a matter of education, supervision, and repetition. The establishment of and adherence to standards facilitated enforcement.
5. Responsibility for administering the program and getting action needs to be clearly defined and specifically assigned. If a committee setup is employed give that committee power to act. The designation of some one individual to push the program seems to have proved most satisfactory.
6. The active interest and wholehearted backing of top management is necessary for the plan to be successful. A lukewarm or disinterested attitude on their part will quickly be reflected in the rank and file.
7. Employee enthusiasm and participation can be developed through the usual promotional and publicity devices such as bulletins, posters, house organ articles, etc., but new and unique methods of stirring up interest are proving especially effective.
8. Most programs are based largely on the dissemination of specific conservation and waste-elimination practices. Usually some logical approach is employed in developing these. In one instance the practices are classified under: (a) conservation, (b) simplification, (c) substitution, and (d) salvage. Another approach employed is (a) do not use—or stop using, (b) use less than formerly, (c) use more effectively than formerly, (d) use over again, and (e) salvage.
9. There is need for more effective means of follow up and enforcement of waste-elimination practices. This seems to be a common weakness of the programs so far developed. Conservation practices no matter how excellent in themselves accomplish nothing unless they are carried out.
10. So far as practicable, special efforts should be made to measure the results of the program in terms of actual reductions, savings, etc. This provides useful material for promoting the program with top management and others as well as an indication of comparative performance. However, many executives believe that the major dividends received from their program is the development of a general waste-conscious attitude on the part of the employees rather than the actual reductions accomplished.

QUESTIONS FOR DISCUSSION

1. "The office is really a money maker and a money saver." Explain.
2. "The sin of American business is waste." Comment.

3. Why is an "economy wave" undesirable?
4. Into what three classes may waste be divided?
5. How may the waste of money be prevented?
6. Is the fact that an item is in the budget a sufficient justification for spending the company's money? Why or why not?
7. What should a budget do?
8. How may the waste of materials, equipment, and services be prevented?
9. Comment on the waste of human effort.
10. Under what five heads are the survey findings of the National Office Management Association Research Committee grouped?
11. Name two items under each of the five headings and comment on them.

APPENDIX

CHECK LISTS FOR OFFICE MANAGERS

The use of check lists is a convenient and generally satisfactory way of determining whether any important feature has been overlooked. To be wholly effective, of course, a check list should be complete and comprehensive, and—what is obviously important, though unfortunately not always observed—it should be used. A check list need not be complete if it is adequate for the purpose in hand; and it is probably much better to use a check list that is available and reliable, even though it may not be complete, rather than to wait until it is absolutely perfect.

A number of check lists in office work and office management have been prepared and are available to those who desire them. The following check lists, prepared under Mr. Leffingwell's supervision, have been found revealing.¹ Although they are comprehensive, comprising nearly 400 questions, they are not claimed to be complete. The order of presentation will facilitate such additional questions as many office managers may wish to add out of their own experience or that of others.

OFFICE-MANAGEMENT SETUP

1. Is one individual—called "office manager" in these questions—responsible for the management of all clerical activities?
2. Does the office manager report to a sufficiently high administrative officer so that his position is a powerful one?

¹ Courtesy of Parker Marshall Company, publishers. For other good check lists in this field, see Coleman Maze, *Office Management: A Handbook*, pp. 771-782, The Ronald Press Company, New York, 1947; *Analysis of Office Management*, The Standard Register Company, Dayton. See also Edwin M. Robinson, *Topical Outline of Office Management*, Parker Marshall Company, Boston, 1946, for several hundred helpful items.

3. Is the office manager both a capable executive and well versed in the principles and application of scientific office management?

4. Is there a clear understanding as to which clerical activities the office manager treats as a staff functioning specialist, and which as an operating head?

5. Is the office manager as a staff specialist empowered to study and recommend improvements in clerical work wherever it is done?

6. Does the office manager set standards, assign tasks, and control production?

7. Are all centralized office service activities under one man who is, or who reports to, the office manager?

8. Are all office personnel activities centralized under one man who is, or reports to, the office manager?

9. Are all requisitions for the purchase of office equipment, furniture, forms, machines, supplies, routed through the office manager or one of his subordinates?

ORGANIZATION

1. Does each individual—worker, supervisor, or executive—know to whom he reports?

2. Does each supervisor, department head, and executive know what individuals report to him?

3. Is there an organization chart?

4. Is the organization chart kept up to date?

5. Can a copy of the organization chart be found quickly?

6. Are individuals in the organization specifically acquainted with their respective sections of the organization chart and generally acquainted with the rest of it or with appropriate divisions of it?

7. Is there an organization write-up describing each position on the organization chart?

8. Are there standard-practice instructions covering each standardized operation?

9. Is there a pamphlet for distribution to employees that states all office rules?

10. Is there a well-constructed office manual, describing all routines and the manner of handling each kind of work, and explaining its relation to other work?

11. Is the office work functionalized—that is, so far as possible, is work of a similar kind assigned to specified workers (as in centralized departments like transcribing, calculating, statistical), and so on? And similarly with individuals where appropriate?

12. Is each individual responsible solely to one person for each function performed?
13. Are technical and functional contacts and sources of information differentiated from lines of operating responsibility?
14. Is decision making decentralized as far as possible?
15. Are decisions made at the lowest point in the organization at which the decider possesses all the facts necessary for a sound decision?
16. Do men who possess the facts do the deciding?
17. Have there been eliminated nominal approvals that destroy subordinates' confidence in their ability and that encourage "buck passing"?
18. Does each executive have four or fewer subexecutives, department heads, or supervisors reporting direct to him?
19. Is there a program for training persons for supervisory and executive positions?
20. Is there a periodic inspection and checkup of department heads and supervisors?
21. Do executives and department heads know of the work, ability, especial achievement, and especial shortcomings of their immediate subordinates' assistants, the men in the second rank below them?
22. Are executives, department heads, and supervisors in the same general rank of similar intelligence and taste?
23. In making executive changes is there too strict an adherence to a fixed organization plan regardless of the qualifications of the executive personnel?
24. Is it recognized that anyone may appeal to the president or some other top executive regarding unfair treatment?
25. Are expense accounts and budget items arranged according to the organization chart and, thus, according to operating responsibilities?
26. Are only those costs charged to divisions, departments, and sections, for which the division, department, or section head is responsible and which he can regulate and control?
27. Are all costs allocated to divisions, departments, and sections that can be thus allocated?
28. Are detailed analyses of their financial results available to division, department, and section heads?

SUPERVISION

1. Do supervisors know the rates of pay of those under them?
2. Do department heads and supervisors know the budgeted and actual costs of the work for which they are responsible?

3. Do supervisors represent the company point of view to those under them?
4. Are responsibility and authority placed squarely upon supervisors for results?
5. Do supervisors listen to suggestions from those below them?
6. Is it to the advantage of supervisors to develop their subordinates and to credit them with their achievements?
7. Have there been removed from supervisory positions those with poor supervisory habits such as loudly criticizing workers before others, favoritism, unwillingness to praise good work, refusal to accept responsibility for failure of plans, and so on?
8. Is there an absence of internal politics?
9. Are assistant supervisors personally known and is their work known to those who are next above their immediate supervisors?
10. Do workers feel that supervisors tell their superiors the truth about them?

CONTROL OF OUTPUT

1. Is there a method for planning the clerical work?
2. Do you, by planning, avoid idleness in departments?
3. If appropriate, are graphic methods used to compare actual with planned production?
4. Is your working force well balanced in all departments of the office?
5. Is there an uninterrupted flow of work in all departments during normal times?
6. Do you have adequate reports of the volume of incoming work?
7. Does work travel from step to step on schedule?
8. Do you have reports of unfinished work?
9. Do you know what force is required for stated volumes of work?
10. Are there well-planned provisions for handling peaks of work?
11. Are peaks forecast from such indicators as incoming mail, or orders, or from experience, so far as possible?
12. Are the well-planned provisions for peaks used when peaks are expected?
13. Is overtime avoided in normal seasons?
14. Have "rush" jobs been eliminated as far as possible?
15. Have delays in work been eliminated?
16. Has each supervisor a good follow-up system?

CLERICAL OUTPUT

1. Do you know how much work each worker should do and whether or not he is doing it?
 2. Has all possible work been standardized?
 3. Is all standardized work measured?
 4. Is work subdivided as far as effective to take advantage of the principle of division of labor?
 5. Is each employee's work definitely assigned, without too many jobs to any one person?
 6. Is work started promptly in the morning and after lunch, without delays on the way to desks, and without waiting for the bell?
 7. Is work continued up to the end of the morning and afternoon working periods without undue preparations for stopping work?
- In your section or department have you sufficiently eliminated:
8. Interruptions to workers?
 9. Argument?
 10. Gossiping?
 11. Procrastination?
 12. Absences from desks?
 13. Delays in answering telephones?
 14. Unnecessary questions?
 15. Stalling or soldiering by clerks?
 16. Personal telephone calls?
 17. Personal correspondence?
 18. In lending workers between departments or sections, is the best good of the whole company considered?
 19. Are incompetent new workers dismissed as soon as adequate training efforts reveal their incompetence?

ROUTINES

1. Have all useless motions or steps in procedures and routines been discontinued?
2. Have duplicate operations or forms been eliminated?
3. Are there as few steps as possible?
4. Does each step in the routine have a definite, specified, and understood purpose?
5. Is each step always performed in the same manner?
6. Are the most effective methods being used in each instance?
7. Do all workers on the same operation use the same method?

8. Does the work go in a direct manner from one person to another without needless repeating of the same work or records?
9. Does work move along regularly and speedily without being held up?
10. Has the spending of excessive time on details, at the expense of more important matters, been eliminated?
11. Are reports submitted only as often as needed?

INTERCOMMUNICATION AND MESSENGERS

1. Is the number of workers on their feet in the main workrooms less than 10 per cent of all those in the room?
2. Are departments located to minimize executive and clerk walking distances?
3. Have you a messenger system?
4. Is the supervision of messengers centralized?
5. Are messengers hired and trained so that further promotion to the clerical force is possible?
6. Are all sorts of messenger activities—including transcribing division, advertising department, and so on—carried on by one service?
7. Are there written instructions for the operation of the messenger service?
8. Are there regular scheduled messenger trips throughout the office with collections and deliveries at least once every 20 minutes?
9. Are the messengers provided with bags, trays, or carts in which mail may be sorted as collected?
10. Are there incoming and outgoing trays on all the desks that should have them?
11. Does someone check up at least twice a month to see whether collections and deliveries are made from every outgoing tray as scheduled?
12. Have special messenger trips outside the building been reduced to a minimum?
13. Do the intercommunication methods provide for moving work forward frequently enough and in small enough batches to minimize over-all time of routines?
14. Has the possible usefulness of carriers and conveyers been ascertained from factual surveys of the number of papers moved between sections and departments?
15. Are there carriers and conveyers—belt, pneumatic lifts, and so on—where they are desirable?
16. If you operate your own elevators, is the average waiting time for an elevator 2 minutes or less?

17. Is there a telephone at every point where one is needed?
18. During the lunch period is someone present in your section or department to answer inquiries or telephone calls?
19. If you have your own manually operated switchboard, can you get a telephone connection in 10 seconds?
20. Is someone in the company informed as to modern telephone conveniences, such as for dial telephones and other interoffice communications; for telephone equipment for special uses, such as telephone selling; and for desk equipment for holding and transferring calls?
21. In the internal telephone directory is there an alphabetical listing by persons' names?
22. Is the time for a complete cycle of your operations as small as you would like?

MAIL

1. Is all incoming mail handled through one mailing room?
2. Do the mail clerks arrive earlier than the rest of the office force?
3. Is the first mail distributed to those who can work on it before the office opens?
4. Are there adequate arrangements for "borrowing" workers for peak-mail loads?
5. Are there sufficient pigeonholes or trays of appropriate dimensions?
6. Where there are more than 100 letters to open, is the mail opening speeded up by using a mechanical letter opener?
7. Is there a rough first sorting, before opening, between mail that needs prompt handling and other mail?
8. Is the cash mail sorted separately upon opening?
9. Are there adequate checks upon the handling of cash mail?
10. Is mail stamped with the time of receipt?
11. Are the mail readers and sorters sufficiently familiar with the company activities?
12. Is there a routine prescribed and used by which the mail readers and sorters are notified of new company activities, departments, surveys, or products?
13. Is correspondence that cannot easily be sorted turned over to someone who knows the company thoroughly?
14. Is mail from branch offices sent in envelopes that can be easily distinguished and sorted?
15. Is all outgoing mail handled through one mailing room?
16. Is the mail room adequately equipped with mailing machines for

the volume and kind of work passing through it—including sealers, scales, indicia printers, inserters, folding machines, tying machines, and so on?

17. Are data as to times of outgoing mails and as to postal regulations posted or readily accessible?

18. Is one person especially responsible for taking advantage of all postage economies?

19. Is postage expense charged to departments as incurred?

20. Are departments urged to distribute the outgoing-mail load by sending mail to the mailing department during the day, instead of at the end of the day?

21. Does part of the mail-room staff work after office hours so that all mail goes out each day?

22. Are window envelopes used for all letters possible?

23. Is mail for branches or other frequent destinations segregated and sent in one envelope each day?

24. Are there as few sizes of stationery and envelopes as possible?

25. Where appropriate, is the handling of both incoming and outgoing mail done under a plan of measured production and a carefully set wage incentive?

CORRESPONDENCE

1. Is the appearance of each letter satisfactory and such as you would like?

2. Is the typed matter well placed on the sheet?

3. Is the typing clear and even?

4. Is the letter spaced properly on the sheet?

5. Is the letter free of erasures or smudges?

6. Is it free of typographical errors everywhere?

7. Can you understand clearly the letter's purpose?

8. Is it perfectly clear what the correspondent meant?

9. Is the letter free of stereotyped phrases and expressions?

10. Is the composition good?

11. Are grammatical constructions correct?

12. Is the letter courteous? Are such phrases as "you claim" omitted?

13. Is the letter concise without being curt?

14. Is correspondence handled promptly?

15. Are form letters used where possible?

16. Are form paragraphs used where possible?

17. Are dictating machines used as much as possible?

18. Do dictators have complete facts before calling stenographers?
19. Are there manuals for dictators?
20. Is there some plan by which dictators' faults are noted and called to their attention?
21. Is the distribution of record blanks for dictating machines adequate?

TRANSCRIBING

1. Is as much work done in the central transcribing division as can be centralized there?
2. Is the transcribing division used for routine day-to-day work, not merely for peak loads and vacation loads?
3. Is at least 75 per cent of the dictation returned completed within 24 hours?
4. Is at least 75 per cent of the routine typing returned completed within 24 hours?
5. Is work that comes into the division so scheduled among the operators that there is no waiting for work?
6. Are jobs time stamped, entered, and filed upon receipt in the most efficient manner, to ensure prompt turnover and scheduled return to the dictator, as well as to facilitate the locating of any desired copy?
7. Have ample provisions been made for rush copy and overtime jobs?
8. Are adequate routes and time schedules established for collections and deliveries of work?
9. Has mechanical service been provided for breakdowns on the speediest and most economical basis? Have monthly inspections been established?
10. Does the equipment meet specific requirements for each type of job?
11. Are costs charged back to the departments served?
12. Does the transcribing division routine encourage the use of form letters and form paragraphs wherever possible?
13. Is the work of each dictator assigned to one transcriber as far as possible?
14. Are there established standards of spacing and of the mechanical make-up of letters?
15. Are there separate standards of performance for such classifications of work as typing, addressing envelopes, tabular work, dictating machine transcription, stenographic transcription, and so on?
16. Is the work of each operator measured?

17. Are production reports kept showing the production and unit cost of each classification of work?

18. Is there a wage-incentive plan based on the standards established?

19. Is the incentive wage so planned that savings from high rates of production are shared by the individual and the company?

20. Is compensation high enough to attract good workers and not too high by standards in this locality?

21. Are there established standards for the selection of transcribers?

22. Is there a training program for new workers?

23. Are there manuals for transcribers?

24. Has a control been provided for supplies used in the transcribing division, including such supplies as stencils, record blanks, carbon paper, ribbons, and special supplies?

FILING

1. Is there a list or chart showing location of files?

2. Are files indexed as to the kind of material in them?

3. Are special instructions and names of individual clerks responsible for files given?

4. Are such charts, lists, and indexes up to date and available?

5. Are files neatly and clearly labeled?

6. Are receipts placed in files when papers are removed?

7. Are the most accessible file drawers used for files most frequently referred to?

8. Is each drawer of each filing cabinet about equally filled?

9. Are file drawers so filled that papers can be inserted and removed easily?

10. Is there sufficient, but not too much, space for future expansion?

11. Are there sufficient file cabinets?

12. Does the filing system meet the needs of the section, division, department, or business?

13. Is the filing system easily learned?

14. Are new file clerks adequately trained?

15. Is the filing done promptly so that work does not pile up?

16. Is the filing work up to date? Or slightly behind?

17. Examine 1,000 pieces for correctness of filing. Were there five or fewer errors?

18. Examine the contents of one file drawer. Were all of these papers worth filing?

19. Is material with only a limited life of usefulness preserved for only a limited period?
20. Is there a suspense file for papers worth keeping only a short time, such as 3 months?
21. Is filed material moved to transfer cases as soon as is desirable?
22. Is material in transfer cases junked as soon as is desirable?
23. Is there a properly indexed follow-up file?
24. Is access to the files limited to file clerks? Or, if file work is only a part-time job, to a designated person or persons?

FORMS

1. Have the forms used throughout the company been studied as a whole?
 2. Has the approval of forms been centralized in one person?
 3. Is the cost of keeping a new record estimated and the requesting individual notified of this cost before the form is ordered or used?
 4. Does the central form authority inquire periodically into the necessity for continuing the forms in use?
 5. Are forms classified and "keyed"?
 6. Is there a routine for keeping track of suggestions for the improvement of forms?
 7. Are sound standards uniformly followed in selecting paper for forms?
 8. Is the typography uniform on similar forms?
 9. In reordering forms, are they grouped to decrease printing costs?
 10. Is only one month's supply of a new form ordered at first?
 11. Except under unusual circumstances is a maximum of only 6 months' supply of a form ordered at one time?
- Obtain a copy of each form used in the company, department, or section being examined and answer the following questions concerning it:
12. Is the purpose of the form clear from the heading?
 13. Is the size of the form appropriate for the work?
 14. Is the size one that can be cut from standard sheets without waste?
 15. Is there sufficient space for each of the entries and not too much?
 16. Are entries made in a manner to conserve effort?
 17. If the form is to be filled in on a typewriter, is typewriter spacing followed both horizontally and vertically?
 18. Is the information most frequently needed, or by which the form is filed, located at the top?

19. Is the information on the form in the same order in which it appears on the form from which it is taken?
20. Do the questions on the form unmistakably indicate the information desired?
21. Has all recurring information been printed so that only the variables will need to be filled in?
22. Is the form numbered?
23. Do the form name and number appear at the bottom of the form?
24. Is the paper of the proper quality for the purpose?
25. Is the paper no more expensive than it should be?
26. Is the paper suitable for the writing medium to be used—pen, pencil, or machine?
27. If colored paper or printing is used, has the color any significance?
28. If a color scheme is used, is it necessary?
29. Is there a uniformity in the colors used?
30. Are blues avoided?

STOCKKEEPING

1. Are all supplies stored properly so as to avoid loss through dampness, heat, falling, and other hazards?
2. Are supplies protected against dust by being wrapped in small packages, with only a small supply unwrapped?
3. Are ragged, torn edges on packages avoided?
4. Is there adequate light on all the shelves of the stock room?
5. Are there various sizes of bins or various spacings of shelves?
6. Is the stock arranged in an orderly manner?
7. Are heavy, bulky items placed on the lowest shelves?
8. Is all the stock, except reserve stock, of one item in the same place?
9. Is there a system of classification?
10. Is there an easily learned location plan?
11. Is there a properly prepared index to all stock?
12. Are large empty spaces on stock shelves avoided?
13. Is there the proper variety of supplies in neither too large stocks, nor too small?
14. Is there an inventory system?
15. Is there a plan under which notification is given before stock is exhausted, so that a new supply may be ordered?
16. When new supplies or forms are ordered, is there consideration of the rate of use and the possibility of discontinuance of further use?

17. Is stock issued upon requisition only?
18. Are only certain specified persons authorized to sign requisitions?
19. Is one person only in each department (or section, if appropriate) responsible for the distribution of supplies?
20. Are peaks of work avoided by a schedule of hours or days for nonemergency requisitions from departments or sections?
21. Has the amount of stationery and supplies kept in desks or cabinets in departments been limited?
22. Is a sufficient quantity of stationery and supplies kept on hand?
23. Are clerks kept supplied with the needed working materials?
24. Are supervisors furnished with the necessary records and materials?
25. Are fountain pens and mechanical pencils used where they are appropriate?
26. Are carbon paper and typewriter ribbons used for a reasonably long time, and not for too long a time?
27. Has the use of usable printed forms and of good stationery for scratch-pads been eliminated?
28. Are obsolete forms used for scratch-pads?

OFFICE FURNITURE

Test each piece of furniture with the first three questions:

1. Is this piece of furniture adequate and as well suited to its purpose as is possible? Consider height, working surface, storage space (enough but not too much), accessibility of working materials, and so on.
2. Is this piece of furniture the right size—neither too small for the work, nor too large and thus wasteful of floor space?
3. Is this piece of furniture in good working condition?
4. Is the same kind of furniture for similar purposes standardized as to size, shape, and working arrangements?
5. Are desks, chairs, cabinets, and other pieces of furniture standardized as to appearance?
6. Have chairs been provided wherever they can be used?
7. Are posture chairs used?
8. Has all obsolete furniture been disposed of?
9. Is there the right amount of reserve furniture, neither too much nor too little?
10. Is special equipment used where desirable?
11. Are requisitions for furniture routed through a central authority

for approval as to need, design, suitability for the purpose, appearance, construction, and conformity to established standards?

12. Is all purchasing of furniture for the company done by one individual or department?

OFFICE MACHINES

Test each machine or appliance with the first five questions:

1. Is this machine the best machine for the purpose?
2. Is this machine modern?
3. Is this machine profitably used?
4. Is this machine used on as much work throughout the company as it can efficiently handle?
5. Is this machine in good working condition?
6. Is there a definite schedule for the cleaning, oiling, and inspecting of all machines?
7. Do you use a machine, appliance, or device on each operation where it would be profitable to do so?
8. Are machines kept busy a good part of the time?
9. Are machines that are no longer in use turned in to a central equipment section?
10. Has each department the right amount of reserve equipment, neither too much nor too little?
11. Has the company disposed of all obsolete machines?
12. Are requisitions for machines, appliances, and devices routed through a central authority for approval as to need, design, suitability, construction, and conformance to established standards?
13. Before purchasing, does this central authority conduct tests (under working conditions with company employees) of different classes or makes of equipment where such tests are appropriate?
14. Does some individual in the company know the trade-in policies of the different manufacturers and keep in mind the economical modernization of equipment?

WORKING CONDITIONS

1. Is the office arranged so that as many workers as possible get a natural light intensity of at least 30 foot-candles on average clear days?
2. Are there windows giving ample light in the main workroom?
3. Do windows make up at least 60 per cent of the wall space?
4. Do desks face so that the light falls on the working surface from the left?

5. On south and east exposures, are there window shades, venetian blinds, or other means for avoiding direct sunlight, and are they in good working order?

6. Is glare from sunlight or reflected sunlight avoided?

7. Does the artificial lighting give an intensity on every working surface of at least 30 foot-candles?

8. Are the electric lamps and reflectors cleaned at least once a month?

9. Are the lighting fixtures such that glare and marked shadows are avoided?

10. Are the electric lights and current turned off when not in use?

11. Is the indirect or semi-indirect system of lighting used? Fluorescent?

12. Is the ceiling height of clerical workrooms at least 11 feet?

13. Has the color of the ceiling been selected with attention to its light-reflecting qualities?

14. Has the color of the walls been selected with attention to its light-reflecting qualities and to eye comfort?

15. Are walls and ceilings kept clean to preserve light-reflecting qualities?

16. Is there a duct system in the floors sufficiently complete so that electric and telephone service can be supplied at any desk without exposed wires or conduits on top of the floor?

17. Has the floor covering been selected with regard to resilience, evenness of surface, sanitation, durability, sound absorption, ease of repair, ease of cleaning, as well as appearance and cost?

18. Has the noise from disturbing noise-producing operations been prevented or deadened at its source as far as possible?

19. Is sound-deadening ceiling and wall covering used where needed?

20. Has any attempt been made to reduce the noise of machines in the main workroom?

21. Are noisy machine sections and operations segregated in completely partitioned rooms?

22. Have executives and workers whose work requires concentration, or involves confidential conversations, partitioned private offices?

23. Are windows kept closed to exclude outside noises?

24. Is there a ventilating system other than open windows?

25. Is there sufficient ventilation without drafts?

26. If there is no artificial ventilating system, are electric fans provided where necessary?

27. Is the air cleaned if necessary?

28. Is the relative humidity between 30 and 60 per cent?
29. Is your building—walls, ceilings, roof, floors, and so on—insulated to reduce heat outgo in winter and heat intake in summer?
30. In the winter does the heating system maintain a temperature of about 68°F.?
31. Do you have thermometers in each bay?
32. Are drinking fountains with bubbler nozzles or paper drinking cups provided to the extent of one for each four bays?
33. Are drinking fountains placed within 30 feet of each worker?
34. Are clocks so placed that they may be seen by every worker?
35. In proportion to the number of workers, are the washroom facilities adequate?
36. On every floor, are there washrooms, respectively, for men and women?
37. Are the washrooms well lighted?
38. In the toilet room is there one seat and one washbowl for every 15 persons?
39. In the women's powder room is there a mirror large enough to be used by several persons at one time?
40. Are separate rooms or spaces provided for each sex for hanging hats and wraps?

OFFICE ARRANGEMENT

1. Does the office present a neat and orderly appearance?
2. Are window sills, files, desks, and tables free from disorderly piles of papers, books, file folders, or other material?
3. Have workers been instructed to maintain an orderly appearance and to clear desks of working papers each day?
4. Is there adequate equipment for filing or otherwise keeping working papers so that workers can maintain orderly appearance?
5. Are working materials arranged in proper order for efficient work?
6. Are aisles and desks so arranged that space is not wasted?
7. Are desks arranged in pairs in rows?
8. Are desks spaced in rows not more than 3 feet and not less than 2½ feet apart?
9. Do desks face so that light falls from the left on desks where work is done with pencil or pen, and so that workers at machines neither face bright windows nor themselves cut off light from the keyboards?
10. Are there aisles enough for ready access to all working quarters?

11. Are there aisles not less than 3 feet wide between each pair of desks?

12. Are main aisles and cross aisles wide enough?

13. Are main circulation aisles 6 feet wide?

14. Are cross aisles placed not more than 30 feet apart?

15. When the various steps of a routine are traced on a floor plan, does the work always go forward without avoidable back and crosswise travel?

16. Are files, cabinets, and other records and materials located for the convenience and ready access of those who use them?

17. Are machines, telephones, tube or conveyer stations, and so on, located for the convenience and ready access of those who use them?

18. Are files and other pieces of equipment, especially equipment above desk height, located so that they do not shut off natural or artificial light from working surfaces?

19. Are files and other pieces of equipment, especially equipment above desk height, located so that they do not interfere with proper ventilation?

20. Are supply shelves and other unsightly sections enclosed by partitions?

21. Are partitions—desk high or higher as appropriate—used to set off sections of the office sufficiently to give a generally orderly appearance?

22. Are partitions—5 feet high or higher as appropriate—used to set off reception-room or other activities that will distract the attention of workers?

23. Are supervisors' desks well located, both for visibility of department or section and for readiness of access by workers?

24. Is the number of private offices reduced to a minimum?

25. Has the working space been planned to provide large, open-office units—that is, have you avoided dividing your office into a large number of small offices?

PERSONNEL

1. Are applicants for employment interviewed by one person?

2. Have you methods of testing the ability of prospective employees?

3. Are mental ability and employment tests used where practicable?

4. Are physical and medical examinations made before hiring and periodically during employment?

5. Do department heads and supervisors do the final selecting from those referred by the employment manager?
6. Are accessible and convenient records of data received upon employment?
7. Is a continuous and complete historical record of each employee's connection and progress with the company maintained and used?
8. Is there a recorded analysis of the duties of each job?
9. Is there a method of learning what operations, besides the one on which a clerk is working, he or she is capable of performing?
10. Do the records show what work an employee can do, in addition to that on which he is working?
11. Are efforts made to develop versatility in employees?
12. Is there an organized method of training both workers and supervisors?
13. Do instructors teach new employees their work?
14. Do supervisors teach new employees their work?
15. Is there a recognized and thoughtfully prepared line of promotion from all basic positions?
16. Whenever possible, are promotions made from within the organization?
17. Are there plans for rating and grading workers and supervisors?
18. Is there a definite and well-understood vacation policy?
19. Is there group life insurance?
20. Is there group health insurance?
21. Is there a pension plan?
22. Are there provisions for employees' savings and loans?
23. Are attendance records kept and periodically reviewed by supervisors?
24. Do workers feel free to take up difficulties with the personnel staff?
25. Do you have any method for ascertaining causes of dissatisfaction?
26. Do employees remain with the company long enough to become of maximum value?
27. Does one person interview all those who leave the company's employ?
28. Are turnover records kept by departments and appropriate classifications of workers?
29. Are reasons for "quits" analyzed and tabulated?
30. Is the ratio of "quits" to the average number carried on the payroll 10 per cent or less?

COMPENSATION

1. Is there a standard rate of pay for a specific class of work?
2. Are all workers of a similar class within that range?
3. Does any person receive more than he should for the class of work done?
4. Are market rates paid for all clerical positions?
5. Are there additional plans for extra remuneration beyond salary, such as bonus, profit sharing, or the like?
6. Are incentive plans used where appropriate? (This usually means where several people do work that has been standardized and where proper control has been established.)
7. Are workers paid by check?
8. Have arrangements been made with some nearby banks to cash the workers' checks?

RECEPTION ROOM

1. Does the public reception room provide at least 10 square feet for each of the maximum number of guests that might be waiting at any one time?
2. Are the entrances and directing signs so arranged that first-time visitors surely reach the information desk without difficulty?
3. Is the clerical space so partitioned off that clerical work is not interrupted by the arrival of guests?
4. Is reading matter furnished for waiting guests?
5. Is there a light intensity of at least 15 foot-candles so that the waiting guest may read without eyestrain?
6. Are the information clerks able to answer intelligently questions as to where individuals and activities are located?
7. Is there an established company policy that guests will not be kept waiting a long time without some sort of information as to whether and when they can be seen?
8. If the information clerk has to leave the reception room, does someone else cover the desk during his absence?
9. Where appropriate, is the reception room clerk supplied with nonroutine clerical work, so that idle time may be utilized?

INDEX

A

- Ability, tests for, 430-431
(See also Tests and testing)
- Accessories, desk, 271-272
- Accuracy, habit of, 101
relation to speed, 101-102
- Acoustical treatment, 354-357
- Adding machines, 303
- Addressing machines, 299
- Administration, 51-52
definition of, 51
function of, 52
- Admissibility of copies in evidence, 297
- Agency for collective bargaining, 509
- Agriculture, U.S. Department of, 172*n*.
- Aisles, width of, 376
- Allowances for delay, 565-567, 587-588
- American Hospital Association, 357
- American Management Association, 37*n*,
56, 147, 153, 283, 393, 472*n*, 509
- American Society of Mechanical Engineers, 87, 517*n*.
- Analysis, of card indexes, 207
charts for, 90-94
of desk systems, 273-278
of existing method, 556
in experiments, 515-524
(See also Scientific experiments)
experts, use of, in, 525
of existing filing system, 190, 192, 195
of flow of work, 366-368
of forms, 214, 215, 218
of job, 393-398
of machine requirements, 284-288
major steps in, 514-515
of nonroutine job, 396-398
of an operation, 96-97
check list for, 560
organizing work of, 524-525
by planning department, 578-579
of positions, 393-398
principle of, 39-41
of the problem, 39-41
of records, 129
requirements of, 513
results from, 525
of routines, 86-90, 94-96
of sales, 21
- Analysis, scientific, 40, 513-527
(See also Scientific analysis)
work sheet for, 397
- Analyst, 394
- Apparatus for experiments, 521-522
- Appearance of office, 364, 371
- Appliances, repair of, 406-407
(See also Equipment; Machines, office)
- Applicants for employment, interviewing, 412-417
references of, 417-420
sources of, 411
testing, 429-448
(See also Tests and testing)
- Application forms, 417
- Appropriate bargaining unit, 508-509
- Arrangement of office, 364-381
analyzing the flow of work, 366-368
appearance of, 364, 371
check list for, 622-623
clerks-on-feet test of, 366
dominant routine in, determining, 367-368
expansion, allowing for, in, 320-322, 376
flow, analyzing (see Flow of work)
location of departments, 368-371
making the new layout, 377-378
mapping flow of work in, 375
old and new, 16-17
planning of, 372-376
psychological effects of, 364-375
relation of workers to each other, 370-371
selling the new plan, 378
space allowances, determining, 375-376
for desks, 260, 376
(See also Space, office)
standard symbols in plan of, 374
straight-line flow in, 365-368
(See also Straight-line flow)
telephone and buzzer conduits, 325, 371
templats, use of, in, 376-378
toilet facilities, 358
uniformity desirable in, 371
visualizing the movement of work in, 367
who should plan, 372
- Arrangement of stock, 242-244
- Arthur, Guy B., Jr., 410

- Artificial lighting, 339-344
(*See also* Lighting)
- Art Metal Construction Company, 264, 271n, 475
- Assignment of work, 579, 582
- Assignment record, 398-401
- Associated Industries of Cleveland, 506
- Attitudes, employee, 423-425
of some executives, 30
- Audit (*see* Prestandardization work)
- Authority, charting of, 58-60
clearly defined, 54-55
delegation of, 54-55
of department head, 57
line and staff, 56-57
of office manager, 57
of personnel manager, 57
power to command, 54, 55
- Automatic pencils, 251
- Automatisms, in occupations, 393
- B
- Bargaining, collective, 507-509
- Barnes, Ralph M., 464, 557
- Barnum, C. L., 224
- Bedaux wage-incentive plan, 488
- Beginners, employment of, 412
- Bell & Howell, 158
- Belt conveyers, 90
- Benge, E. J., 485n.
- Bergson, Maria, 267, 268
- Billing machines, 304
duties of operator of, 495
- Bingham, W. V., 440n.
- Blanket letters, 157-159
- Blind indexing, 204
- Blue-print duplication, 292
(*See also* Duplicating processes)
- Bond papers, 226
- Bonuses, 486-491
(*See also* Compensation of employees)
calculated by planning department, 580
for calculating work, 313
for cost of living, 499
effect of, on unit costs, 489-490
graduated plan of, 488-489
group measurement for, 543, 553
how to figure, 488-489, 543
Leffingwell plan for, 488-490
(*See also* Incentives; Standardization; Standards)
- Book of decisions, 468
- Bookkeeping machines, 304-306
duties of operator of, 495
- Boston Chamber of Commerce, 495
- Bottle-necks, chart showing, 94-95
- Box to raise typewriters, 173
- Brass rule in forms, 224
- Brigham, L. H., 236
- Bristol, index, 221
- Browne-Morse, 260
- Bruère, Henry, 1
- Buck passing, elimination of, 54
- Budget, 594
- Building, office, 319-325
lighting, 324, 335-350
(*See also* Lighting)
location of, 319-325
materials and sound absorption, 355
ventilation of, 324
- Burroughs Adding Machine Company, 17
- Business, relation of office to, 1-25
- Buzzer conduits, 325, 371
- C
- Cabinets, filing, uses for, 204
- Calculating, tables for, use of, 301, 310
- Calculating machines, 311-312
analyzing need for, 284-288
central computing section, 36, 313-314
duties of operator of, 495
getting a large output from, 312-314
organizing work of, 312-314
slide rule, 310-311
training in use of, 312-313
where used, 302
- Calendar, on desk, 272
of duties, 398-400
- Call systems for executives, 127, 128
- Callers, reception of, 404-406
- Cancellations, handling, 153
- Capacity of individuals, 71-73
of machines, 70-71
theoretical, 109-110
- Carbon paper, duplication by, 292
(*See also* Duplicating processes)
economy in use of, 600
selection of, 252-253
testing of, 253, 518-519
- Card indexing, operations in, 205-206
visible, 204-207
- Carnegie Foundation for Advancement of Teaching, 549n.
- Carriers, mechanical, 125
- Cash mail, 133
- Castle Films, 463n.
- Catalogue files, 204
- Causes of delays, 112, 136-137
- Cement, rubber, 254-255
- Census, Bureau of, 306-307
- Center, Charles L., 265
- Central computing section, 36, 313-314
- Central departments, location of, 370
- Central duplicating section, 36
- Central filing section, 4, 35, 188-193
(*See also* Filing)
- Central planning room, 578-580, 588
(*See also* Planning department)
- Central service departments (*see* Office service)
- Central stenographic section, 34, 588
- Central stockkeeping, 36, 239
(*See also* Stationery and supplies)
- Centralization of clerical activities, 34-37
physical advantages of, 36

- Centralization of clerical activities, promotes standardization and control, 36-37
- Centralized control, advantages of, 32-37
results of lack of, 29-30
(See also Control)
- Centralized employment, 410-411
- Chairs, 267, 269
faults of, 267, 269
posture, 267, 269
- Changes in forms, providing for, 230-231
- Charts, cross-analysis, 93-94
flow, 90-94
form, 91
functional, 62
of incoming mail, 132
isometric flow, 92-94
line-and-staff, 33
neck, 94-95
organization, 58-63
steps-in-squares, 91
- Check files, 204
- Check lists, 560, 607-625
for analyzing an operation, 560
of arrangement of office, 622-623
of clerical output, 611
of compensation of employees, 625
of control of output, 610
of correspondence, 614-615
of filing, 616-617
of forms, 617-618
of intercommunication, 612-613
of mail handling, 613-614
of messenger service, 612
of office furniture, 619
of office machines, 620
of office management setup, 607-608
for operation analysis, 560
of the organization, 608-609
of personnel, 623-624
of reception room, 625
of routines, 611-612
of stockkeeping, 618-619
of supervision, 609-610
of transcribing, 615-616
of working conditions, 620-622
- Checking, unnecessary, avoiding, 100
- Chicago Bureau of Filing and Indexing, 203*n*.
- Civil Service Commission, U.S., 497
- Classification, of data, 579-580
decimal system of, 219
of jobs, 494-495
of management problems, 40
of records, 181
of stock, 244-246
- Cleaning, 406
- Clerical activities, 1-2
fundamental tasks in, 7
linking function of, 8
manager of, 23
unit for measuring, 535-538
which may be centralized, 34
- Clerical minutes per order, 534, 543-544
- Clerical output, check list for, 611
- Clerk, desk system for, 269-270, 277-278
- Clerks-on-feet test, 366
- Cleveland, Associated Industries of, 506
- Clips, brass, 250, 600
- Cloakrooms, 325-326
- Clocks and clock watching, 360
- Cody, Sherwin, 438, 439*n*.
- Coefficients of sound absorption, 355
- Collective bargaining, 509-750
(See also Grievances)
control of, 136-137
definition of, 508*n*.
determining bargaining unit in, 507-508
first steps in, 507
negotiating the contract in, 509
purpose of, 508
selecting agency for, 509
- Colors, in forms, 227
in office lighting, 337-339
- Commerce and Industry Association of New York, 496
- Commerce, U.S. Department of, 353, 361
- Communication, 3, 6
interoffice, 143, 165-166
(See also Intercommunication; Mail and messenger service)
- Community Chest, 317
- Company organization, chart of, 5
- Company policies, 477
- Compensation of employees, 483-512
bonus, figuring, 489-490, 543
check list for, 625
General Foods Job Rating Scale, 500-501
incentive necessary in, 484-486
(See also Incentive plans)
initial, problem of, 498-499
job descriptions, for specific jobs, 493-498
standard, 493-495
use of terms in, 497-498
job evaluation in, 491-503
(See also Job evaluation)
- Leffingwell bonus plan, 488-490
- office unions and, 507-509
(See also Unions)
- profit sharing, weakness of, 485
- rating plans, use of, 503-505
- salaries, determining, 498-503
discrepancies in, 483
establishing limits of, 499
granting increases in, 503
intermediate rates in, 499-502
problem of, 483-486
standardization of, 505-507
starting, 498-499
- salary standardization, 491-507
advantages of, 499
objective of, 492
operation of plan of, 502-503
scale, job rating, 500-501

- Compensation of employees, section head, reward for, 491
 setting standards of, 505-507
 standardization of work necessary, 492
 Composition of letters, test of, 148, 435-436
 Computing, 6
 machines for, 311-312
 section for, central, 36, 313-314
 Condition of work, daily report of, 70
 Conditions, working (*see* Heating; Lighting; Noise; Ventilation)
 Conduits for wires, 325, 371
 Conferences, recording of, 290-291, 477-478
 Connecticut Safe Deposit Association, 476
 Conservation, office, 590-606
 (*See also* Economy; Expense, Office; Waste)
 Consultants, use of, 525
 Continuous transfer, 200
 Control, 29-30, 32-37, 56, 66-79
 centralized, 29-30, 32-37
 of conditions, 67
 conditions essential to, 74-76
 definition of, 66
 elements of, 66, 68
 figures of output for, 544
 of filing work, 203
 of forms, 211-235
 (*See also* Forms)
 functional, 31-34
 of human element, 71-73
 of incoming mail, 136-137
 through measurement, 528-547
 (*See also* Measurement)
 measures for, 75
 mechanisms for, 67
 of office machines, 70-71, 302
 of office work, 8, 66-80
 by department heads, 33
 by office manager, 32-34, 66-67
 of output, check list for, 610
 planning and scheduling (*see* Planning; Scheduling)
 of quality, 491, 549-550
 results of lack of, 29-30
 of routine work, 76
 scientific, 68
 span of, 55, 56
 standardization necessary to, 76
 of stationery inventory, 246-248
 (*See also* Economy; Stationery and supplies)
 by the head stenographer, 146
 of waste (*see* Economy; Waste)
 when present, 67
 work which can be placed under, 76-77
 Convertible desks, 265-267
 Conveyers, belt, 125, 366
 pneumatic tubes, 125
 Cooke, Morris L., 243, 548
 Cooperation, 42, 46-47
 Coordination through office, 8
 Copies, making of, 11
 (*See also* Duplicating processes)
 Copley, Frank B., 517n.
 Copy reading, training in, 176, 459-460
 Copying forms of others, 12
 Correct motions, training in, 459
 Correspondence, 4, 143-170
 check list for, 614-615
 destruction of, 201-203
 dictation of, to machines, 170, 290-292
 eight ways of answering, 144
 external, 143-165
 features of, 149-150
 brevity, 149
 courtesy, 150
 firmness, 149-150
 friendliness, 149
 form paragraphs, advantages of, 162-164
 construction of, 164-165
 improving quality of, 156
 instructions on, 167-170
 internal, 143, 165-166
 excess, causes of, 165-166
 memorandum for, 166-167
 standardized messages in, 166-167
 letter-writing routine, 144-146
 manual, 167-170, 470
 (*See also* Standard practice instructions)
 model letter for, 154-155, 168
 nonroutine dictation, 146-147
 policies on, standardizing, 152-156
 preplanning work in, 581
 previous, locating, 134-135
 purposes of, 147, 150
 routine of letter writing, 144-146
 standard paragraphs, 159-165
 advantages of, 163-164
 construction of, 164-165
 standard practice instructions, 167-170
 standardizing company policies on, 152-156
 methods of, 156
 style of, 154-155, 156-157
 stationery for, economy in use of, 596-599
 supervision of, 151-152, 168-170
 technique of, 147-151
 test of, 148
 and transcribing, 143-179
 transferring, 199-201
 using wire dictation in, 147
 useless, eliminating, 170
 Correspondents, training of, 153
 Cost, of intercommunication, 129
 of office management, 37
 of planning, 588-589
 of supplies, 236
 of training, 450
 of work, keeping down, 592-606
 (*See also* Economy; Expense, office)

- Cost-of-living bonuses, 499
 Cost records, 187
 Counting the work, 538-541
 Courtesy in correspondence, 150
 Coverings, floor, 356-357
 Credit department, location of, 369
 Cross-analysis chart, 93-94
 Cross-analysis sheet, 44
 Current-practice instructions, 63, 401-402, 474-477
 (See also Standard practice instructions)
 Cycle of motions, 561-562
 Cylinders for dictation, providing, 145
- D
- Daily report, of condition of work, 70
 of incoming mail, 135-136
 Data needed in scheduling, 585-586
 Daylight, in buildings, 336-337
 intensity of, 340
 penetration of, 336-337
 saw-tooth roofs, 336
 variations in, 340-341
 Deadening noise, 356
 Decentralization, evils of, 29
 Decimal system, 219
 Decisions, book of, 468
 making, 100-101, 467-468
 Delays, allowances for, 565, 567
 causes of, 112, 136-137
 unavoidable, factors of, 567-568
 Delegation of responsibility, 54, 76
 Department-head type of worker, 392
 Department heads, authority of, 57
 and office manager, 31
 Departmental records of progress, 544
 Departments, location of, 368-370
 Description, occupational, 395-396
 Descriptions, job, standard, 494-495
 Design, of forms, 211-235
 (See also Forms)
 of records, 183-184
 simplicity of, 218
 Desk, accessories for, 271-272
 arrangement of, 277
 Bergson, Maria, 267, 268
 convertible, 265-267
 cost of, 260-261
 directory of, 274, 278
 drawers of, 271
 equipment for, 274
 factors involved, 259-261
 files in drawers of, 194
 height of, 267, 279
 inspection of, 275
 interchangeability of, 265-267
 layout of, 275
 Leffingwell specifications for, 265
 lighting of, 342
 map of contents of, 274, 278
 purposes of, 258
 Desk, secretarial, 279
 shelf for back of, 263, 264
 size of, 260
 space allowances for, 376
 special, 278-280
 specifications for, 260, 265-267
 standard equipment for, 274
 standardization of, 261-268
 storage space in, 258-259
 Studebaker, 265-267
 study of, 264-265
 telephone on, 272
 tools used with, 271-273
 trays for, 271
 types of, 262
 unit desk, 266, 268
 uses of, 258
 work analyzed by Gilbreth, 270
 work organizer for, 272-273
 as work place, 259-260, 270-271
 Desk systems, 269-278
 analysis of problem of, 273-278
 for clerks, 269-270, 277-278
 data needed in, 274
 for executives, 275-277
 for file clerks, 280
 inspection of, 275
 for secretaries, 279
 standardization of, 269
 for stenographers, 270, 279
 supplies used in, 273-274, 277, 279
 tickler, 272
 tools used in, 271-273
 for typists, 279
 work organizer, 272-273
 Destruction of records, 201-203
 manuals for, 203n.
 Diagrams, flow, 90-95
 showing relation of speed to accuracy, 102
 Dictaphone Corporation, 291
 Dictating machines, 128, 145, 170, 177, 290
 Dictation, nonroutine, 146-147
 (See also Correspondence)
 personality in, 147
 providing blank records for, 145
 routine, 144-146
 scheduling, 146-147
 speed of, in tests for stenographers, 434-435, 444
 standardization of, 162
 by wire, 147
 Dictionary of Occupational Titles, 493, 496
 Differences between individuals, 382-383
 Direct duplication, 294
 (See also Duplicating processes)
 Direct lighting, 344
 (See also Lighting)
 Directory, desk, 274-278
 Discharge, 410-411, 421, 426
 Dispatch routines, 82
 Dispatching the schedule, 587
 Dissatisfaction among employees, 423-425

- Divided routines, 582
 Division of labor, 46
 Dominant routine, 367-368
 Dominating factors in routine, 101, 103
 Double-printing process for ruled forms, 222-224
 Drinking fountains, 357-358
 Drop lights, disadvantages of, 342
 Duplicating, choosing method of, 294-295
 Duplicating processes, 292-297
 blue print, 292
 carbon, 292
 choice of, 294-295
 direct process, 294
 economical use of, 596-597
 gelatin or hectograph, 294
 liquid, 294
 lithoprint, 293
 microfilm, 296-297
 ozalid, 292
 photocopying, 292-293
 photolithography, 293
 selection of, 294-295
 spirit, 294
 stencil, 294
 type and ribbon, 294
 Duplicating section, central, 38
 Duplication of work, 98
 Duties, calendar of, 398-401
 of planning department, 578-580
 as shown by standard job descriptions, 395-396, 494-495
- E
- Eastern Business Teachers' Association, 442*n.*
 Eastman Kodak Company, 463*n.*
 Eastman Recordak, 296
 Economy, labor, 595, 603-604
 in paper utilization, 596-599
 envelopes, 597
 filing material, 598
 forms, 598
 general, 599
 stationery, 596-599
 (See also Stationery and supplies)
 waste paper, 598
 savings from, 604
 summary conclusions concerning, 604-605
 in use of other materials and supplies, 599-601
 carbon paper, 600
 clips, pins, rubber bands, 600
 general, 601
 pencils, 599
 typewriter ribbons, 599
 in use of office machines, furniture, and equipment, 601-602
 in use of service facilities, 602-603
- Edison, Thos. A., Inc., 35
 Efficiency, desk systems and, 269
 finding rate of, 536
 measurement of (see Measurement)
 Electric typewriters, 289
 Electrical outlets, provision for, 325, 371
 Elements, standard, 561-562, 570
 Elevators, 125
 Elimination of reports, 27
 of superfluous work, 18-19
 of unnecessary filing, 27-28
 Ells, L. W., 504*n.*
 Emerson wage-incentive plan, 487
 Employee's progress record, 420-421
 Employment, 410-428
 applicants, sources of, 411
 application blank for, 417
 of beginners, 412
 centralization of, 410-411
 discharge, 410-411, 421, 426
 of executives, 416-417
 experience, value of, in, 412
 of experienced clerks, 412
 finding the right person for, 44
 follow-up in, 423
 function of, 410
 interviewing applicants for, 412-417
 introducing the new employee, 421-422
 job specification, 306
 office manual, contents of, 473
 preliminary information blank for, 414
 qualification card, 420-421
 quits, reasons for, 426
 rating sheet, 419
 reception of new employees, 421-422
 references, value of, 417-420
 report of interview for, 416
 salary standards, 498-503
 sources of applicants, 411
 tests in, (see Tests and testing)
 trial-and-error method of, 429-430
 turnover in, 425-427
 waiting room, 412
 who should employ, 410-411
 Envelope addressing, training in, 459-460
 Envelopes, 597
 Equipment, check lists for, 619-620
 economy in use of, 601-602
 for filing, 197-199, 280
 requirements of, 198-199
 symbols for, 374
 surplus, control of, 284
 templates for, 376-378
 (See also Desks; Machines, office)
 Errors, in experiments, eliminating, 523
 in typewriting, causes of, 175-176
 (See also Quality, control of, 491, 549-550)
Esprit de corps, 387-388
 Estimating work ahead, 76-77
 Executive, definition of, 275
 desk system for, 275-277

- Executive energy, dissipation of, 467
 Executive type of worker, 392
 Executives, attitude of, 30
 devices for locating, 127-128
 interviewing for employment, 416-417
 location of, 369-370
 Expansion, how to figure, 320-322
 provision for, 376
 Expense, office, 592-606
 budget in controlling, 594
 economies possible, 596-606
 (See also Economy; Waste)
 economy wave, 592-593
 unnecessary, 593-595
 (See also Waste)
 as "unproductive," 4, 592
 Experience, value of in employment, 412
 Experiments, scientific (see Scientific experiments)
 Experts, outside, use of, 525
 External correspondence, 143-165
 Extracts from letters, form for, 134
- F
- Facilitating services (see Office service)
 Facilitation, product of office work, 11
 Facilities, problems involving, 39
 Fact finding, requirements of, 11
 Fatigue, 567-569
 Federal Departmental Safety Council, 360-361
 Figures for control, 544
 Figuring, machines for, 301-312
 types of, 302
 File clerks, desk equipment for, 280
 duties of, 494-495
 with incoming mail, 134-135
 File drawer, testing of, 520
 Files, televising of, 126
 Filing, 188-207
 accuracy in, 188
 central, 4, 35, 188-193
 items to omit in, 189
 organizing, 192-197
 chart of systems for, 196
 check list of, 616-617
 control of, 203
 of departmental papers, 189
 in desk drawers, 194
 destroying old records, 201-203
 manuals for, 203
 equipment for, 197-199, 280
 cabinets, 204
 requirements of, 198-199
 shelves for, 199
 wheels, 207
 errors in, preventing, 190-192
 follow-up, 197
 as a form of record keeping, 188
 function of, 188
 inspection of, 203
 Filing, material for, economical use of, 598
 open shelf, 199
 preparing standard practice instructions for, 197
 requirements of, 188
 survey of, 190-192, 195
 system for, choosing, 194-197
 use of television in, 297-299
 testing ability for, 436
 ticklers, 197
 transferring, 199-201
 suspense file in, 202
 unnecessary, eliminating, 27-28
 vertical vs. horizontal, 198
 visible, 204-207
 waste in, 27, 28
 Filing department, location of, 370
 Fill-in work, 70
 Financial incentives, 485-491
 Fixtures, lighting, 343, 344
 Floor covering, 356-357
 types recommended, 357
 Floor space (see Space, office)
 Flow of work, 100, 106-113, 365-368, 375
 analysis of, 366-368
 capacity, theoretical, 109-110
 charts showing, 90-94
 defects in, causes of, 107-109
 departmental lines of, 368-371
 difficulties encountered in, 110-112
 explanation of, 106-107
 impediments in, 107-108
 a management problem, 107-108
 mapping, 375
 scheduling, 584-585
 straight-line, 365-368
 testing, 366
 theoretical capacity, 109-110
 unit plan of, 109
 Fluorescent lighting, 343, 344
 (See also Lighting)
 Flying squadron, 69, 462, 580
 Folding machines, 300
 Follow-up, of new employees, 423
 of schedules, 587
 in mail-order houses, 587-588
 Follow-up file, 197
 Foot-candle, 341
 (See also Lighting)
 Foot-candle meter, 347
 Form book, 230
 Form chart to show routines, 91
 Form letters, printed, use of, 157-159
 Form paragraphs, 159-165
 advantages of, 162-164
 construction of, 164-165
 Forms, 211-235
 analysis of, 214-215, 218
 arrangement of, faulty, 217
 changes in, providing for, 230-231
 check list of, 617-618

- Forms, collecting, value of, 12
 colors, use of, in, 227
 column widths and lengths in, 221-222
 control of, 229
 copying of, 12
 design of, 212-230
 as to arrangement of information, 217-218
 as to name and number, 218-220
 as to purpose, 212
 as to ruled lines, 222-224
 as to simplicity, 218
 as to size, 220-222
 as to type, 223
 as to use, 216-217
 faulty arrangement in, 217
 for use on machines, 216
 double printing of lines in, 223
 economy in use of, 598
 for extracts of letters, 134
 naming and numbering of, 218-220
 obsolete, use of, 233
 packing, standardization of, 232-233
 paper for, 224-227
 (See also Paper)
 perforating, 227
 punching of, 227
 purpose of, 212
 quantity to order, 231-232
 routine of designing, 228-230
 ruled lines in, 222-224
 scoring of, 227
 sizes of, 220-222, 230
 specifications for, 220
 type for, 222, 223
 use of, 216-217
 used in planning, 581-584
 Fountain pens, 251
 Fountains, drinking, 357-358
 Franklin, Benjamin, 592
 Freeland, Willard E., 199
 Function, importance of, 51
 of employment, 410
 of management, 52-53
 of office management, 1, 4, 31, 53
 study of, 76, 186
 Functional control, 31
 Functional foreman, 31
 Functional office manager, 31-32
 Functional organization chart, 62
 Functional thinking, 51
 Functionalization, 55
 Fundamental office tasks, 7
 Furniture (see Desk; Economy; Equipment)
- G
- Gadgets, office, 271-272
 Gantt, Henry L., 483
 Gantt wage-incentive plan, 487
 Gelatin duplication, 294
 (See also Duplicating processes)
 General Electric Company, 347, 348
 Gilbreth's analysis of desk work, 270
 micromotion study, 557
 three-position promotion plan, 452
 Glare, 339
 Glue, 254
 Gothic type, for forms, 223
 Grading of tests, 432, 446
 Grammar, testing of, 430, 437
 Graphic routine charts, 90-95
 Grievances, handling, 388-391
 Groups, measurement by, 543-544
 Guide, standard practice, 569-570
 (See also Standard practice instructions)
- H
- Habits, of accuracy, 101
 formation of, 549-550
 order of development of, 101
 of speed, 102, 460-461
 of work, 100, 549-552
 Halsey wage-incentive plan, 487
 Hammermill Paper Company, 470
 Handbook for employees, 473
 Hardware Mutuals, 87, 159
 Hazards, physical, in offices, 359-360
 Health of clerks, 72
 Heating, 350-353
 atmospheric conditions, effect of, on, 352
 ideal temperature of, 350-351
 location and exposure, influence of, on, 350
 overheating, 351-352
 of private offices, 327
 Hectograph duplication, 294
 (See also Duplicating processes)
 Height of typewriters, 172
 Hermann, Irvin A., 367
 Hiring (see Employment)
 Hollerith, Dr. Herman, 307
 Hoover Commission, 27, 201-203
 savings through records center, 201
 Hoover, Herbert, 180
 Hopf, H. A., 335, 351, 528
 House mail service, 114, 118-127
 checking collections of, 123
 forwarding slip for, 120, 122
 mechanical aids for, 124
 for outgoing mail, 137, 138
 planning route for, 121
 special trips, providing for, 124
 Human element, control of, 71-73, 523
 Humidity, 352-353
 Hunches, in management, 528

I

Idle time, 30, 32
 Illuminating Engineering Society, 348
 Illumination (*see* Lighting)
 Illuminometer, 347
 Improvement work, 86-90, 96-101, 108, 393-402, 551, 554-562
 (*See also* Routines; Flow of work; Scientific analysis; Setting standards; Planning and scheduling; Expense, office)
 In-and-out trays, 271-272
 Incentives, financial, 485-491
 Lefingwell bonus plan of, 488-490
 nonfinancial, 484-485
 profit-sharing, 485
 rewarding section head, 491
 size of reward, 486
 (*See also* Bonuses; Compensation of employees)
 Incentive plans, 486-491
 basic requirements of, 490-491
 Bedaux plan, 488
 early plans, 487
 Lefingwell plan, 488-490
 requirements of, 486
 Incoming mail, 130-136
 chart showing distribution of, 132
 daily report of, 135-136
 distributing, 135
 fixing time of receipt of, 134
 opening, 130-131, 133
 presorting, 131
 reading, 134-135
 Increases, salary, 503
 Index bristols, 221
 Index Visible, 205
 Indexes, visible, 204-207
 Indicia, for postage, 300-301
 Indirect lighting (*see* Lighting)
 Individual differences, 382-383
 Individual output, measurement of, 542-544
 Individual planning, 415, 575-576
 Induction of new employees, 421-422
 Industrial Vision Institute, 434
 Information, general, test of, 439
 Ink, 253
 Inspection, of files, 203
 of machines, 407
 Instruction on the job, 459-461
 (*See also* Training)
 Instructions, current practice, 401-402, 474-477
 standard practice, 63, 401-402, 472-474
 for correspondents, 167-170
 testing knowledge of, 476
 Instructor, qualifications of, 458-459
 Intelligence, testing of, of executives, 416-417
 in general, 430, 439

Intensity of lighting (*see* Lighting)
 Interchangeability of desks (*see* Desk)
 Intercommunication, 115-142
 analyzing the problem of, 128-129
 ascertaining requirements of, 129
 automatic telephone, 127
 check list of, 612-613
 figuring cost of, 129
 forms of, 116-117
 loud-speaking telephones, 127
 pneumatic tube, 125
 problems of, 117-118, 128-129
 signaling devices, 127-128
 telautograph, 125
 telephone, 127-128
 teletypewriter, 125
 when needed, 115-116
 (*See also* Messenger service)
 Interdepartmental communication, 166-167
 Internal correspondence, 143, 165-166
 Internal mail service (*see* House mail service)
 International Theatrical and Television Company, 463*n*.
 Interviewer, in job analysis, 394
 Introduction of new employees, 421-422
 Inventory, control of, 246-248
 perpetual, 247
 taking, machines for, 290
 Investigator type of worker, 392
 Invoices, filing of, equipment for, 204
 Isometric flow chart, 92-94
 Issuing of stock, 241, 246, 248-250

J

Janitorial work, 406
 Job analysis, 393-398
 distinction between job and occupation, 393-394
 facts required in, 394-395
 finding capacities required, 394
 in job evaluation, 492
 interviewer in, 394
 motion study, 557-562
 (*See also* Standardization; Standards)
 of nonroutine job, 396-398
 occupational description, 395-396
 position analysis, 494-495
 time study, 557-567
 work sheet for, 397
 Job classification, 494-495
 Job descriptions, standard, 494-495
 Job evaluation, 491-503
 (*See also* Compensation of employees)
 basic systems of, 492
 classification system in, 492
 descriptions of job classes for, 494-498
 factor comparison system, 492
 job classification, 493-498

Job evaluation, point system in, 492
 ranking system in, 492
 making terms clear in, 497-498
 objectives of, 492
 Job rating scale, 500-501
 Job specifications, 395-396, 434, 440
 Joint Committee on Tests, 442-446

K

Key punch operator, duties of, 495
 Keysort, 309
 Keystroke method of measurement, 539
 Knox, Frank M., 211

L

Labor, U.S. Department of, 390-391,
 492-494, 498, 509
 Laborsaving, machines for, 282-283, 285
 Labor turnover, 425-427, 430
 records of, 187
 Laying out work, training in, 459
 Layout (*see* Arrangement)
 Ledger papers, 226
 Leffingwell bonus plan, 488-490
 Leffingwell square-inch scale, 540-541
 Length of service, and salary, 499
 Letter, simplified, 160-161
 Letters, extracts from, 134
 blanket, 157-159
 Letterwriting (*see* Correspondence)
 Libbey, Charles O., 453
 Lighting, 324, 332, 335-350
 artificial, 339-344
 colors of walls and ceiling, 337-339
 balanced scheme of, 338
 daylight in, intensity of, 340
 penetration of, 336-337
 desk and drop, 342
 deteriorating factors in, 348-350
 direct, 344
 economy in use of, 602-603
 effect of, on arrangement, 371
 efficiency of, maintaining, 348-350
 fixtures for, limiting factors in, 343
 fluorescent, 344
 foot-candle, definition of, 341
 measurement of, 347
 meter, 347
 specifications, 346
 glare, 337, 339
 illuminometer, 347
 indirect, 344
 intensity of, required, 344-345
 maintenance of, 348-350
 measurement of, 347-348
 reflection of surfaces in, 337-339
 saw-tooth roof in, 336
 seeing conditions in, good, 346-347

Lighting, semi-indirect, 344
 standards recommended for, 346,
 348
 systems of, 342-344
 venetian blinds in, 337
 visibility levels for, determining, 345-
 346
 Limits for salaries, 499
 Line authority, 56-57
 Lines, ruled, in forms, 222-224
 Linoleum, for floors, 357
 Liquid duplicator, 294
 (*See also* Duplicating processes)
 Listing machine, 303
 Lithoprint, 293
 (*See also* Duplicating processes)
 Location, of credit department, 369
 of departments generally, 368-370
 of executives, 369-370
 factors in problem of, 322-325
 of noisy departments, 369
 of office building, 319-320
 of service departments, 370
 of stockroom, 241-242
 Longevity of paper for forms, 224-226
 Luckiesh, Matthew, 345, 346, 347
 Luckiesh-Moss visibility meter, 345
 Lumen, 341*n*.
 Lytle, Charles W., 487*n*., 557

M

MacBeth Illuminometers, 347
 Machine dictation, 170-171, 290-292
 poor transcription from, 177
 Machines, office, 282-318
 for adding and calculating, 301-312
 calculating, 311-312
 computing, 311-312
 listing, 303
 nonlisting, 303
 organizing work of, 312-314
 slide rule, 310-311
 for addressing, 299
 analyzing requirements of, 284-288
 for billing, 304
 for bookkeeping, 304-306
 test of, 286
 check list for, 620
 control of, 70-71, 302
 determining what to buy, 284-288
 for dictating, 128, 170, 290-292
 for duplicating (*see* Duplicating pro-
 cesses)
 for figuring, 301-312
 for folding, 300
 idle, expense of, 284
 location of, 371
 for mailing, 300
 postage indicia printing, 300
 maintenance of, 71, 406-407, 594

- Machines, for posting, 304-306**
 to promote accuracy, 283
 for recording conferences, 290-291
 for recording telephone conversations, 290-291
 to relieve drudgery, 283, 285
 to save labor, 282-283, 285
 to save time, 283, 285
 for sorting, 278, 301
 of punched cards, 306-310
 for stamp affixing, 300
 for statistical work, 301, 306-310
 surplus, control of, 284
 for taking inventory, 290
 test of, 286-287
 trend of, 20-21
 for typewriting, 288-289
 when to use, 282-283
- Mail and messenger service, 114-142**
 cash mail, 133
 chart of incoming mail destinations, 132
 check list of, 613-614
 control of, 136-137
 distributing the first mail, 135
 figuring the cost of, 129
 intercommunication, problems of, 117-118
 analyzing the problem of, 128-129
 forms of, 116-117
 mechanical devices for, 124-126
 limitations of, 126-127
 messenger service, 118-125
 (See also Messenger service)
 oral, 127-128
 when needed, 115-116
 internal mail service (see House mail service)
 metered mail, 300-301
 obtaining previous correspondence, 134-135
 opening the mail, 130-134
 desk system for, 278
 importance of early handling, 130
 presorting, 131
 removing contents, 133, 278
 standard method of, 130-133
 tables for, 278 -
 outgoing mail, 136-138
 machines used for, 300
 reasons for delays in dispatching, 137
 trays used for, 138
 reading the mail, 134-135
 time stamping, 134
- Mailing department lines of flow, 308**
- Mail-opening clerk, analysis of work of, 395-396**
- Mail-order houses, work measurement by, 538**
 scheduling by, 587-588
- Maintenance of lighting system, 348-350**
 of office machines, 71, 406-407, 594
 standardizing, 406-407
- Management, control in, 42, 66-67**
 (See also Control)
 function of, 52-53
 meaning of, 52-53
 problems of, 39
 research for, 42
 responsibility of, for assignments, 54, 76
 scheduling by, 587-588
 science in, 38-39
 (See also Office management)
 scientific, 38-47
 standards for, 42
- Manuals, correspondence, 167-170**
 office, 467-482
 policy, 152
 standard practice guide, 569-570
 (See also Office manual)
- Map of desk contents, 274, 278**
- Mapping flow of work, 375**
- Master planning, 575**
 (See also Planning)
- Mastic, for floors, 357**
- Materials, sound absorption by, 355**
- Maze, Coleman, 52, 607n.**
- McCormack, H. S., 51, 548**
- McKenzie, Carl H., 467**
- McKinsey, James O., 40**
- Measurement, 528-547**
 approximate, value of, 541-542
 of certain features, 535
 of clerical minutes per order, 534, 543-544
 control figures from, 544
 of cost, 535
 by counting, 538-541
 of departmental efficiency, 544
 definitions for purposes of, 535-536
 standardized operations, 535
 time unit, 535
 unstandardized operations, 536
 work unit, 536
 difficulties of, 529, 542
 by groups, 543-544
 importance of, 530
 impossibility of, 529
 of individual output, 542-544
 by keystrokes, 539
 of light, 347-348
 by mail-order houses, 538
 methods of, 538
 necessity of, 530-532
 objections to, 529, 542
 purposes of, 528
 recording for, 543-544
 of repetitive work, 538
 by scales, 540-541
 by square-inch method, 540-541

- Measurement and standardization, 552-554
 by time taken, 535-537, 542
 of typewritten matter, 589-541
 unit of, 530-538
 for clerical output, 535-538
 early, 531
 need for, 530-532
 order as, 533-535, 544
 other items as, 534
 for over-all measurement, 532-535
 requirements of, 532
 work, 535-538
 of volume of work by orders, 544
 when to do, 542
 where to start, 538
 work not subject to, 529, 538
- Measures for control, 75
- Mechanical devices, in intercommunication, 124-126
 limitations of, 126-127
 (See also Machines, office)
- Mechanism, control, 67
 used in organized planning, 581-584
- Memorandum for internal correspondence, 166
- Merchandise, returns of, handling, 153
- Merit rating, 504
- Merrick, Dwight V., 486, 567-568
- Merrick wage-incentive plan, 487
- Messenger, duties of, 494
- Messenger service, 118-125
 check list of, 612
 facilities to provide for, 119-124
 instructions, 123-124
 mechanical aids to, 124-127
 planning and organizing, 118-125
 primitive forms of, 118
 and straight-line flow, 366
- Meter, foot-candle, 347
- Metals cutting experiment, 516-517
- Metered mail, 300-301
- Method, existing, analysis of, 556
 problems involving, 39
 questions of, 54
 scientific, 38-47
 (See also Scientific analysis)
 standard, 457
 (See also Standard practice instructions)
- Microfilm, 296-297
- Micromotion study, 557-558
- Mimeograph, paper for, 226
 duplicating process, 294
 (See also Duplicating processes)
- Minutes per order, 534, 543-544
- Misfiling, preventing, 190-192
- Model letter, 154-155, 160-161, 168
- Mogensen, Allan H., 464, 557
- Moisture (see Humidity)
- Montgomery Ward & Company, 146
- Morale of office personnel, 387
- Morning mail, handling, 130-136
 (See also Mail and messenger service)
- Moss, Frank, 346
- Motion pictures, 462-464
 advantages of, 462-463
 made to order, 463-464
 procuring, 463-464
 staff made, 464
 stock items in, 463
 for training supervisors, 464
 use of, in training, 462-464
 otion study, 557-562
 (See also Standardization; Standards)
 analysis of motion cycle, 561-562
 check list for, 560
 definition of, 557
 points to observe in, 558-559
- Motions, cycle of, 561-562
 six standard elements in, 561-562, 570
 using correct, 459
- Mucilage, 254
- N
- National Association of Employing Lithographers, 221
- National Business Entrance Tests, 432, 442-447
 (See also Tests and testing)
- National Labor Relations Board, 507-509
- National Office Management Association, 160-161, 274, 326, 442, 446, 469, 491, 494, 498, 507, 509, 595, 596n.
- National Office Ratios Survey, 534
- Neck chart, 94-95
- New York State Committee on Ventilation, 351-352
- New York University, 557n.
- Niles, Henry E., 283
- O
- Objective, defining the, 39-40, 514
- Observations, causes of variations in, 523
 making of, 96-97, 515
 recording of, 522
 (See also Experiments, scientific)
- Obsolete forms, 233
- Occupational description, 395-396
- Occupational tests (see Tests and testing)
- Occupational Titles, Dictionary of, 496
- Office, 1
 coordinating activity of, 8
 intercommunication in, 115-142
 layout (see Arrangement, office)
 linking activity of, 8
 purpose of, 9
 relation of, to general business, 1-25
 routines of, 81-105
 (See also Routines)

- Office, size of, to need office manager, 37-38
 subdivisions of, 74
 trend in, 15-21
 unions in (*see* Unions, office)
 work of, 8
- Office buildings, lighting and ventilation of, 324, 335-350
 location of, 319-320, 322-325
- Office chairs, 267
- Office desks and desk systems, 258-281
- Office expense (*see* Expense, office)
- Office lighting (*see* Lighting)
- Office location, 319-325
- Office machines, control of, 70-71
 (*See also* Machines, office)
- Office management, check list of, 607-608
 control in, 66-79
 (*See also* Control)
 function of, 1, 53
 functional, 31-32
 future of, 22-23
 modern conception of, 26-47
 summary of, 28
 present trend of, 15-23
 forces influencing, 29
 relative cost of, 37
 scientific, principles of, 38-47
 a specialty, 9
- Office manager, and department heads, 31
 authority of, 57
 control measures for, 75
 duties of, 9, 32
 functional, 31-32
 knowledge required by, for control, 74-75
 and personnel manager, 383
 requirements of, 14
 responsibility for getting work done, 108
 size of office having, 37-38
 status of, 30-31
 title of, 22-23
 when needed, 37-38
- Office manual, 467-482
 brings useless work to light, 468
 checking up periodically on, 480
 contents of, 469-478
 correspondence manual, 470
 current practice instructions, 474-477
 facilities, 472
 how to pack, 470
 information about the company, 471
 reception of callers, 470
 rules and regulations, 472
 sales manual, 470
 standard practice instructions, 472-474
 (*See also* Standard practice instructions)
- Office manual, stenographers' style book, 470
 telephone etiquette, 470
 current-practice instructions, 401-402, 474-477
 (*See also* Current-practice instructions)
 distribution of, 479-480
 handbook for employees, 472-473
 suggested contents of, 473
 helps green employees, 469
 making changes in, 480-481
 making instructions clear in, 479
 making it effective, 480
 mechanical features of, 478-481
 and policy book, 468, 477
 (*See also* Policy book)
 preparation of, 474
 putting into use, 479-480
 standard practice guide, 569-570
 symbols, use of, in, 475
 writing of, 479
- Office organization, charts of, 61-62
- Office personnel, control of, 71-73
 (*See also* Control)
 health of, 72
 and the scientific method, 47
 training of, 20, 45, 188, 449-466
 (*See also* Training)
 treatment of, 73
 (*See also* Personnel)
- Office records, 180-187
- Office routines (*see* Routines)
- Office service, 114-142
 centralization of, 114-115
 correspondence and transcribing (*see* Correspondence; Typewriting transcription)
 dependability of, 114-115
 effect on office work, 114
 filing (*see* Filing)
 inadequate results of, 114
 location of service departments, 370
 mail and messenger (*see* Mail and messenger service)
 stockkeeping (*see* Stationery and supplies)
- Office space, 319-334
 (*See also* Space, office)
- Office supplies (*see* Stationery and supplies)
- Office unions (*see* Collective bargaining)
- Office work, 1-11
 control of, 8, 66-80
 (*See also* Control)
 controllable, 8, 76-77
 details of, 8
 division of labor in, 46
 eliminating superfluous, 18-19
 fundamental tasks in, 7
 kinds of, the three, 67, 68

- Office work, measurable, 77
 (See also Measurement)
 necessity of, 26-27
 periodical, 77
 primary functions of, 6-7
 products of, 10-13
 productivity of, 9, 11, 30
 routines of, 81-105
 (See also Routines)
 subject to control, 76-77
 types of, 7, 67
- Office workers (see Personnel)
- Open shelf filing, 199
- Operation, analysis of, 96-97
 standardized, 535
 typical, 13
 unstandardized, 535-536
- Operation charts, 90-95
- Operations, analysis of, 96-97
 in card indexing, 205-207
 check list for, 560
 possible to standardize, 552-554
- Oral communication, 127-128
- Order as unit of measurement, 533-534
- Order routine, chart of, 91, 99
 (See also Routines)
- Organization, 46, 53-57
 of central files, 192-197
 chart of, 5, 58-63
 company, 5
 functional, 62
 how made, 60-63
 personal, 61
 relationships shown by, 58
 value of, 58
 check list of, 608-609
 common defects of, 59
 definition of, 46, 54
 of the figuring work, 301-312
 functionalization and specialization
 in, 55
 of planning, 574, 581-584
 principles of, 56
 problems involving, 39
 questions of, 54
 rules of, 54-56
 assigning responsibility, 54-55
 delegating authority, 55
 span of control, 56
 specialization, 56
 of scientific analysis, 524-525
 write-up of, 63
- Out baskets, collections from, 137, 138
- Outgoing mail, 136-138
- Output, effect of training on, 450
- Overheating of offices, 351-352
- Overtime, 72
- P
- Paper, carbon, 252-253, 518-519, 600
 economy in use of, 596-599
- Paper, carbon, for forms, 224-227
 appearance of, 226-227
 colors in, 227
 impress of, 226
 longevity of, 224-226
 scoring of, 227
 standard sizes of, 220-221, 230
 strength of, 225-226
 treatment of, 225-226
 type faces for, 223
 (See also Forms)
- Paragraphs, standard, 159-165
 advantages of, 162-164
 construction of, 164-165
 (See also Correspondence)
- Parker Marshall Company, 154-155
- Parsons Paper Company, 225
- Paste, 254
- Payroll, saving through machines, 282-283, 285
 tendency to increase, 21
- Peak loads, 32
 handling of, 70, 110, 462, 580
- Pegboard, 301
- Pen ruling, on forms, 223
- Pencils, 251, 599
- Pennicke, H. C., 114, 573
- Performance ratings, 504
- Performance records, 187
- Periodic transfer, in filing, 200
- Periodical work, 77
- Person, Harlow S., 42
- Personal telephone calls, 403-404
- Personality in dictation, 147
- Personality, factors in, 504, 505
- Personnel, 382-465, 483, 512
 analyzing the job, 393-398
 applicants, testing of, 429-448
 (See also Tests and testing)
 bonuses for (see Bonuses)
 capacities of, 384-386
 check list of, 623-624
 compensation of, 483-512
 (See also Compensation of employees)
 differences between individuals, 382-384-386
 employee testing, 429-448
 (See also Tests and testing)
 employment, 410-428
 (See also Employment)
 environmental influences on, 384
 function, 3, 383
 grievances of, 388-391
 hereditary influences on, 384
 how men differ, 384-386
 interests of, 386-387
 job analysis, 383, 393-398
 job specifications, 395-396, 434, 440
 as a management function, 383
 mental capacities of, 385-386
 merit rating, 504

- Personnel, morale of, 387-388
 nonroutine jobs, 396-407
 occupational description, 395-396
 opportunities of, 387
 payment of (*see* Compensation of employees)
 physical capacities of, 384-385
 place of, in organization, 383
 of the planning department, 588
 policies, test of, 506
 problems involving, 39
 records of, 187
 scientific management and, 382, 389
 standardization of, 382-383, 398-402
 tendency of, to increase, 21
 testing of, 429-448
 (*See also* Tests and testing)
 training of, 20, 45, 188, 449-466
 (*See also* Training)
 turnover of, 425-427, 430
 types of, 389, 392-393
 Personnel Classification Board, 497
 Personnel manager, authority of, 57
 relation to office manager, 383
 Phonograph (*see* Dictating machines)
 Photocopying duplication (*see* Duplicating processes)
 Photolithography, 293
 for forms, 224
 Physical centralization, 36
 Physical hazards in offices, 359-360
 Pins, 250, 600
 Planning, 7, 45-46, 573-584
 of arrangement, 372-376
 (*See also* Arrangement, office)
 cost of, 588-589
 definition of, 573
 departmental, 575-576
 department for, 578-580
 (*See also* Planning department)
 of divided routines, 582
 forms and mechanisms used in, 581-584
 graphic record in, 582
 individual, 574, 575-576
 involved in all work, 574, 580-581
 master planning, 575
 need of, 69-70
 of nonroutine work, 581
 organized, 574, 581-584
 poor, results of, 573-574
 preplanning, 574-575
 scientific, 574-575
 principles governing, 577-578
 records to be kept in, 582-584
 reports, system of, 575
 requirements for, 577
 route sheet used in, 581-583
 of routine work, 580, 581
 scientific preplanning, 574-575
 size of office doing, 576-577
 of special assignments, 582-583
 of special work, 582
 standardization prerequisite to, 69
 of work requiring initiative, 581
 Planning department, 37, 578-584, 588-589
 duties of, 578-580
 act as central information bureau, 580
 analyze work to be done, 578-579
 anticipate fluctuations in volume of work, 579
 assign work, 579
 care for special and rush work, 580
 classify data, 579-580
 calculate bonuses, 580
 develop flying squadron, 580
 develop improvements, 580
 keep statistics, 579-580
 maintain routines, systems, standards, 580
 operate and control service functions, 580
 set standards, 579, 589
 supervise organized training, 580
 forms used by, 581-584
 must pay its way, 588-589
 need of more than one, 588
 personnel of, 588
 Planning the office arrangement, 372-376
 mapping flow of work in, 375
 symbols used in, 374
 templates, use of, in, 376-378
 (*See also* Arrangement, office)
 Pneumatic tubes, 125
 Point system of wage incentives, 488
 Policies, problems involving, 39
 standardizing, 152-156
 Policy book, 468, 477-478
 preserves all policies, 477
 procedure in building, 477
 records policy-making conferences, 477
 saves executive time and energy, 468
 (*See also* Office manual)
 Policy, questions of, 54
 Policy-making function, 51-52
 Policy manuals, 152, 468, 477-478
 Poor Richard, 592
 Porter, David B., 557n.
 Position analysis, 494-495
 (*See also* Job analysis)
 Post office, cooperation with, 138
 Postage indicia, printing, 300
 Posting machines, 304-306
 Posture chairs, 267, 269
 Pratt & Whitney Aircraft, 531
 Preliminary information blank, 414
 Premium plans (*see* Incentives)
 Preplanning, 574-575
 (*See also* Planning)
 Prestandardization work, 554

- Principles, of organization, 54-56
 of planning, 577-578
 of record keeping, 180-182
 of reuse, 478
 of establishing routines, 98-100
 of scheduling, 585-586
 of scientific office management, 38-47
 analyzing the problem, 39-41
 finding the facts, 41-42
 finding the right method, 42-43
 finding the right person, 44
 getting the work done, 46-47
 planning, 45-46
 stating the problem, 39
 training the right person, 45
 of stock keeping, 243
 Printing tabulator, 308
 Private offices, 326-331
 advantages of, 326
 construction of, 330-331
 cost of, 328
 disadvantages of, 327-329
 heating of, 327
 location of, 330
 when advisable, 329-330
 Problem, analysis of a, 39-41, 514-515
 Problems, management, classification of, 40
 Problems for solution:
 Bonner-Poole, 209
 Brown Knitting Mills, 547
 Carter Hosiery, 113
 Community Chest, 380
 Davis Brush, 209
 General Manufacturing, 590
 Harrison Company, 427
 Hart Manufacturing, 466
 Indiana Manufacturing, 178
 Iroquois Knitting, 281, 334, 362-363, 381
 Jenks and Keane Pharmaceutical, 104
 Kelley Manufacturing, 65
 Kingman Manufacturing, 50
 Maxfield Button, 591
 McLean Button, 235, 317
 Milady Soap, 141
 National Graphite, 257
 Norcross & Company, 210
 Old Colony Rope, 318
 Parker Company, 179
 Popular Priced Stores, Inc., 512
 Proctor Pencil, 408
 Western Pencil, 527
 Wisconsin Mutual Liability Insurance, 142
 Wollaston Knitting, 546
 Wright Machine Tool, 49
 Procedures and procedure charts, 90-95
 (See also Routines)
 Process charts, 90-95
 symbols used in, 87
 Production, payment by, 486-491
 (See also Incentive plans)
 Production records, 187
 Professional status of office managers, 30-31
 Profit sharing, 484
 (See also Incentives)
 Progress, record of, 544
 Promotion, 451-452
 Psychological Corporation, 439n.
 Psychological factors in office control, 72-74
 Punch-card systems, 306-310
 Hollerith, 306-309
 Keysort, 309-310
 Punctuation, test of, 430, 438-439
 Purchase records, 186
 Purchase-order system, 13
 Purchase specifications, standard, 237
 Purchasing agent, location of, 370
 Purdue University, 434
- Q
- Qualification card, employee's, 420-421
 Quality, control of, 491, 549-550
 Quantity of forms to order, 231-232
 Questionnaire, use of, in filing survey, 198
 Quitting, employees' reasons for, 426
- R
- Rating scales, 130, 419, 503-505
 Rating sheet for employment interview, 419
 Raymond Company, 338
 Reading copy, 176, 459-460
 training in, 179, 459-460
 Reception of new employees, 421-422
 Reception clerk, 404-406, 495
 Reception room, 331-332
 check list for, 625
 determining space requirements for, 331-332
 Recommendations of Hoover Commission, 27
 Record keeping, 180-187
 analyzing, rules for, 184-185
 classification, 181
 essential points in, 183
 modern tendencies in, 128
 principles of, 180-182
 Recordak, 296
 Records, 1-2, 180-187
 administration of (see Filing)
 analyzing, rules for, 184-185
 center for, 201
 classification of, 181
 designed to order, 183-184
 destruction of, 201-203
 of experiments, 513, 522
 and filing, 188

- Records, of labor turnover, 187
 for measurement, 543-544
 modern tendencies in, 184
 of performance, 187
 personnel, 187
 kept by planning department, 582-584
 production and cost, 187
 progress, 544
 purchase, 186
 purposes of, 182
 sales, 187
 stock, 186
 as tools, 182
 of work done, 542-544
- Rees, Robert I., 297
- References, employment, 417-420
- Reflection, in lighting, 337-339
- Relation of office to business, 1-25
- Relation of speed to accuracy, 101-102
- Releasing employees, 410-411, 421, 426
- Remington Rand, 297
- Repair man, 405-407
- Repairs, routine for, 407
- Repetitive work, measurement of, 538
- Reports, 27
 of divisional standing, 70
 eliminating, 27
 of filing department, 203
 of incoming mail, 135-136
 of interviews, 416
 in planning, 575
- Research, management, 42
- Reserve-stock plan, 244
- Responsibility, assigning, 54, 76
 of the manager, 108
- Rest periods, 567-569
- Returns of merchandise, handling, 153
- Reuse, principle of, 478, 554
- Reward for effort, problem of, 483-486
 (*See also* Incentives)
- Ribbons, typewriter, 251, 599
- Riegel, John W., 497
- Rotary index, 207
- Route sheet, 543, 581-583
- Routine work, control of, 76
- Routines, 81-105
 analysis of, 86-90, 94-96
 how to study, 97
 building new, 100-103
 charts of, 90-95
 check list of, 611-612
 definition of, 82
 of designing a form, 228-230
 diagrams of, 83
 for dispatch, 82
 dominant, 367-368
 dominating factors in, 101-103
 establishment of, principle of, 98-100
 factors in, 101, 103
 flow charts of, 90-95
 formation of, 83-86
 kinds of, 82
- Routines, of letter writing, 144-146
 necks in, 94-95
 new, building, 100-103
 objectives of, 101, 103
 planning of, 580-581
 as planning mechanisms, 46
 purposes of, 88-90
 reconstructing, 98-103
 for handling repairs, 407
 standard symbols used in, 87
 standardizing main operations in, 55
 study of, 86, 555
 synthesis of, 100-103
 as threads, 82-83
 typical, 84
 visualizing, 90-95
 when justifiable, 89
- Routt, Forrest V., Jr., 429
- Rubber for floors, 357
- Rubber bands, 250
 substitute for, 600
- Rubber cement, 254-255
- Rule, slide, 310-311
- Ruled lines in forms, 222-224
- Rules of organization, 54-56
- S
- Safety in the office, 360-361
- Salaries (*see* Compensation of employees)
- Salary standardization, 491-507
 (*See also* Compensation of employees)
- Salary surveys, NOMA, 494*n*.
- Sales analysis, 21
- Sales records, 187
- Savings from economy, 604
 (*See also* Economy)
- Saw-tooth roof, in lighting, 336
- Scalar principle, 56
- Scale for merit rating, 505
- Scales for measuring work, 540-541
- Scheduling, 7, 69, 584-588
 allowances in, for delays, 586-588
 of clerical hours available, 586
 data needed, 585-586
 definition of, 573, 584
 of dictation, 146-147
 factors to consider in, 586-587
 of flow of work, 584-585
 follow-up of, 587
 in mail-order houses, 587-588
 of nonroutine work, 587
 principles governing, 585-586
 quantity of work subject to, 585
 of special, unrelated tasks, 584-585
 what is involved in, 584
- Science in management, 38-39
 measurement the test of, 528
- Scientific analysis, 40, 513-527
 apparatus, use of, in, 521-522
 carbon paper, test of, 518-519
 definition of, 513

- Scientific analysis, definition of scientific experiment, 517
 determining method of making test, 520
 error in, minimizing, 523
 experiments, making, 515-524
 (See also Scientific experiments)
 expert, outside, use of, 525
 basis of employment of, 525
 human element, eliminating, 523
 limiting purposes of tests, 518-519
 literature, study of, 519-520
 major steps in, 514-515
 metals cutting experiments, 516-517
 objective, definition of, 514
 observations, comparing, 523-524
 limiting, 515
 making, 515
 recording, 522
 organizing, work of, 524-525
 outlines, use of, in, 515
 by planning department, 578-580
 a principle of office management, 39-41, 513
 of the problem, 514-515
 requirements of, 513
 results to be expected from, 525
 of a routine, 85-90, 94-96
 studying results of, 524
 Taylor, Frederick W., 516-517
 testing validity of information, 519
 variables, eliminating or controlling, 520-521
 whose responsibility, 525
 Scientific control, 68
 (See also Control; Scientific experiments)
 Scientific experiments, 515-524
 apparatus for, selection of, 521-522
 controlling variables in, 520-521
 on cutting of metals, 516-517
 definition of, 517
 eliminating error in, 523
 human element in, eliminating, 523
 limiting purpose of, 518-519
 magnifying certain factors in, 520
 observations in, comparing of, 523-524
 limiting, 515
 making of, 515
 recording of, 522
 preliminary survey in, 519
 purpose of, limiting, 518-519
 recording of observations in, 522
 scientific thinking, 514-515
 selecting the method of making, 520
 studying results of, 524
 Taylor's, Frederick W., 516-517
 in testing carbon paper, 518-519
 validating information, 519
 variable conditions in, 520-521
 Scientific management, 22
 Scientific method, 38-47
 (See also Scientific analysis)
 Scientific office layout, 364-381
 (See also Arrangement of office)
 Scientific office management, forces influencing, 29
 importance of, 38
 principles of, 38-47
 Scientific office manager, status of, 30-31
 Scientific preplanning, 574-575
 (See also Planning)
 Scientific thinking, 514-515
 and planning, 577
 Scoring of tests, 446
 Scott, O. M., & Sons Company, 152
 Scratch pads, 255-256
 Sealing machines, 300
 Secretarial desks, 279
 Secretaries, private, 35
 Section-head type of worker, 392-393
 Segur, A. B., 557
 Semi-indirect lighting, 344
 (See also Lighting)
 Servel, Inc., 367
 Service departments, location of, 370
 and planning department, 580
 Services, economy in use of, 602-603
 Setting standards, 548-572
 (See also Standardization; Standards)
 Sheldon, Oliver 39n.
 Shelves, for desks, 263-264
 for filing, 199
 for stockroom, 242
 Shock absorbers in tests, 433
 Signaling devices to locate executives, 127-128
 Simplification, work, 18, 28
 through elimination of wastes, 554
 program of, 28
 Simplified letter, 160-161
 Sizes of forms, 220-222, 230
 Slide rule, 310-311
 Sliding scale of bonuses, 487-490
 Sloan, Alfred P., Jr., 513
 Smoking in offices, 325-326
 Society for Advancement of Management, 172n.
 Sorting devices, 278, 301, 306-310
 Keysort, 309
 Sound absorption, 355
 Sources of applicants, 411
 Sources of facts, 41-42
 Space, office, 319-334
 allowances for, in layout, 375-376
 for cloakrooms and restrooms, 325-326
 expansion of, providing for, 320-322
 lighting of, 324, 332
 (See also Lighting)
 location of, selecting, 322-325
 private offices, 328-331
 (See also Private offices)

- Space, reception room, 331-332
 shape and size of, 324-325
 ventilation, 324, 351-354
 (See also Arrangement, office)
- Span of control, 55-56
- Special assignments, planning of, 582-583
- Special work, planning of, 580
- Specialists, 461-462
- Specialization in the office, 55
- Specification, job, 395-396, 434, 440
 standard, for forms, 220
 for supplies, 237-238
- Speed habits, 101, 460-461
 relation to accuracy, 101-102
- Spelling, test for, 430, 437-438
- Spirit duplicator, 294
 (See also Duplicating processes)
- Square-inch method of measuring work, 540-541
- Staff authority, 56-57
- Staff investigator, 392
- Stamp affixing machines, 300
- Standard, 548-549
 (See also Standards, setting of)
- Standard form specifications, 220
- Standard method, importance of, 457
- Standard nomenclature, 63
- Standard paragraphs, 159-165
 (See also Correspondence)
- Standard-practice guide, 569-570
- Standard-practice instructions, 63, 401-402, 472-474, 569-570
 (See also Current-practice instructions)
- content of, 454
 for correspondents, 167-170
 distribution of, 455
 preventing unauthorized changes in, 455-457
 providing for exceptions, 456
 for training, 398-407, 452-458
 who should have copies of, 455, 479-480
 writing of, 452-458, 474, 479
- Standard purchase specifications, 237
- Standard salaries, 498-503
- Standard specifications, of forms, 220
 of supplies, 237
- Standard symbols (see Symbols)
- Standard type faces for forms, 222-223
- Standardization, 36-37, 76
 analyzing existing method, 556
 of company policies, 152-156
 of correspondence methods, 156
 of correspondence style, 156
 cycle of motions, 561-562
 definition of, 452-453
 of desks, 261-268
 of equipment and materials (see Desk; Economy; Equipment; Forms; Machines, office; Stationery and supplies)
 essential to control, 76
- Standardization, of filing methods, 188
 fixation of work habits necessary to, 550-551
 of form sizes, 220-222, 230
 habits, work, in, 549-552
 how to begin, 554-556
 of janitor work, 406
 of main routine, 555
 of maintenance, 406-407
 micromotion study in, 557-558
 motion study in, 557-562
 motions, cycle of, 561-562
 of nonroutine workers, 398-402
 operations subject to, 552-554
 of packing of forms, 232-233
 of paper sizes, 220-222, 230
 partial, 553
 of personnel, 382-383, 398-402
 (See also Personnel)
 policies to follow in, 555
 prerequisite to control, 69
 prestandardization work, 554
 as to quality, 553
 of quantities to order, 231-233
 as to quantity, 553
 of reception clerk's work, 404-406, 495
 record progress of, 555
 of salaries, 491-507
 standard practice guide, 569-570
 (See also Standard-practice instructions)
- steps in, 556-557
 of telephone usage, 403
 time study in, 557, 562-565
 (See also Time study)
- of unmeasurable work, 553
- unstandardized operations, 536-537
- variables, effect of, on, 553
 where to start, 77-78, 555
 work habits, fixation of, in, 550-551
 work subject to, 552-553
- Standardized operation, definition of, 535
- Standardizing company policies, 152-156
- Standards, 19, 76, 548-572, 588
 definition of, 548-549
 factors in devising, 552-553
 for lighting, recommended, 346, 348
 no universal, 552
 of quality, 553
 setting of, 490-491, 548-572
 definition of, 549
 how determined, 557-558
 micromotion study, 557-558
 motion study in, 557-562
 by planning department, 579, 589
 of salaries, 498-503
 steps in, 556-557
 time study, 557-567
 (See also Time study)
- Starting salaries, 498-499
- Stating the problem, 39

- Stationery and supplies, 236-257
 amount to keep on hand, 246-248
 automatic pencils, 251
 cabinet for, 204
 carbon paper, 252-253, 292, 518-519, 600
 causes of loss in, 236-237
 centralization of, 239
 clips, pins, and paper fasteners, 250, 600
 consumption of, control of, 237, 248-256
 control of, 240, 246-249
 cost, elements in, 238
 deterioration of, 236
 economy in use of, 596-599
 (*See also* Economy)
 forms (*see* Forms)
 fountain pens, 25
 ink, glue, paste, and mucilage, 253-255
 inventory, control of, 246-248
 issuing of, 241, 246, 248-250
 pencils, 251, 599
 problem of, 236
 record of requirements of, 239
 requisition system for, 246
 reserve stock plan, 244
 savings possible in, 236
 small items of, 240
 stock keeping for, 239-249
 arrangement of stock, 242-244
 centralization of, 239
 check list for, 618-619
 classification of stock, 244-246
 layout of stockroom, 242-246
 location of stockroom, 241-242
 principles of, 243
 requirements of, 241
 records for, 239, 249
 reserve plan in, 244
 shelving, 242
 stock limits in, 246-248
 stockroom, layout of, 242-244
 location of, 241-242
 typewriter ribbons, 251, 599
 used in desks, 273-274, 277
 waste of, 237-238
 (*See also* Economy)
- Statistical machines, 306-310
 Statistical work, 6, 21
 "Stem" analysis sheet, 44
 Stencil duplicating, 294
 Stenographers, desk system for, 279
 duties of, 494, 496-497
 tests for, 434-435, 444
 Stenographic section, 34-35, 588
 location of, 370
 Steps in squares chart, 91
 Stock records, 239, 249
 Stockkeeping, 36, 239-249
 (*See also* Stationery and supplies)
 Stoelting Company, C. H., 439n.
- Stop watch, 562-564
 Storage, 239-249
 (*See also* Stationery and supplies)
 Straight-line flow, 365-368
 (*See also* Flow of work; Arrangement, office)
 advantages of, 365-366
 analysis of, 366-368
 definition of, 365
 effect of, on messenger service, 366
 relation of workers to, 370-371
 testing, 366
 Street, Elwood, 317
 Stricker, A. H., 258, 279n.
 Studebaker desk, 265-267
 Stuebing, Robert H., 382
 Style in correspondence, 154-157
 Subdivisions, nomenclature of, 63
 Subexecutives, training of, 452
 Superfluous work, eliminating, 18-19
 Supervision, check list of, 609-610
 by planning department, 578-580
 (*See also* Control)
 Supplies, 236-257
 savings possible in, 236
 (*See also* Stationery and supplies)
 Survey, of card indexing, 205-207
 of files, 190, 192, 195
 procedure for, 554-557
 Suspense file, 202
 Symbols, standard, for equipment, 374
 use of, in office manual, 475
 for routines, 87
 used in time study, 563
 Synthesis of new routine, 100-103
 Systematizer, 15
 Systems, for desks, 269-278
 essential points in, 183
 for filing, choosing, 194-197
 purchase order, 13
 simplification of, 17-18, 28, 554
 (*See also* Standardization)
 trend of, 15-17
- T
- Tab positions in, filing, 196
 Tables, calculation, use of, 301, 310
 for circularizing, 278
 for machines, 278
 for mail opening, 278
 preferred to desks, 263
 for sorting, 278
 Tabulating machines, 306-309
 Taft-Hartley Act, 507, 508n.
 Tarr, W. E., 265
 Taylor, Frederick W., 31, 265, 486, 516-517, 522, 567
 Taylor Society, 286, 517n.
 Taylor wage-incentive plan, 487
 Teacher, qualifications of, 458-459
 Telautograph, 125

- Telefax, 405**
Telegrams, centralizing responsibility for, 405
Telephone, conduits for, 325, 371
 controlling use of, 403-404
 conversations, recording of, 290-291
 holder for, 272
 standard methods of using, 402-403
 types of, 127-128
Telephone operator, 402, 404
Teletypewriter, 125
Television in offices, 126, 297-299
Temperature, in offices, 350-353
Templets used in office layout, 376-378
Testing flow of work, 366
Testing materials, 518-519
Tests and testing, 429-448
 administration of, 440-442, 444-446
 of arithmetic, 436
 of bookkeeping, 436, 444
 Of clerical aptitudes, 439
 onstruction of, 431-434, 446
 of current practice, 476
 definition of, 429
 examiner's qualifications for, 441
 of filing ability, 436
 of general information, 439
 of general intelligence, 430, 439
 for executives, 416-417
 giving of, 440-442
 grading of, 432, 446
 of grammar, 430, 437
 Joint Committee on, 442-446
 of letter writing, 148, 435-436
 National Business Entrance Tests, 432, 442-447
 certificates of proficiency, 446
 construction of, 446
 general plan of, 444
 genesis of, 442
 Joint Committee on, 442, 446
 objectives of, 443
 recognition, provision for, 446-447
 sampling tests, 444
 scoring of, 446
 subjects included in, 444-445
 bookkeeping, 444
 calculating machine operations, 445
 fundamentals, 444
 general information, 444
 general office clerk, 445
 stenography, 444
 typewriting, 444
 where given, 445-446
 occupational test, 429
 primary test, 434
 of punctuation, 430, 438-439
 purpose of, 429, 442-443
 sampling, 444
 shock absorbers in, 433
 of special abilities, 430-431
Tests and testing, of spelling, 430, 437-438
 standardization of, 433-434
 for stenographers, 434-435, 444
 by trial and error, 429-430
 of typing ability, 430-431, 435
Theoretical capacity, 109-110
Thinking functionally, 51
Three-position promotion plan, 452
Tickler file, central, 135
 for desks, 272
Tiffin, Joseph, 434
Time keeping, for measurement, 542
 on unstandardized operations, 536-537
 form for, 537
Time saving, machines for, 283, 285
Time study, 557-567
 allowances to make in, 565-568
 of card indexing, 206
 definition of, 557, 562
 delays, allowances for, 565, 567
 elements in, 561-562
 fatigue, allowance for, 567-569
 how many to make, 565
 preparing the subject for, 564
 purpose of, 557, 562
 rest periods, allowance for, 567-569
 selecting subjects for, 564
 sheet for, 565, 566
 stop watch, use of, in, 562-564
 standard symbols used in, 563
 unit times, recording of, 562, 564
 when to be used, 562
 who should do, 562
 (See also Standardization; Standards)
Time unit, 535
Toilet facilities, 358
Toll calls, controlling, 404
Tools, desk, 271-273
Towne, Henry R., 517
Trade tests, construction of, 431-434, 446
 for file clerks, 436
 primary, for office work, 434
 purpose of, 429, 442-443
 for stenographers, 434-435, 444
 for typists, 430-431, 435
 (See also Tests and testing)
Training, 20, 45, 188, 449-466
 advantages of, 450
 of correspondents, 153
 cost of, 450
 definition of, 451
 developing habit of speed by, 460-461
 effect of, on output, 450
 in envelope addressing, 459-460
 of filing force, 188
 flying squadron in, 462
 Gilbreth plan of, 452
 how far to carry, 461
 individualizing, 458-461
 by instruction on the job, 459-461
 in laying out work, 459

- Training, motion pictures in, 462-464
 for nonroutine tasks, 398-407
 old method of, 450
 in reading copy, 176, 459-460
 preliminary, 451
 for promotion, 451-452
 selecting instructors for, 458-459
 standard methods in, 457
 standard practice instructions for, 398-407, 452-458
 of subexecutives, 452
 supervised by planning department, 580
 three-position promotion plan of, 452
 by trial and error, 429
 in typing envelopes, 459-460
 understudy plan of, 452
 in using correct motions, 459
 versatility, developing by, 461-462
 Traits in office employees, 384-386
 Transcriber, duties of, 494
 Transcription, 170-177
 check list of, 615-616
 (See also Typewriting transcription)
 Transferring correspondence, methods of, 199-201
 (See also Filing)
 Transportation of work, 108-109
 Trays, desk, 271-272
 for outgoing mail, 138
 Trend of office management, 15-21
 Trial-and-error employment, 429
 Trundle Engineering Company, 441
 Turnover of employees, 425-427, 430
 records of, 187
 (See also Personnel)
 Twelve control measures, 75
 Type faces, for forms, 222-223
 Type-and-ribbon duplicator, 294
 (See also Duplicating processes)
 Types of office workers, 389, 392-393
 Typewriter ribbons, 251, 599
 Typewriters, 288-289
 box for raising height of, 173
 Typewriting, paper for, 147
 measurement of, 539-541
 Typewriting transcription, 170-177
 analysing faults of typists, 172-176
 carriage throwing, 173-174
 inserting paper, 173
 manicured nails, 174
 physical adjustment, 175
 platen twirling, 173
 position of copy, 172-173
 posture, 172
 rhythm, 174-175
 stroking keys, 174
 tabulator use, 174
 touch system, 174
 developing speed, 171-172
 eliminating time-wasting conditions in, 172-175
 Typewriting transcription, errors, causes of, 175-176
 disturbing conditions, 175
 lack of interest, 175
 lack of proper training, 176
 physical defects, 175
 reading of copy, 176
 spelling, 176
 high output, how achieved, 171-176
 physical factors involved, 171
 supplies, economy in use of, 596-601
 (See also Economy)
 tests for, 430-431, 435
 Typewritten matter, measurement of, 539-541
- U
- Underfloor conduits, 325, 371
 Understudy plan of training, 452
 Unions, office, 507-509
 (See also Collective bargaining)
 Unit desks, 266, 268
 Unit of measurement, 530-538
 Unit of work, definition of, 535
 Unit plan of flow, 109
 Unit times, recording, 570
 Unit work plan, 535-538
 United Business Education Association, 442
 United Office and Professional Workers of America, 507
 United States agencies, Agriculture, 172n
 Census Bureau, 306
 Commerce, 353, 361
 Employment Service, 496
 Labor, 390-391, 492-494, 498, 509
 Navy, 350
 Railroad Labor Board, 497
 United Typothetae of America, 221
 University of Michigan, 497
 Unstandardized operations, accounting for, 536-537
 definition of, 536
 timekeeping on, 536-537
 Upgrading (see Training for promotion)
 Urwick, L., 55-56
- V
- Variables in experiments, controlling, 520-521
 Venetian blinds, use of, 337
 Ventilation, 324, 351-354
 in private offices, 327
 report of committee on, 351-352
 testing, method of, 353
 Vericon, 297-299
 Vertical filing, 198
 Versatility, developing, 461-462
 Visible indexes, 204-207
 Visitors, reception of, 404-406
 Volume, work, unequal, 110

W

- Wage-incentive plans, 484-491
(See also Compensation of employees)
- Wagner Act, 507, 508*n.*
- Waiting room, 412
- Walls, color of, 337
- Ward, Montgomery & Company, 146
- Washington, D. C., Community Chest, 317
- Waste, 554, 592-606
(See also Economy)
causes of, 593
due to lack of control, 30
of electricity, 595
of equipment, 594
forms of, 593-595
how to prevent, 593-606
of human effort, 595
of materials, 594
of money, 593-594
saving a habit, 592
of services, 594-595
three classes of, 593
of time, causes of, 467
- Watch, stop, 562-564
- Water for drinking, 357-358
- Wax plates for forms, 224
- Westinghouse Electric Corporation, 343, 347
- Westinghouse Electric & Manufacturing Company, 496
- Wheeldex, 207
- White, Wilford L., 26
- Whitney, F. L., 516*n.*
- Willett, K. B., 469
- Wiltse, John S., 282
- Wink counter, 557*n.*
- Wire dictation, 147
- Wirt, S. Edgar, 434
- Wood, George D., 319
- Work ahead, estimating, 76-77
- Work, calendar of, 398-400
controllable, 76-77
flow of, 106-113
interruptions to, 111
of the office, 8
progress sheet of, 400
ways of moving, 108-109
- Work charts, 90-95
symbols used in, 87
- Work flow, 106-113
- Work habits, 101
formation of, 549-550
(See also Standardization; Standards)
- Work organizer, for desks, 272-273
- Work sheet for job analysis, 397
- Work simplification, 18, 28
through elimination of waste, 554
program of, 28
- Work-unit plan, 488-490, 535-538
- Work volume, 110
- Workers, office, types of, 389, 392-393
- Working conditions, 3, 335-363
check list of, 620-622
(See also Heating; Lighting; Noise. Ventilation)
- Write-up, organization, 63
- Written communications, 3, 118
- Written instructions, 63, 167-170, 401-402, 453, 472-474, 569-570
(See also Current-practice instructions; Standard-practice instructions)
- Wylie, H. L., 66

