UNIVERSAL
LIBRARY

OU_166722

UNIVERSAL
LIBRARY

OSMANIA UNIVERSITY LIBRARY

Call No. 658/S25B. Accession No. 26350

Author Saunders. A G

Title Business Reports. 1960

This book should be returned on or before the date last marked below.

BUSINESS REPORTS

The quality of the materials used in the manufacture of this book is governed by continued postwar shortages.

BUSINESS REPORTS

Investigation and Presentation

BY

ALTA GWINN SAUNDERS
Professor of Business English
Chairman of Division of Business English
University of Illinois

AND

CHESTER REED ANDERSON
Associate Professor of English
University of Illinois

SECOND EDITION
SEVENTH IMPRESSION

McGRAW-HILL BOOK COMPANY, INC
NEW YORK AND LONDON
1940

COPYRIGHT, 1929, 1940, BY THE
McGRAW-HILL BOOK COMPANY, INC.

PRINTED IN THE UNITED STATES OF AMERICA

All rights reserved. This book, or parts thereof, may not be reproduced in any form without permission of the publishers.

PREFACE

Since 1929, when *Business Reports, Investigation and Presentation* was originally published, business and industry have continued to lay emphasis upon the value of a person's being able to express himself effectively in writing. In addition, they have doubled and redoubled their research, which has meant a huge increase in the preparation of research reports.

Before 1929, only a relatively few progressive companies used research and reports to effect economies, except in the field of production; today, large numbers of firms and many different branches of business are accepting the research idea and using it extensively. As a result, skill in report writing is now a more valuable instrument to those engaged in business than it was in 1929, and training in research technique and in the writing of reports is, likewise, more important to students of commerce than formerly.

Although written reports have long been instruments of business, only in recent years has marked progress been made in providing adequate training in the writing of this specialized type of exposition. The progress has come about through the demand of business for graduates better trained in forms of business writing, and in increasing numbers from schools, which recognize that students more quickly gain facility in writing when provision is made for them to write on subjects in their own fields of interest and when they are encouraged to do practical types of writing. In other words, acquiring skill in writing is largely a matter of plenty of practice growing out of proper motivation.

The importance of the report as a vehicle for writing is in the careful organization and clear and forceful presentation of a subject in which the writer has a definite interest. Report writing offers a natural combination of straight thinking and straight writing. It offers, in contrast with vague term papers, renewed interest in the library and definiteness of aim.

The principles and the procedure of report writing and of research technique in business outlined in this book remain fundamentally the same as those in the original text. Changes made in them are due to their application in specific fields, such as accountancy, marketing, etc. Changes are more in vocabulary than in fact.

Business Reports, like the original text, is designed to guide the report writer—experienced businessman, young businessman, or student—step by step through the various processes of investigation and presentation—plan, collect data, organize data, etc.—of a business problem and its solution. It attempts to anticipate the troubles of each process, to explain what causes them. and to show how they may be overcome.

To avoid confusing the reader, the book does not treat a myriad of so-called types of reports. Rather it develops one general basic plan that underlies all types of reports, a plan that can be adapted to the dynamic, changing world of business, in which a specific answer today is an obsolete answer tomorrow. The authors believe that under this plan the reader will gain self-confidence in meeting different situations.

Since business research furnishes the data for business reports, the book has two natural divisions, investigation and presentation. The first division considers the planning necessary in starting the investigation: the methods of collecting data, of organizing them, the processes of their final interpretation, and their logical conclusions and recommendations. The second stresses the writing of each element of the final report, with emphasis on organization, English, graphic presentation, and mechanics. The section on mechanics is especially adapted for the typed report. Many rules are available to experienced research men for printing reports, but few to the beginner, who will probably type his report. And many reports are prepared and submitted by the writer who is not an experienced typist.

Written in two sections, the book may be used in whole or in part. The teacher whose students have had a course in statistics or in research technique may wish to use only the second section, on writing the report.

To call the new edition of *Business Reports* a revision is a misstatement which needs explanation. *Business Reports* is really a new treatment of the subject of investigations and of report

writing in the field of business. *Business Reports*, except for its name, is a new book.

Certain features are included in the second edition of *Business Reports* that were not included in the first. These, the authors believe, will make it more valuable to the teacher of report writing; to the student learning the principles and acquiring the procedure of report writing; and to the business executive who makes decisions on the bases of analyses and interpretations of facts embodied in the report.

For the teacher, the suggestions for a course outline in report writing, problem subjects, and specific problems have been added with the hope that they may be helpful, at least occasionally.

For the college student, or businessman who has not studied statistics, the theory of selecting an adequate sample has been added in Chap. III; the method of testing the reliability and proportionality of a sample in Chap. IV; and the method of predetermining the size of a sample, together with a table indicating the size of sample necessary to be practically sure of accuracy within predetermined limits, in Appendix I. Some fundamental statistical methods have been included, less with the idea of teaching students mathematical steps in statistical analysis and more with the desire to suggest to them that application of statistical method is becoming more important in business research. This statement is true because the measurement of quantitative data is the function of statistical procedure, and a large part of research consists in obtaining quantitative information and in analyzing it.

To aid the director of research or the teacher, a wealth of illustrative material has been added. By putting this material into the hands of students, the authors hope to leave teachers and directors more time and energy to direct investigations and give constructive help in writing.

The authors wish to express appreciation to the publishers who have given them permission to quote from their books and periodicals and to the companies and men, particularly their former students, who appear in the list of acknowledgments.

They wish to make special acknowledgment to Arthur C. Weick, president of the Arthur C. Weick Company, Chicago; to Stanley P. Farwell, president of the Chicago Business Research Corporation, Chicago; to J. H. Easton of the same company;

to Mr. W. Herrington, research department, Blackett-Sample-Hummert, Inc.; to Professor Theodore Henry Brown, professor of business statistics, Harvard University Graduate School of Business; to John R. Riggleman, consulting economist and statistician; to Professor Ira N. Frisbee, professor of accounting, University of California; to Professor W. P. Boyd, associate professor of business administration, University of Texas; to Ferdinand C. Wheeler, marketing consultant; to A. H. Winakor, statistician, Bureau of Institutional Research, University of Illinois, for writing the chapter entitled "Preparation of Tables and Charts"; to Roscoe R. Giffin, assistant in economics, University of Illinois, for writing Appendix I; and to M. Henry Wells for assisting in preparation of the manuscript.

ALTA GWINN SAUNDERS,
CHESTER REED ANDERSON.

UNIVERSITY OF ILLINOIS,
October, 1940.

ACKNOWLEDGMENTS

Robert Allen, National Youth Administration of Illinois, Mendota, Illinois; C. T. Baumgart, Chicago; W. A. Berridge, Metropolitan Life Insurance Company, New York; H. M. Beville, Jr., National Broadcasting Company, New York; H. S. Brutton, Proctor & Gamble, Cincinnati; H. S. Bishop, Curtis Publishing Company, Philadelphia; V. P. Black, Chrysler Corporation, Dayton; Walther Buchen, Chicago; W. J. Byrnes, *Chicago Tribune*, Chicago; G. G. Cartwright, Goodyear Tire and Rubber Company, Inc., Akron; E. F. Dorn, Commercial Credit Company, Minneapolis; A. H. Frauenthal, vice president and general manager, Bantam Bearing Corporation, South Bend; Frank Furbush, Meredith Publishing Company, Des Moines; George H. Gallup, American Institute of Public Opinion, Princeton; Henry Glasstetter, Poughkeepsie Chamber of Commerce, Poughkeepsie; J. E. Graham, Market Research Corporation of America, New York; C. E. Haring, Hooper-Holmes Bureau, Inc., New York; E. C. Harwood, director, American Institute for Economic Research, Cambridge; G. B. Hotchkiss, Jr., *The Architectural Forum*, New York; G. P. Kendall, Washington National Insurance Co., Chicago; C. E. Kisner, Vienna; E. J. Klock, General Electric Company, Schenectady; Frank M. Knox Co., New York; H. W. Marks, Printers' Ink Publications, New York; Mamie J. Meredith, University of Nebraska, Lincoln; R. V. Mitchell, instructor in business organization and operation, University of Illinois, Urbana; Howard H. Monk and Earl H. Kruse of Howard H. Monk & Associates, Advertising, Rockford; C. H. Mottier, chief engineer, Illinois Central Railroad, Chicago; W. A. Neiswanger, associate professor of economics, University of Illinois, Urbana; C. M. Oehler, Batten, Barton, Durstine and Osborn, Inc., Chicago; S. N. Perkins, Krey Packing Company, St. Louis; F. L. Phillips, Standard Oil Company, Chicago; M. L. Prindle, director of marketing, Erwin, Wasey and Company, Inc., New York; J. H. Serkowich, Caterpillar Tractor Company, Peoria; L. V. Simmons, Peoples Gas Light and Coke Company,

Chicago; R. L. Simmons, *Cleveland Press*, Cleveland; J. R. Stockton, University of Texas, Austin; K. G. Stuart, Eastman Kodak Company, Rochester; C. N. Watkins, Jewel Tea Company, Barrington, Ill.; J. G. Weaver, director, Customer Research Staff, General Motors Corporation, Detroit; P. L. Weinman, American Rolling Mill Company, Middletown, Ohio; W. L. White, chief, Marketing Research Division, Department of Commerce, Washington, D. C.; B. P. Williams, director of research, McCann-Erickson, Inc., Chicago; *Des Moines Register;* Hormel Packing Company, Austin, Minn.; *Saturday Evening Post*, Philadelphia; Union Guardian Trust, Detroit; Arthur C. Weick Company, Chicago.

CONTENTS

PAGE

PREFACE v

ACKNOWLEDGMENTS ix

CHAPTER I

THE ROLE OF THE BUSINESS REPORT 1

CHAPTER II

CLASSIFICATION OF BUSINESS REPORTS 14

CHAPTER III

GETTING THE INVESTIGATION UNDER WAY 25

CHAPTER IV

COLLECTING DATA 55

CHAPTER V

COLLECTING DATA: QUESTIONNAIRE 83

CHAPTER VI

ORGANIZATION OF DATA 123

CHAPTER VII

INTERPRETING DATA AND DRAWING CONCLUSIONS 157

CHAPTER VIII

OUTLINING THE FINAL REPORT 171

CHAPTER IX

WRITING THE ELEMENTS OF THE REPORT 183
Cover through Letter of Approval

CHAPTER X

WRITING THE ELEMENTS OF THE REPORT (*Continued*) . . . 210
Table of Contents through Synopsis

CHAPTER XI

WRITING THE ELEMENTS OF THE REPORT (*Continued*) . . . 227
Introduction

PAGE

CHAPTER XII

WRITING THE ELEMENTS OF THE REPORT (*Concluded*) . . . 254
Text through Index

CHAPTER XIII

PUTTING THE REPORT INTO WORDS 274

CHAPTER XIV

HELPING THE READER TO UNDERSTAND 300

CHAPTER XV

PUTTING THE RULES INTO PRACTICE. 322

CHAPTER XVI

PREPARATION OF TABLES AND CHARTS. 340

CHAPTER XVII

MECHANICS FOR TYPED WORK 378

APPENDIX I

SOME STATISTICAL TOOLS USED IN SAMPLING 403

APPENDIX II

TYPICAL OUTLINES 423

APPENDIX III

SUGGESTED OUTLINE FOR A REPORT-WRITING COURSE . . . 440

APPENDIX IV

SUGGESTIVE LIST OF REPORT SUBJECTS. 442

APPENDIX V

REPORT-WRITING PROBLEMS 445

BIBLIOGRAPHY 455

INDEX. 463

BUSINESS REPORTS

CHAPTER I

THE ROLE OF THE BUSINESS REPORT

I. Why Study Report Writing?—II. What Is a Report?—III. Scope of Reports—IV. Range of Subject Matter—V. Agencies and Research Departments—VI. Requisites of the Report Writer.

Says one of the leading firms of public accountants in a *Memorandum to Managers and Seniors:* "Since the client usually has little evidence of our work before him other than our report—and to all intents and purposes it becomes a public document once it is issued—the necessity for well-written reports can scarcely be overemphasized."

That *expression* is *power* in the business world is indicated by C. F. Kettering of General Motors:

> A man's English is the index of his mind. . . . Success depends as much on ability to present an idea convincingly as on ability to perform calculations or experiments. You may perform the most miraculous experiments in laboratory, yet you have not contributed anything to the advancement of knowledge until you have transmitted your results to others.[1]

In discussing this need for adequate expression in employees, a second large public-accounting firm says:

> In hiring young men for our office . . . we pay a great deal of attention to their ability to write clear English (as evidenced by their letter of application and other correspondence). . . . An achievement in writing English, particularly exposition, is to be attained only by a hard grind of painstaking experience. A man must learn to care for accurate expression, and he must learn what tools are available to attain that result if he is ever going to write accurate English. . . . President Butler of Columbia University places first in his list of char-

[1] C. F. KETTERING, *Journal of Engineering Education*, January, 1937.

acteristics which bear evidence as to education—correctness and precision in the use of the mother tongue.[1]

Likewise is a command of expression specified for the director of research by a research executive: "He must be able to write clearly and convincingly. For, if the research director cannot detail his facts and express his findings and suggestions in a clear, convincing manner, much of his analysis and planning will go for naught, and he will be of little value to his store."[2]

It is with the transmission of ideas through the ever-increasing use of reports in business that this book is concerned. No one in business works alone. Each person is part of a fast-moving organization that is impatient with the poor talker or with the badly written report. Here, as elsewhere, inadequate expression handicaps one in all he undertakes; it marks and classifies one in the intellectual and cultural scale.

Business changes rapidly, and it is constantly faced with the necessity of making new and difficult material understandable to many different types of people.

WHY STUDY REPORT WRITING?

Report writing is a specialized form of exposition, the ultimate end of which is the orderly *communication* of factual ideas. A knowledge of and skill in report-writing technique, especially for the new writer, give that assurance characteristic of the guide who easily and quickly picks his way through the dense forest because he knows the route.

The definite plan of procedure and the mental discipline learned in report work are useful in all courses and in all thinking. Reports teach one to analyze and to organize information and hence to make it useful.

Writing compositions of more than one or two pages, the usual length of the business letter, offers new difficulties, one of the greatest of which is that of organizing material. Much of the value in report writing comes from organizing data, mainly original, collected in an investigation and presenting them in a long

[1] "Comments on Accountant's Reports," Haskin & Sells *Bulletin*, July, 1931.

[2] WILLIAM J. MALEDON, "Research in Retail Distribution: Its Methods and Problems," *Journal of Marketing*, 4: 3: 247, January, 1940.

piece of original work, either to give information or to effect some change.

In this respect, the report differs from the old term paper, which at best is usually a rehash of material that has already been carefully organized by the original authors. The term paper, moreover, is usually not written for any well-conceived objective, except to fill an assignment. The report, however, usually is written for a well-conceived objective; and since the true test of a person's ability for expression is whether he can organize and present more or less raw data for a definite purpose, he is thoroughly tested by report writing.

The writing of reports presupposes one of two kinds of information: either that acquired in the regular conduct of business, such as daily, weekly, and monthly reports of inventory, production, or sales; or new information which has been sought to solve some problem. The fundamental principles of collecting, organizing, interpreting, and presenting data—processes preliminary to writing a report—are applicable to any form of research. If followed, they should enable even the novice, who has his first report assignment dropped on his desk without comment, to proceed in collecting material and in reporting upon it in a calm, efficient manner.

Because there is such a myriad of so-called report forms, the authors have elected to discuss one broad, usable type that can be adapted to fit any circumstance, regardless of a man's experience or type of work. Since a report has no product to sell—only ideas—it is desirable to study every device of effective presentation, organization, English, and mechanics. Presenting the data after the investigation has been completed, when many investigators want to quit and take a rest, seems doubly important if we consider that the final, written report is all that the reader has upon which to judge the entire work.

The written report, in addition to preserving information which, for example, is needed in business by division heads, department heads, and company executives and which serves as a record, clarifies the work for its writer and shows him the gaps that are inevitable in the first drafts. When it embodies convincing evidence that changes should be made in products, policies, methods, often the result of firsthand fact finding, it becomes a powerful instrument to get things done.

WHAT IS A REPORT?

Paul T. Cherington has said that research is: "To find the truth no matter how obscure; to recognize it no matter in what strange form it may present itself; to formulate it honestly; to state it unmistakably; and to reason from it remorselessly and without regard to prejudice."

Since business research and business reports are inseparably combined, it is necessary to look at them together. Webster's dictionary defines *research* as a studious inquiry; critical and exhaustive investigation or experimentation having for its aim the revision of accepted conclusions, in the light of newly discovered facts. It defines *report* as an official statement of facts; account or relation, especially of some matter specially investigated.

As used in business, *research* means "a careful or critical inquiry and examination seeking business facts or principles, as distinguished from a similar inquiry concerning scientific, technical, social, or other matters. And business research, when properly conducted, employs much the same technique as is used in scientific research."[1]

As used in business, a *report* is the orderly presentation of the results of research which seeks truth and interprets facts into constructive ideas and suggestions. After research has found, developed, or substantiated knowledge, the new facts are collected, organized, and presented in a report designed to meet a need for specific information.

In business the value of a good report, embodying the results of an investigation, is that people act on facts, the executive more constantly than other people because almost all his work is the solving of problems.

To the executive, the report constitutes the investigation. The research work is important to him only in proportion to what is given to him in the report. It brings to him a clear, readable summary, supported by evidence, of the material put together, analyzed, and embodied in conclusions. Its success depends upon

[1] From a speech of Stanley P. Farwell, president, Business Research Corporation, Chicago, American Gas Association, Accounting Section, Spring Conference, White Sulphur Springs, W. Va., April 20–21, 1939.

its being a correct and an adequate interpretation. The report is as important to business as is the research.

The recognition of the importance of research embodied in reports, especially in the field of distribution, is given by W. B. Edwards of the Dennison Manufacturing Company—a statement even more true today than when it was first written:

> Twenty years ago, a manufacturer was proud to show how little he spent in records and accounting. He seldom dreamed of such folly as experimental research. Today, millions are spent annually and saved many times over. We are now proud of the kind of overhead of which each dollar points the way to a saving of $2 or $3 underfoot. I have not the least doubt that in the whole field of distribution millions will be spent for records and analysis and experiments within a few years and that those millions will be, in the early years, at any rate, even more profitable than those of manufacturing.[1]

As evidence of the truth of this statement The Monsanto Company, for instance, says in its last annual report that research has been a major activity for 36 years, and that last year over a million dollars was invested in research.

With the phenomenal growth of business research, reports are today being used more and more as the tools of management. The function of reports in business is presenting the findings of research in such an effective form that solutions to problems may be effected.

> Where management [so reads an article in *Printers' Ink*] formerly almost dared anyone to show a better method of accomplishing a given function, in these modern days, in many concerns, a force of research men is kept busy testing the habits and methods of tradition in the laboratory of practical research. All fundamental processes and habits are being overhauled and subjected to the closest scrutiny. Jobs are being redistributed, man power and machine brought into closer co-operation. Not only in the production end of the business is research winning out over tradition, but it is having an excellent effect upon the selling end of industry.[2]

Business reports are important because the facts uncovered are dynamic; they "start things" when brought to the attention

[1] W. B. Edwards, "A Modern Cato Mounts the Rostrum," *Printers' Ink*, February 16, 1928, p. 113.

[2] "Research Is Better Than Tradition," *Printers' Ink*, 140: 99.

of people who are interested in them and have the power to act. As records, reports are permanent and thus make knowledge available at any time it is needed.

In addition to the research report, there is another type that is equally numerous and important in function—the daily, weekly, and monthly reports devised to assist executives. The executive has three ways in which he can know what is happening throughout an organization: personal observation, contact with subordinates, and reports. Reports are in truth a long step in simplifying management, and they have been applied in almost every phase of production, management, and distribution. The report is one of the special technical services to which management has resorted. In this regard, Stanley P. Farwell, quoted above, says:

> Reliable information is needed for operation and control all along the line from division heads of departments through the department heads to the company executives. As this information rises through the organization, detail can be omitted and greater emphasis must be placed on comparisons, ratios, and trends. Yet, if the system is to work, the refined, analyzed data of the executive reports must grow regularly out of the detailed records and reports needed to operate departments and districts. And for reasons of economy, the process should be integrated so that completed detailed reports become the basic data for analytical reports of a higher order.

Commenting further on the function of the information reports in management, he indicates what makes them most helpful:

> Executives need to study very little detail if they receive analytical reports which show:
>
> Status in relation to standards.
> Trends.
> Unusual happenings with explanations.

Of the same tenor is the following statement of the Eastman Kodak Company on the necessity and importance of reports:

> As concerns grow larger and extend their activities, those who must make important decisions find it increasingly difficult to maintain personal contact with all details of the business. They must rely on information—verbal or written—supplied by others. Even when verbal information is available, a written report is usually better. It crystal-

lizes the information into usable shape and avoids the errors that often creep in when too much dependence is placed on memory. Furthermore, it can be filed and used as a reference later. It is important, then, that people who must submit reports be able to write them properly.[1]

SCOPE OF REPORTS

Before the days of industrialization, Federal taxes, and efficiency experts, business relied more on personal contacts than upon reports. A simple set of records was sufficient for the businessman to keep his accounts straight. But now that companies are large, activities varied and extensive, overhead huge, and margins of profit narrow, business must keep its accounts and records so that despite tangled threads of interest it can tell all the time not only where it is but where it will be tomorrow. As the reports substitute for personal contacts, they become vast in number. Some idea of the extent of informational reports may be suggested by the government's annual 97½ million administrative and 38 million non-administrative returns.[2]

This explanation accounts for reports being needed to give information at definite time intervals. It does not account for the vast scope of reports in industry and business which are the outcome of research. We have to look to economic and political forces, as well as to psychological, to explain the report which transmits the finding of research.

Accepting the belief that the spirit of inquiry, which motivates much research in science, in medicine, in literature, must also motivate business to a large extent, we find much research is caused by the economic urge. Research, gathering momentum after 1929 when business could not make a profit unless it found some means of making distribution keep up with production, turned its attention to studies in the field of marketing, particularly: markets, products, merchandising, advertising, and selling. And because the greatest hope of restoring, maintaining, or increasing profits in many firms still depends upon distribution of their products at lower costs, market research is at present the most rapidly growing field of research in business and industry. An idea of its growth may be gathered from the statements that it grew 50 per cent between the end of 1935 and 1938; that the

[1] *The Kodak Correspondent, Bulletins* 26 and 27, November 1, 1935.
[2] Report of the Central Statistical Board, 1939.

Administration
- Systems
- General accounting
- Customers accounting
- Mechanization
- Controls
- Layouts

Employee relations
- Selection and placement
- Training
- Working conditions
- Recognition of merit
- Direction and supervision
- Reports to employees
- Equitable wages
- Incentives
- Profit sharing
- Employee security
- Employee satisfactions
- Employee services
- Employment stabilization

Public relations
- Labor
- The public and investors
- The community
- Suppliers
- Competitors
- Customers

AGENCIES AND RESEARCH DEPARTMENTS

The 1940 census of United States business—retailing, wholesaling, construction, service industries—inspired by the desire of businessmen to have satisfactory figures on marketing, credit, unemployment, etc., is indicative of hundreds of types of research being done by the Federal government, the findings of which are good secondary-source material for mail-order houses, advertising firms, chambers of commerce, business analysts, etc.

Magazines, newspapers, advertising agencies interested in accounts do extensive research work. These studies touch many products, subjects, and problems and provide a wealth of material in readily accessible form which may serve genuine constructive purposes in many types of research.

Commercial research agencies are doing a large volume of research and producing a correspondingly large volume of reports.

Some, like the Business Research Corporation of Chicago, seek more efficient methods in production, administration, sales, employee relations, public relations. Others do research mainly in the field of marketing. Well-known ones doing research in this field are the A. C. Nielsen Company; Market Research Corporation of America; Ross Federal Research Corporation; Cross, Inc.; Paul Terry Cherington; American Institute of Public Opinion (Gallup Poll); Daniel Starch; Psychological Corporation; McKinsey, Wellington and Company; Paul Lazarsfeld, Elmo Roper (Fortune Surveys); Barrington Associates; C. E. Hooper, Inc.; Ford, Bacon & Davis; Facts, Inc.[1]

Private organizations do extensive research such as American Telephone and Telegraph Company; Bristol-Myers Company; Coca-Cola Company; E. I. du Pont de Nemours & Company, Inc.; General Electric Company; General Foods Corporation; General Motors Corporation; Eastman Kodak Company; Goodyear Tire and Rubber Company, Inc.; Swift & Company; and Standard Oil Company of Indiana.

Much co-operative research is done today, which is usually of great help to the smaller concerns. Small firms act together and exchange data or pay the salary of a research worker, each firm to have access to the results. Co-operative research is perhaps most effective when organized by non-competing firms, or in work on raw material and uses of a product.

A consultant at an advertising agency is really an agent of co-operative research because he is giving his latest client the benefits of this experience with others. Some life-insurance research bureaus are supported by different companies. Traveling supervisors aid co-operative research by the knowledge they accumulate.

To this list of research agencies could be added trade associations, banking institutions and insurance institutes, advertising associations, research bureaus of colleges of commerce.

The types and numbers of agencies doing research and writing reports already mentioned are, however, sufficient to indicate the important place research procedure and report writing have in modern business. And in proportion to the importance of research report writing in business is the importance of studying

[1] *Time*, November 14, 1938.

research technique and the technique of business writing while preparing for business.

REQUISITES OF THE REPORT WRITER

The contents of a business report are often of tremendous consequence and importance to its readers. For this reason an organization will do well to entrust the investigation precedent to writing a report and the writing itself only to a person well qualified for the work by the proper temperament, training, and ability. The report writer ideally qualified is dependable, resourceful, accurate, patient, and persuasive.

If he is dependable he is first of all alert to the significance of his task and the importance of doing it well. He is intellectually honest: unwilling to misread the plain evidence of the facts in order to preserve a theory which cannot explain them, and unwilling to appeal to dubious authority or to data misleadingly presented in order to prove an untenable hypothesis. A dependable writer of business reports is also a person who will see a job through to the finish.

The writer of reports should be resourceful especially in the research activities which precede actual composition. He must be able to think of new approaches and different angles to the business of securing all the pertinent facts. He will not overlook data because they are somewhat inaccessible, or because on first blush they seem not to have the relevance to the investigation which further attention discloses, or because their relation to the object of the report is so obvious that they are taken for granted. Investigating for the informational report or the report undertaken in order to solve a specific problem, the writer needs to be ingenious in framing useful hypotheses—theories which, upon further investigation and after exhaustive checking, do fit the facts and solve the problem. He must be resourceful also in devising significant tests and counter-checks upon his hypotheses so as to reduce to the barest minimum the possibility of error.

The good reseacher is he of the inquiring mind who challenges the old approach in order to replace it with a better and more useful method of discovering and explaining the facts, but who employs the old approach when it proves its superiority over alternative methods. The resourceful report writer will be able to arrive at significant conclusions and to make worth-while

recommendations. In other words he will be capable of intelligent interpretation of, and creative thinking about, the material of the report.

No less important than dependability and resourcefulness for success in report writing is the requirement of accuracy. The writer must be careful of details—able to verify sources and check footnotes, cite cases correctly, use indexes efficiently, handle figures easily and accurately. Absolute reliability is one of the characteristics of a good report, and the competent report writer will be able to make his work factually accurate.

To attain such accuracy the writer of good reports needs an additional trait—patience. He must be willing to spend long hours in material gathering and fact hunting, much of it dull, tedious labor, and more hours in arranging, interpreting, and writing up the data so collected. He needs to be willing to toss overboard a hypothesis which will not explain the facts he discovers and to start again on a new tack. And his must be the patience of Job as he sets about checking and rechecking the accuracy of his data and condensing hours of work into a little copy.

In many cases the accomplishments of a fruitful investigation are vitiated by a report so badly written that it fails to gain for the results of the investigation the attention they deserve. The final requisite of the writer of good business reports is, therefore, ability to write persuasively. The result of several factors, such ability is partly the product of knowledge of human nature; the writer must know how to adapt his report to the probable reader of it. Persuasiveness comes also from experience and training in business. Knowledge of business practice and possession of that elusive yet real thing, "business sense," enable the report writer to invest his work with an air of practicality and applicability which makes it convincing to the reader.

The man with the proper requisites of temperament, training, and ability should produce a report that is clear as to objective, strictly to the point, complete as to facts, logical in correlation of data, sound in its conclusions, unbiased and unprejudiced, adapted in style and content to the reader, intelligible in organization, and attractively arranged and typed.

CHAPTER II

CLASSIFICATION OF BUSINESS REPORTS

I. Classification by Subject Matter—II. Classification by Function—III. Other Classifications—IV. Informational Reports—V. Research Reports—Technical and Applied—VI. Analytical Report: *A*. Definition; *B*. Extent of use and variety; *C*. Characteristics; *D*. Processes in Preparation.

Since this book is concerned with general procedure adaptable to practically all reports, we consider it futile to attempt the impossible task of discussing all conceivable reports. Instead, emphasis is placed on the analytical report because it is by far the most complete and comprehensive type, covering as it does the past, present, and future of a problem.

A study of the analytical report will take the investigator through all the steps of report writing, from making a preliminary analysis, drawing up a working plan, securing data, interpreting data, and drawing conclusions, to the actual organizing and writing of the report with conclusions and recommendations.

From this complete report procedure, other types may draw what is needed for their individual cases. For example, a routine or informational report may use very little or no history, may present facts between very definite, and oftentimes narrow, limitations, and may offer no final solutions or recommendations for future action. Another type, the technical research report, may follow a rather routine method of presenting observed data with no recommendations. But the basic principles of report writing remain the same. Hence, our emphasis is on the one complete type.

We make no attempt to cover special terms which specific businesses using reports employ to indicate certain phases of their work. Most often the meaning of each term is well known only within that organization and has no widespread recognition.

Classification of reports depends largely on the nature of the commission and on the object of the investigation. It is chiefly

because individual characteristics have been permitted to influence terminology that such a large number of so-called report types have come about.

For instance, we have such reports as period, progress, condition, improvement, special, efficiency, etc., each bearing a different name and having different content, but possessing few differences in basic structure and purpose.

CLASSIFICATION BY SUBJECT MATTER

Reports naturally vary somewhat with the subject matter characteristic of different fields of research. The more common divisions made on this basis are financial, engineering, organization and efficiency, marketing, governmental, social, and educational.

However, the same basic types of structure are used in all these fields, and the same orderly procedure of research, thinking, and presenting the report is common to all of them. Therefore, thorough study of the comprehensive analytical report will provide a basis for writing reports in any of these fields in a form acceptable to any executive. The nature of the commission may automatically determine specific limits for each report, but it will merely mean that instead of using analytical report procedure in its entirety, one will utilize only such portions as the limitations indicate.

CLASSIFICATION BY FUNCTION

Different companies have different methods of identifying their reports.

By some, informational reports that come with regularity, whether daily, monthly, or yearly, are termed *periodic* reports. The same type of report covering a definite period of time but prepared upon request is called a *special* report. Strictly speaking, this type should give information with general conclusions but no recommendations, but with many companies the special report means a special investigation of some particular problem and is accompanied by recommendations. In this case, the preparation and presentation fall under the more complete analytical type.

Periodic reports, as commonly used, present records of past events up to or including the present. They narrate important

events and interpret and explain results of operation over a certain period. Examples are the reports of officers, banks, governments, etc., which frequently not only give the facts relative to a certain period but compare them with a preceding period. Daily, weekly, and annual reports are chiefly informational periodic reports.

Like other simple expository reports, the periodic follows the basic informational type in that it is a fact-finding report consisting largely of presentation of facts.

Special reports may be requested at any time and upon almost any subject. Usually the reputation and ability of the investigator will determine whether the problem shall be carried through to a complete solution. Occasionally, however, the nature of the commission will specify just how far the client or executive desires the investigator to go. If a group of specialists are asked to make a report on some problem, they will probably be expected to give the complete solution, with recommendations. If a subordinate in a company is commissioned to submit a report on some issue, the executive may specify that he wants facts with general conclusions, preferring to draw his own specific conclusions and to make his own recommendation or application.

Special reports are usually analytical reports because they are requested for the purpose of solving some problem and are frequently carried through to definite conclusions and recommendations. The special report aims at one thing and is noted for timeliness inasmuch as it is presented upon request. It may tell of something done, something under way, or something in the future. It may go to the general public, to a specialized group, or to one executive who requests it. It may be short or long, formal or informal. It may even be given by means of pictures.

The *examination* report, giving the past, present, and future of a problem, is another name used to designate the analytical report. Yet another term for it is the *recommendation* report. This is often used in operation and construction reports. It is analytical in that it not only gives the findings of fact and their analysis but also offers recommendations for future action. It sometimes differs from the purely analytical report inasmuch as it does not handle the past comprehensively; that is, it may cover an operation from some given point or it may depend on general opinions and past experience for earlier data.

The *progress* report is another type, which may be limited to time, place, and handling of data, as is the informational report, or it may go into such detail in past, present, and future that it becomes analytical in its completeness. It may be periodic in its appearance, or it may be requested as a special report. So-called progress reports may be routine in nature, such as the daily or weekly report on the amount of concrete poured. Progress reports are used particularly in construction and operation work, although the secretary of the chamber of commerce may make a progress report during a drive for funds, or at the end of the year to establish comparisons and to show what his office has accomplished.

Improvement reports, partially analytical, but sometimes omitting details of conditions and of the analysis of findings, present recommendations or proposals for improving a situation or for solving a problem. The proposal element is essential to this type.

The proposal element may be (1) general suggestions based on experience rather than on a detailed survey, (2) a specific, detailed, and complete solution of a problem developed from a specific investigation, (3) or instructions which are more detailed, minute, and adapted than those in (2).

OTHER CLASSIFICATIONS

Reports may also be classified on the basis of arrangement, as on form or composition.

Or on the basis of the relation between author and reader, there is the classification of *administrative*, *professional*, and *independent*. An administrative report is made from an official capacity within a business, either to follow a certain routine such as the annual report of the president, or to fulfill a special request. The professional report is submitted by a specialist, usually outside the company. It is usually prepared upon request and is expected to furnish definite conclusions and oftentimes recommendations. An independent report is prepared and submitted or published without request. Although the material here presented represents various points of view, all of these reports entail the same mental processes and methods of work in collecting and presenting data as do the informational and analytical reports.

The nature of the commission and the purpose of each are the only points of difference.

Hence in trying to give a name to some highly developed feature of a report, companies find themselves with a family of hybrids in that they many times want recommendations on a research or periodic report. "An Appraisal of Employee Lunch Rooms" might from its title be classed as a condition report, but it also employs the results of research in several companies, and it makes definite recommendations.

To solve the problem of name, let us add one more and call it *combination* or *composite*, which term makes clear the variance in terminology while it pre-supposes similarity in structure.

Because our time is much better spent on a study of general report style and tone than on the minutiae of infinitesimal classifications, we call attention to only three types, *informational*, *research*, and *analytical*, with emphasis on only one—the complete analytical report.

INFORMATIONAL REPORTS

The informational report presents a subject in detail without criticism, arguments, comments, or recommendations. Many are so routine—daily, weekly, or monthly reports on sales, production, progress, etc.—that they are mere tabulations and follow a definite pattern. They are fact-finding reports devoted largely to the organization of accumulated data and to a statement of results.

RESEARCH REPORTS—TECHNICAL AND APPLIED

The purely technical report is the formal presentation resulting from the search for new knowledge. It is merely a record of findings, neither addressed to specific readers nor written for any specific or immediate purpose.

Technical men, such as engineers and chemists, are continually doing research and submitting reports, the results of which may not be used for an indefinite time. Josiah Willard Gibbs developed the theory of thermodynamic equilibrium of mixed substances, but it took technologists years to understand and apply his findings to their own practical problems of metallurgy, refrigeration, and ceramics.

Research reports are more impersonal than other types. They present the results of an extended study or analysis, usually with interpretation and elucidation of findings and with general conclusions, but with no definite recommendation or application. Occasionally they include specific conclusions and recommendations, thus encroaching on the analytical report.

The research report is a distinct type only in that emphasis is placed on looking for new things and developing new ideas, regardless of when they are to be used. The purest research is in the technical fields.

The method of approaching a technical problem involves little, if any, change in mental tactics from those employed in any other business research problem. The technician is trained to approach his problem open-mindedly—not to work from a preconceived notion and not to omit facts that fail to substantiate his theory.

A finer sense of accuracy is noticeable in technical reports, but even this is largely due to the nature of the subject matter, which lends itself to greater accuracy. Other business report writers would welcome the same accuracy if the nature of their work permitted. But the report on the reaction of many people toward a certain kind of aluminum obviously cannot be reduced to the mathematical accuracy of the expansion of an inanimate object like a steel rail.

In business, the technical report is little used. Even in commercial laboratories, it usually becomes an "applied" research report; that is, it shows the specific and immediate application to business development of a certain technical principle. The chemist who first discovered the basic principle of gas and electricity later used for the neon sign wrote a technical report of his findings. Afterward, a commercial technician applied the principle to a specific purpose and wrote the report that resulted in the neon sign. Applied research often starts with a need which prompts the search for data to solve the problem. The need may come in the form of a request from some department.

Versatility is demanded of the technical report writer, who may have to present one report of apparatus to the sales staff and another on the same apparatus to a prospective customer so that he will recognize a need for it. In order to be of the most service to the reader, the technical man needs oftentimes to consider beyond the physical nature of the report. It is frequently desir-

able to include questions of administration, operation, economics, finance, relation to the community, etc., which mean that an engineer submitting a report must often have a broad background, know the problems and people in many fields, and be able to adapt his report to them. A certain amount of business training is a necessity for highly successful business or commercial technical reports.

Scientists employed in industry are continuously seeking methods of applying to the practical use of business the results of their technical research. Technical business research is found under various names—research laboratory, development, statistical, engineering, planning, standards, methods, market analysis, etc. In the ranks of business research are found directors, chemists, engineers, metallurgists, inventors, designers, experimental and testing specialists in all divisions, proving-ground workers, etc., all writing reports of some nature.

In absorbing technical research commercially, business has caused it to add to its former objective of contributing something constructive to society that of increasing the earning capacity of corporations and individuals. Engineering substitutes exact methods for guesses and opinions. Because of the complicated business structure of today, business has taken over some of the methods of science, and now we hear of "research" in all fields of business. Although the methods and results are not definite and unerring as in science, a constant advancement has been made.

Crowding under the tent of applied research we find the technique used in marketing reports which is partly an investigation of tendencies by a sort of "sampling method." This type of research (by liberal definition of research) often involves the human element, which can never be determined accurately. The number of people passing a store can be counted, but the intent of those people can only be estimated; the physical well-being of the workman may affect production in a way that cannot be ascertained by test tube or report.

Obviously these applied research reports used primarily in business are basically analytical reports, but the purely technical report is beyond the range of this book.

Presentation

Effective presentation of technical reports is governed by the same principles that apply for other reports, subject to natural

peculiarities of subject matter. The nature of the commission, the subject matter, and prospective readers determine the presentation of the report. Next to the ability to handle men, the technical man needs skill in writing good reports, in conveying exact information by means of the written word. To perform a task is not enough—it must be presented in good form. The writer must be able to select the essential facts and attractively present them in the fewest words so that they will be capable of but one interpretation. Unnecessary words conceal rather than reveal facts. Some engineers attempt to use formulas, drawings, etc., in place of words. These things have their place, but they cannot be used alone. Moreover, all readers are not interested or convinced by diagrams.

Some research workers take the attitude that fellow engineers will understand regardless of the form in which it is presented. In business engineering, many readers are not engineers, and even if they were, it is a mark of courtesy to conserve their time and energy. Other engineers ignore English because it is a tradition to do so. With a changing social order this alleged tradition becomes a mark of backwardness, a mark which is being combated in all good engineering colleges today.

ANALYTICAL REPORT

Definition

An analytical report contains findings of fact and analysis of those facts, both past and present, with the complete interpretation serving as a basis for the solution of the immediate problem and for future estimates and forecasts. This contrasts to the informational report, which tends to emphasize one or two divisions, usually past and present, but which does not attempt to direct future action.

The complete, purely analytical report gives detailed suggestions for a solution; in fact, the proposal element is necessary for absolute completeness. It indicates the true significance of facts, outlines the reasoning by which a decision has been reached, and points to a remedy or further procedure.

The purpose of the analytical report in business is to increase or to confirm knowledge of a more or less specific situation and to provide means for improving that situation. The analytical report works toward a definite objective, which may be either to

discover details and uses of new truths or to interpret old ones.

Extent of Use and Variety

At some time the analytical report is used in complete or in curtailed form in practically every line of work. This is particularly true of the business in which one is trying to find causal sequences without resorting to the slow and expensive trial-and-error method.

The president of a corporation holds his position because of his ability to reach proper conclusions quickly and to make correct decisions. He is responsible to stockholders, employees, public —everyone. The answer is *reports*. And for the most complete, searching investigation, requiring history, precedent, comparative present facts, conclusions, and recommendations, the executive resorts to the analytical report.

Naturally, he has many needs for lesser reports, which are adaptations of the analytical. A short report on the proper arrangement of the shipping room to aid efficiency may not require the months of painstaking work that are frequently devoted to a comprehensive analytical report, but it is just as necessary within its field, and the steps in its preparation are miniature steps, limited only in scope and purpose, of the more complete investigation.

The wide range of report readers indicates the necessity for variety of type and usage in the report. A banker or layman surveying a report from an investment standpoint, an executive reading a survey of his own organization, a superior officer going over the report of a subordinate, a citizen studying the report of a city department—these are only a few of that vast army of report readers.

The condition of a business, department, or process at a given time, with comments, explanations, and recommendations, falls within the range of the analytical report. Inventories and appraisals, usually of the purely informational type, become analytical when they make recommendations or give conclusions drawn from the facts presented.

The analytical report may be made yearly, with suggestions for betterment of procedure next year, or it may be a special timely report that, instead of shooting like a shotgun, aims at only one

thing like a rifle. It may go from the general to the particular —for example, a general survey of what type of advertising literature architects want to receive, leading to the specific conclusion that they prefer catalogues of certain sizes that are easily filed.

The special analytical report may tell of something done, under way, or contemplated for the future. It may go to the general public or to official management; it may be long or short; it even may be entirely pictorial, as is often the case before and after a certain improvement

Among the types of reports already discussed, those condition reports which recommend future action are forms of the analytical report. Improvement reports, which offer a solution to a problem, such as the introduction of manuals to coordinate correspondence, are analytical. Others, according to their nature and purpose, may be analytical, such as composite, short, long, special, recommendation, efficiency, examination, and period reports.

There is practically no limit to the range of analytical reports, since they are applicable to and are used in industry, government, social welfare, or educational studies. In size, the analytical report ranges from the memorandum or letter type, with its limited subject matter, to the stupendous volumes on "The Knickerbocker Theatre Disaster," to "A Survey of the U. S. Farm Market," or to a legal report on "The Incorporation Laws of Each State in the Union."

Characteristics

The general characteristics of the analytical report are the rhetorical qualities of unity, coherence, and emphasis, judicial qualities, tone, and persuasion. Special attention is called to the judicial qualities of accuracy, precision, consistency, and thoroughness, since the analytical report furnishes the broadest field for their application.

Careful organization must be made to enable the reader to follow a clear-cut line of reasoning. The tone of the report will not permit sarcasm, exaggeration, or strong language. When occasional criticism is necessary, it should be handled as impersonally as possible in order that it may be inoffensive. Readability secured through careful selection and arrangement of

material, as well as by mechanical aids, is an essential if the report is to achieve practical results.

Processes in Preparing the Report

The next six chapters will be devoted to the processes in preparing the complete report, from the preliminary analysis to the interpretation of data and final outline. Chapters IX to XV will discuss the writing or presentation of the report.

CHAPTER III

GETTING THE INVESTIGATION UNDER WAY

I. Characteristic Processes of Research Procedure: *A.* Surveying the problem; *B.* Collecting data; *C.* Organizing data; *D.* Interpreting data; *E.* Presenting data—II. The Preliminary Survey: *A.* Determination of the problem; *B.* First impressions; *C.* Factors shaping the survey; *D.* Importance of the subject; *E.* Attitude of the reader; *F.* Tentative bibliography—III. The Analysis: *A.* What is the central problem? *B.* What are its basic elements? *C.* Can any elements be eliminated with certainty? *D.* Which elements are most important? —IV. The Working Plan: *A.* Bibliography; *B.* Objective of the investigation; *C.* Definition of terms; *D.* Basic elements requiring analysis; *E.* Limitations of the investigation; *F.* Scope of the investigation; 1. Sampling; 2. Principles upon which sampling is based; 3. Selecting the sample; 4. Checking the adequacy of the sample; *G.* Method of gathering data; *H.* Method of organizing data; *I.* Testing the working plan; *J.* Work progress outline; *K.* Outline of the report; 1. Digest of impressions; 2. Tentative plan of the final report; 3. Preliminary statement of conclusions; 4. Statement of expected results.

Business research is the result of some new problem or perplexing business situation for which there is no ready solution. It is also the result of a deep desire to effect economies, to make improvements, to plan for the future for the purpose of maintaining profits in the face of increasing costs and decreasing prices, or of increasing profits when conditions are favorable. The need for new information gives rise to a series of steps in research procedure and in the writing of a business report which are the concern of this and the succeeding chapters.

Every problem must be solved individually; hence the specific procedure for each problem will be determined by the one in charge. In general, the characteristic processes in research procedure are five:[1]

1. Getting the investigation under way
2. Collecting data
3. Organizing data

[1] These five steps may be broken down into many others. The *Survey*

4. Interpreting data, drawing conclusions, summarizing recommendations
5. Presenting data

The present chapter briefly explains these processes and discusses in detail the first step of research procedure, *i.e.*, getting the investigation under way.

CHARACTERISTIC PROCESSES OF RESEARCH PROCEDURE

Surveying the Problem

Confronted by a problem requiring research initiated or assigned, the investigator, often a director of research for a company, studies it in the light of the knowledge and experience that he has available. When he has determined the most logical sources from which, first, to get material, he prepares his bibliography as completely as is possible at this stage of the work. Many times, preparing the bibliography will uncover the fact that the subject has already been investigated in whole or in part and will make unnecessary much or all of the work.

Handling Procedure of one of the leading advertising agencies in the United States includes the following 24 steps:

1. Request received
2. *First* conference with executive
3. Staff conference on plans
4. Job assignment
5. Written plan, questionnaire
6. Cost estimate
7. Preliminary approval of plan and cost estimate
8. *Second* conference with executive (and client)
9. Final approval of plan and cost estimate
10. Test of questionnaire and method
11. Revision of questionnaire—machine coding
12. Hiring and instruction of supervisors and investigators
13. Field work
14. Editing, hand coding of questionnaire
15. Preliminary accounting of field costs
16. Tabulation (machine)
17. Preliminary report of major findings
18. Writing of final report of findings
19. Study and interpretation of findings
20. *Third* conference with executive
21. Writing of conclusions and recommendations
22. Presentation to executive or client
23. Final cost accounting
24. Filing.

Having made this study of source material, the investigator sees what trend the work must take and is able, at least tentatively, to define the problem and to determine to some degree the objectives toward which he must work in order to accomplish his purpose. Naturally, this will be subject to change and modification as source material is later read and analyzed.

Because all thorough and orderly work must follow some scheme of organization, a tentative outline is the first step of the working plan, made, of course, after the bibliography is carefully studied to decide what information is necessary to solve the key problem and what is to be the scope of the investigation. Sometimes a quick search through source material such as magazines, books, or records will be desirable before making the working plan. The intensive study of source material, however, will be made after a plan has been decided upon.

Other purposes of the working plan are to determine the sources of procuring data, the procedure, and the best way for recording and analyzing them. A brief survey of the availability of data will often save much time later; it will sometimes change the scope of the survey and enable the worker to start the machinery necessary for getting difficult material, while at the same time he is working on findings more easily available.

Collecting Data

The process of collecting data includes reading, note taking, questionnaires, interviews, and numerous other methods peculiar to the problem.

In an investigation to determine the type of magazine subscribers in a certain district, the investigator studied the errors of past tests and determined the scope of his work in terms of occupation, income, and kind of market reached. Then, for the purpose of procuring data, he broke up his work into units of occupational classifications, house-to-house survey, newsstand investigation, and questionnaires.

Organizing Data

Formulation of data means where, when, and how to assemble and record data. A good filing and entering system is a necessity for an investigation of any size because it makes writing easier

and it constantly shows the worker in what departments he lacks sufficient material.

Interpreting Data

Analyzing and interpreting the data collected means dividing facts into usable units and determining the relation and value of each fact to the key problem. This process may reduce material considerably and may shift the tentative outline followed up to this point. In view of the interpretations made, conclusions and recommendations are prepared.

Presenting Data

After the data are interpreted and the outline is put into final form, the report is written in a style which presents the result interestingly, clearly, convincingly, and, to a certain degree, persuasively.

Each step of research procedure and the preparation of the report, except getting the investigation under way, is discussed in detail in the following chapters. Getting the investigation under way is the concern of the rest of this chapter.

THE PRELIMINARY SURVEY

Determination of the Problem

Because the object of business research, the finding of business facts and principles, more often than not arises from a situation in production, administration, sales, employee relations, or public relations presenting difficulty to management, an important task of getting the investigation under way is to define the problem —to isolate the source of the difficulty. The *Research Department Handbook* of Erwin Wasey & Company, a well-known advertising agency, reads: "The most important thing to be secured, before an investigation is undertaken, is an exact understanding of the problem involved. An activity is waste motion till this is definitely settled. Sometimes, however, it has to be worked out as we go along."

By what method does an investigator determine the exact nature of the problem to be investigated? The purpose of an investigation is, of course, usually stated in a general way by who-

ever authorizes it. The client tells the commercial research man the purpose of the investigation for which he is employed. The superior executive in delegating research to a minor executive explains its purpose. The individual who undertakes some research on his own, to support recommendations he wishes to make, has a guiding purpose. Many investigations are suggested at committee meetings or conferences of executives of a company and referred to the research division of the company for study.

The following letter of authorization illustrates one method by which the person making an investigation learns the general nature of his problem:

DEAR MR. BLANK:

No adequate information concerning the distribution of pay-roll payments by days of the month, by volume, or by frequency of distribution (with the exception of a few meager inquiries and rule-of-thumb theories) has been available for any city in the country. Will you undertake a study to find out how the workers of Philadelphia are paid and when they are paid during a typical month?

This information will be appreciated by employers, employees, bankers, and retailers. Considerable interest has been expressed in staggered pay rolls as a means of lessening the burden of the cashier's accounting and disbursing work. The mutual problem of employers and employees can best be solved in terms of enlightened self-interest. I authorize you to undertake this study with the hope that information may be uncovered which will improve methods of pay-roll payments and even the flow of wage income.

Wherever pay rolls are poorly staggered throughout the month, your report may serve as a guide to those who are considering changes in pay-roll policies. Sharp peaks in pay-roll payments may indicate sharp rises and drops in the disbursement of funds by employers and banks; bad pay-roll practices may result in uneven currency demands, holdup hazards, and consequently increased insurance rates; they may not permit an even flow of consumption goods within a community, not a continuous daily level of business by retailers who serve the community.

Yours sincerely,
JOHN DOE
General Manager[1]

[1] Adapted from a letter concerning "Payroll Policies in Philadelphia," a report written by Professor Howard T. Hovde, University of Pennsylvania.

Another method of determining the problem is to have a conference with the person authorizing the investigation, as is suggested in the following letter of authorization:

Mr. James Black
Market Research Division
DEAR MR. BLACK:

I should like to have your assistance in making a rather comprehensive study of the market for our line of miniature instruments, as a basis for an extensive sales campaign.

We hope that this can be made as expeditiously as possible inasmuch as we wish to use some of the facts in guiding the preparation of our 194- intensive sales campaign on instruments. We should like to begin preparation of this campaign in the summer months of this year.

Mr. Jones and I, and others interested, would be glad to sit down with you as soon as possible to outline the specific type of information desired in this study.

S. A. BROWN
Manager, Meter Division[1]

As a specific example of the steps taken to determine the exact problem, we cite those of one market analyst upon being commissioned to find if Sun Screen (a fictitious name) "could be sold at a price which would allow a reasonable profit margin in spite of necessarily high production cost." Experience and research had proved that it could not be sold primarily as a "fly screen," and that it hence offered "a new kind of selling problem." The following is the market analyst's explanation:

To determine the problems and conceive the plan of marketing research, there were conferences with the manufacturer's executives—the president, the plant manager, and engineer, including the president of an engineering development company working with the plant on this product. These conferences, incidentally, were continued from time to time throughout the duration of our research. Every executive was given an opportunity to contribute his ideas and his facts as to the problems involved.

Next, there were interviews with well-informed outsiders, including several publishers and a large number of prospective commercial and industrial users in St. Louis and Chicago. Available market statistics

[1] A letter of authorization, using fictitious names and figures, supplied by E. J. Klock, Market Research Division, General Electric Company.

were also examined. Then a preliminary plan for marketing research was prepared.[1]

First Impressions

With the problem determined, the investigator is well advised to examine his own general knowledge of the subject of his future research. In putting on paper his random ideas about the problem, he should write fully. "In this section," says Aesop Glim, "don't try to skimp and save words. Go into detail. Enjoy yourself to your heart's content in writing sentence after sentence. Tell everything you know—explain the problem fully. List those important basic questions which you want answered."[2]

Factors Shaping the Survey

The investigator must consider a number of factors, some of them within the organization and some without, in order to determine what information to seek, whether or not to make a field investigation, examine office records, or do library research, and what kind of report to write. Factors of this sort are

1. The use to be made of the report.
2. The importance of the subject.
3. The probable attitude of the reader toward the content of the report as determined by his official position, personality, character, temperament, desires, information on the subject, and instructions given to the investigator.

An investigator will jot down a few notes under each of these topic headings. As a result, his preliminary survey will gain in perspective and usefulness. For example, a person making a preliminary report to a committee of a company, on the feasibility of a credit union among the company's employees, must know that the function of his report is to convince this committee that such a venture would probably be, or would probably not be, a success. The committee, if convinced, will use the same report later to sell the committee's recommendation on the credit-union idea to the employees as a whole; hence, the investigator must include certain information in the report to the committee which would not be necessary were only they to read it.

[1] ARTHUR C. WEICK, *The Role of Marketing Research in the Evolution of a New Product*, The Arthur C. Weick Company, Chicago.

[2] AESOP GLIM, "Purpose and Scope in a Market Survey," *Printers' Ink*, December 5, 1925, p. 155.

Importance of the Subject

The investigator of the feasibility of an employee credit union will survey the problem in the light of its importance to all company employees: (1) if the plan should succeed; or (2) if it should be tried and fail. He will consider the amount of time its officers would have to give to keep it going; their salaries; their prestige among their fellow employees; their relation to management. He would consider all ramifications for members of the credit union.

Attitude of the Reader

Continuing the company-credit-union illustration, we know that the investigator will probably do better work if he is clearly conscious of the fact that an investigating committee will see the entire report and that parts of the report will reach all the employees of the company. He will, therefore, keep in mind that not all his readers will be equally intelligent or well read; that not all of them will be financially minded or capable of following a statistical discussion. Some hearing the report will be friendly; some will be neutral; and some will be skeptical or antagonistic—their various reactions depending upon the extent of their knowledge of credit unions and their own experiences or the experiences of their friends. Some will want to know whether the investigator has a self-interest in establishing a credit union, why he has any interest in the idea. Some will know the inception and history of credit unions; some will know almost nothing about them. Some will want only new problems discussed; some will want tabulations and graphic illustrations; others, with imaginative minds, will not require them. In making a decision, some will be slow; others will be fast.

Tentative Bibliography

When the investigation can be made partially in the library, the preliminary survey should include the preparation of a tentative bibliography for subsequent use. This will not only give an idea concerning the amount of material available but may also uncover work that has been done already along similar lines and that will hence save much time, energy, and money for the investigator and for those whom he represents. He may find

that enough work has been done on his exact subject to lighten his own task or even to make it unnecessary to continue his investigation.

In any case, his rapid bibliographical research should disclose useful new material and suggest new approaches to his problem. At this stage of the investigation, he will ordinarily find it satisfactory to turn only to the basic sources of bibliographical information, such as the *Reader's Guide to Periodical Literature*, *Industrial Arts Index*, and the *United States Catalog*. The investigator may profitably scan the card catalogue of the libraries available for titles of books and pamphlets bearing on his subject. This bibliography, let it be remembered, is sketchy and tentative and will be reinforced later by the more elaborate bibliography drawn up in the working plan and used as a method of gathering data. The making of a bibliograpy is discussed in Chaps. IV and XVII.

THE ANALYSIS

The preliminary survey of the situation leads right into an analysis of the problem. This analysis separates the situation into its elements, determines which are irrelevant to the central problem, and discovers the relation of the relevant parts to various possible solutions.

What Is the Central Problem?

The first step in making the analysis to find the central problem and its most important elements is to make a general statement of the problem. In the example of the company credit union investigation, the investigator begins his analysis by declaring that his problem is to determine the advisability of establishing a credit union.

What Are Its Basic Elements?

The next step is to list what seem, at this early stage of the investigation, to be its most important elements. The investigator of the above problem might list such elements as

1. Need—inadequacy of the average employee's wage or salary
2. High rates on money borrowed from loan companies
3. Attitude of employees toward borrowing
4. Inability to borrow at local banks

5. Amount of money available for credit union
6. Size of company
7. Formation and operation of credit union
8. Membership requirements
9. Ability of leaders
10. Ways of inducing non-members to join—possibility of good rates paid on savings, etc.; safety through state examination of accounts; conservative lending policy; Federal guaranty of savings; etc.

One method of analyzing or of breaking a problem into its basic elements is questioning. The investigator, by asking himself and others interested in the problem questions about a specific situation, brings elements to light. He may either propose the questions himself or rely on a ready-made check list for them. He may confer with executives and employees of the company concerned with the investigation or with officers of trade associations to which the company belongs. He may read enunciation of policies or of claims for products in advertising. He may consult company records.

Almost any business problem [write C. B. Larrabee and H. W. Marks] that requires a careful analysis before inauguration, or is at all complicated in execution, lends itself to the check-list method of preliminary survey. . . . In the last dozen years, *Printers' Ink* has published more than 100 check lists covering all sorts of problems, and one of the best business books of the year is made up entirely of check lists.[1]

An example of a typical check list is given in Fig. 1, the questions of which indicate studies needed by a manufacturer prior to a capital investment in the production and marketing of a new consumer product.

Check lists have their limitations, of course. Though each prepared check list is complete and logical in itself, the investigator rarely finds one which perfectly fits his particular case. Often the greatest value of a check list is the fact that it suggests approaches to the problem and serves as a source of ideas.

Can Any Elements Be Eliminated with Certainty?

Certain elements of the situation discovered by analysis often have no bearing on the problem to be solved. A company manufacturing a brand of cake flour may wish to discover why it does

[1] C. B. Larrabee and H. W. Marks, "How to Make Check Lists," *Printers' Ink*, 181: 5: 45, November 4, 1937.

not sell so well as a competitor's brand in a given community and may investigate the matter. In analyzing the situation, the company finds that both cake flours sell at the same price for the same size package. The elements of price and size of package, therefore, can be disregarded in explaining the difference in popularity of the two brands. In the company-credit-union problem, the investigator might eliminate the element of "size of the company."

Which Elements Are Most Important?

Just as some elements of the situation are readily seen to be irrelevant to a solution of the problem, so other elements clearly require special attention. In the study of the credit union, the need of credit that company employees experience at certain times would, for example, be an element deserving special emphasis, as would also "available sources" and "management."

Exemplifying these typical steps of analysis in getting an investigation under way are the specific steps in rough outline form of the preliminary thinking process which one market analyst follows when he confronts a difficult problem.

First, I make a general statement of the objective. This is followed by a quick survey of readily available data for clarification of the various ramifications of the problem. The problem may arise out of (*a*) lack of adaptation of a means to an end, (*b*) need to identify the character of something, (*c*) need for explanation of a situation, or (*d*) a combination of needs.

Second, I make a preliminary classification of the influential factors which bear upon the problem. This involves a further study of certain of the company's records and policies, the personal knowledge of executives, and a detailed explanation of the subject.

Third, because there are usually both animate and inanimate facts to be considered, I reclassify the factors of influence into (*a*) direct and indirect animate (personal human) factors, and (*b*) the inanimate (fixed, statistical) factors. These I consider in relation to both the company and its competition.[1]

THE WORKING PLAN

The third step in the procedure of solving a complex business problem is to devise a working plan to guide the next stage of the

[1] ARTHUR C. WEICK, *The Technique of Building a Market*, The Arthur C. Weick Company, Chicago.

CHART 1 - MARKETING

STUDIES NEEDED BY A MANUFACTURER PRIOR TO A CAPITAL INVESTMENT IN THE PRODUCTION AND MARKETING OF A NEW CONSUMER PRODUCT

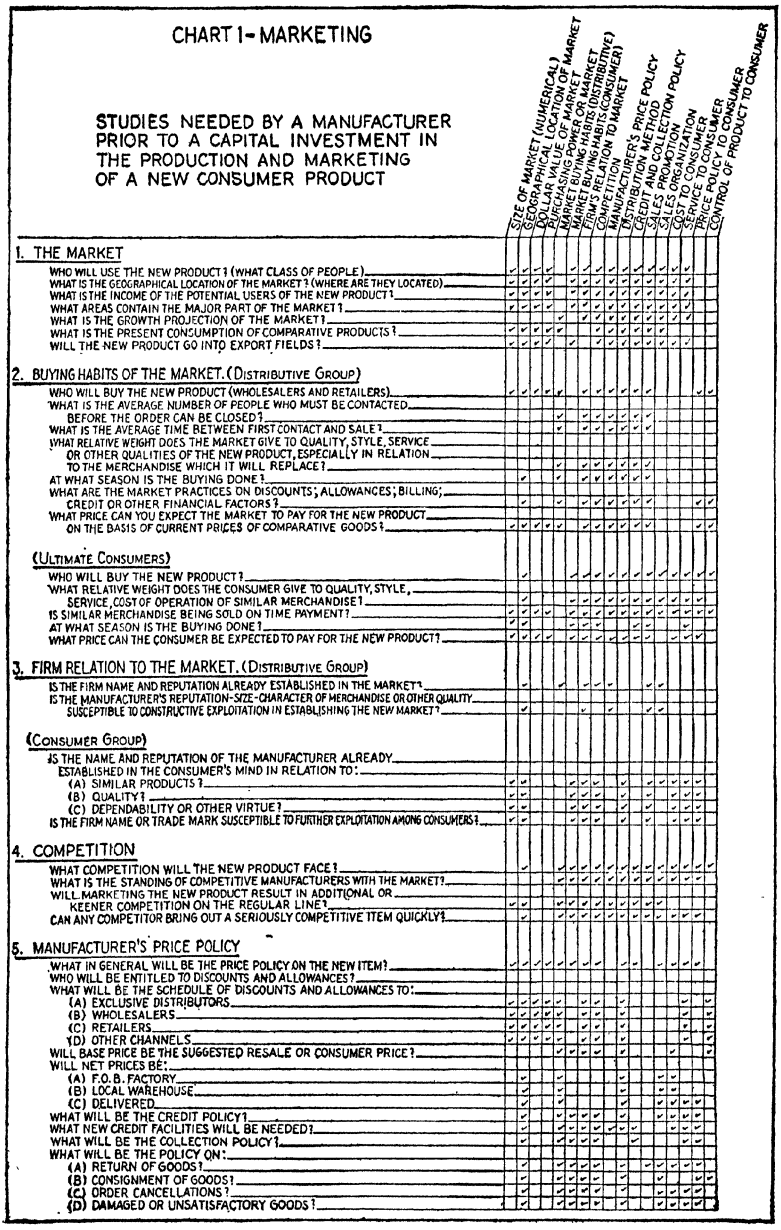


FIG. 1.—**Check sheet for introduction of new consumer product. U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Market Research Series 7, December, 1939.**

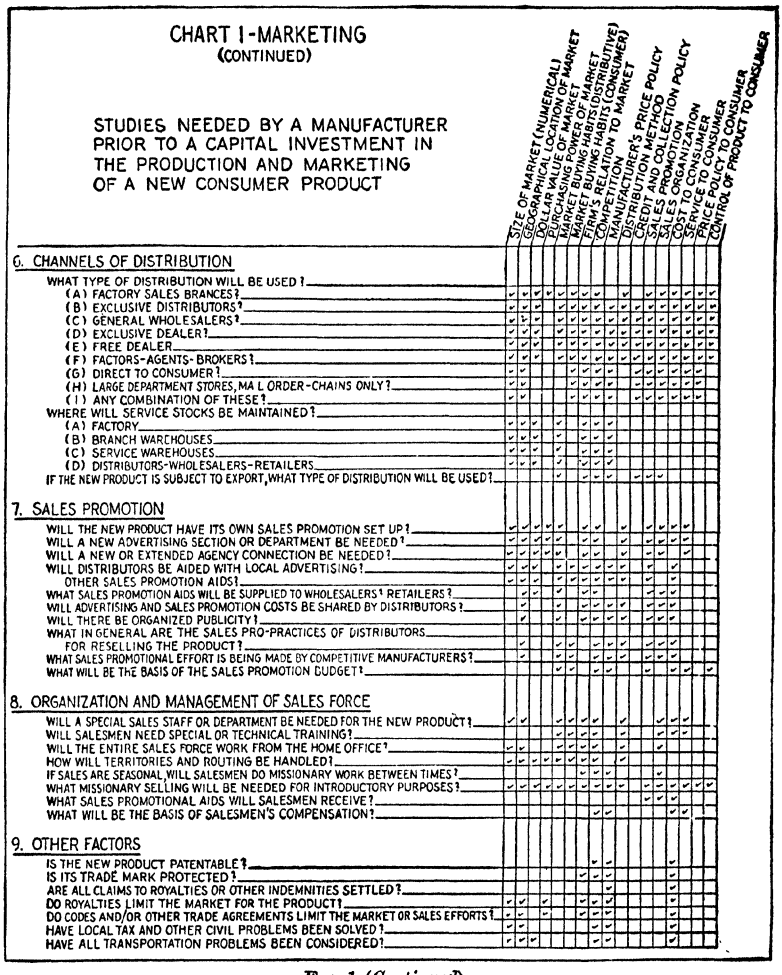


CHART I-MARKETING
(CONTINUED)

STUDIES NEEDED BY A MANUFACTURER PRIOR TO A CAPITAL INVESTMENT IN THE PRODUCTION AND MARKETING OF A NEW CONSUMER PRODUCT

SIZE OF MARKET (NUMERICAL)
GEOGRAPHICAL LOCATION OF MARKET
DOLLAR VALUE OF MARKET
PURCHASING POWER OF MARKET
MARKET BUYING HABITS (DISTRIBUTIVE)
FIRM'S RELATION TO MARKET
COMPETITION
MANUFACTURER'S PRICE POLICY
DISTRIBUTION METHOD
CREDIT AND COLLECTION POLICY
SALES PROMOTION
SALES ORGANIZATION
COST TO CONSUMER
SERVICE TO CONSUMER
PRICE POLICY TO CONSUMER
CONTROL OF PRODUCT TO CONSUMER

6. CHANNELS OF DISTRIBUTION
- WHAT TYPE OF DISTRIBUTION WILL BE USED?
  - (A) FACTORY SALES BRANCES?
  - (B) EXCLUSIVE DISTRIBUTORS?
  - (C) GENERAL WHOLESALERS?
  - (D) EXCLUSIVE DEALER?
  - (E) FREE DEALER
  - (F) FACTORS-AGENTS-BROKERS?
  - (G) DIRECT TO CONSUMER?
  - (H) LARGE DEPARTMENT STORES, MAIL ORDER-CHAINS ONLY?
  - (I) ANY COMBINATION OF THESE?
- WHERE WILL SERVICE STOCKS BE MAINTAINED?
  - (A) FACTORY
  - (B) BRANCH WAREHOUSES
  - (C) SERVICE WAREHOUSES
  - (D) DISTRIBUTORS-WHOLESALERS-RETAILERS
- IF THE NEW PRODUCT IS SUBJECT TO EXPORT, WHAT TYPE OF DISTRIBUTION WILL BE USED?

7. SALES PROMOTION
- WILL THE NEW PRODUCT HAVE ITS OWN SALES PROMOTION SET UP?
- WILL A NEW ADVERTISING SECTION OR DEPARTMENT BE NEEDED?
- WILL A NEW OR EXTENDED AGENCY CONNECTION BE NEEDED?
- WILL DISTRIBUTORS BE AIDED WITH LOCAL ADVERTISING?
- OTHER SALES PROMOTION AIDS?
- WHAT SALES PROMOTION AIDS WILL BE SUPPLIED TO WHOLESALERS? RETAILERS?
- WILL ADVERTISING AND SALES PROMOTION COSTS BE SHARED BY DISTRIBUTORS?
- WILL THERE BE ORGANIZED PUBLICITY?
- WHAT IN GENERAL ARE THE SALES PRO-PRACTICES OF DISTRIBUTORS FOR RESELLING THE PRODUCT?
- WHAT SALES PROMOTIONAL EFFORT IS BEING MADE BY COMPETITIVE MANUFACTURERS?
- WHAT WILL BE THE BASIS OF THE SALES PROMOTION BUDGET?

8. ORGANIZATION AND MANAGEMENT OF SALES FORCE
- WILL A SPECIAL SALES STAFF OR DEPARTMENT BE NEEDED FOR THE NEW PRODUCT?
- WILL SALESMEN NEED SPECIAL OR TECHNICAL TRAINING?
- WILL THE ENTIRE SALES FORCE WORK FROM THE HOME OFFICE?
- HOW WILL TERRITORIES AND ROUTING BE HANDLED?
- IF SALES ARE SEASONAL, WILL SALESMEN DO MISSIONARY WORK BETWEEN TIMES?
- WHAT MISSIONARY SELLING WILL BE NEEDED FOR INTRODUCTORY PURPOSES?
- WHAT SALES PROMOTIONAL AIDS WILL SALESMEN RECEIVE?
- WHAT WILL BE THE BASIS OF SALESMEN'S COMPENSATION?

9. OTHER FACTORS
- IS THE NEW PRODUCT PATENTABLE?
- IS ITS TRADE MARK PROTECTED?
- ARE ALL CLAIMS TO ROYALTIES OR OTHER INDEMNITIES SETTLED?
- DO ROYALTIES LIMIT THE MARKET FOR THE PRODUCT?
- DO CODES AND/OR OTHER TRADE AGREEMENTS LIMIT THE MARKET OR SALES EFFORTS?
- HAVE LOCAL TAX AND OTHER CIVIL PROBLEMS BEEN SOLVED?
- HAVE ALL TRANSPORTATION PROBLEMS BEEN CONSIDERED?

FIG. 1 (*Continued*).

investigation, the gathering of data. The working plan also charts the entire remaining course of the investigation, through the writing of the report. Another purpose of the working plan is, however, to give those sponsoring the investigation information concerning what the researcher plans to investigate, how he proposes to begin, how long a time the study will take, and how much it will cost. The sponsor can then make constructive suggestions and can give or withhold approval of plans. A third

CHART 2 - ORIGINATION AND PRODUCTION

STUDIES NEEDED BY A MANUFACTURER PRIOR TO A CAPITAL INVESTMENT IN THE PRODUCTION AND MARKETING OF A NEW CONSUMER PRODUCT

	DIRECTIONAL RESEARCH	PURCHASE FROM OUTSIDE INVENTORS	INDIRECTIONAL RESEARCH	PRESENT PLANT	DIFFERENT PLANT	TEST GOODS	MADE BY ANOTHER COMPANY	SEASONAL PRODUCTION	RAW MATERIALS	FINISHED STOCK	PARTS STOCK	TRANSPORTATION	COST OF MANUFACTURE	GOOD TO CONSUMER	SERVICE TO CONSUMER	RELATION TO REGULAR LINE	STYLE AND QUALITY PROBLEMS
10. SOURCES OF IDEAS FOR NEW CONSUMER PRODUCTS																	
MANUFACTURER'S SALES AND SERVICE STAFFS	✓	✓															
DISTRIBUTORS	✓	✓															
RETAILERS	✓	✓															
CONSUMERS	✓	✓															
COMPETITORS' MERCHANDISE	✓	✓															
NON-COMPETITIVE GOODS WHICH NEED COMPLEMENTARY EQUIPMENT	✓	✓															
RESEARCH AND PRODUCTION ENGINEERS	✓	✓															
INDEPENDENT INVENTORS	✓	✓															
11. MAJOR PURPOSES FOR WHICH NEW GOODS ARE MADE																	
TO COMPLETE LINE				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TO EXPAND SALES IN PRESENT MARKET				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TO ANTICIPATE A CHANGING NEED				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TO MEET A NEW NEED				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TO MEET AN EXISTENT NEED MORE EFFECTIVELY				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TO MEET STYLE CHANGES				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TO OPEN NEW MARKETS				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TO USE IDLE TIME OF PLANT AND EQUIPMENT				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
12. DESIGN FACTORS																	
WHAT IS THE MARKET DESIRE IN DESIGN?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SHALL THE DESIGN BE ORIGINAL?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HOW RADICAL A CHANGE WILL THE CONSUMER TOLERATE?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SHALL THE DESIGN BE AN ADJUSTMENT OF PRESENT DESIGN?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IS THE DESIGN TO BE BASED ON CLASS OR MASS MARKETS?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT ARE THE MARKET PREJUDICES IN REGARD TO SIZE, COLOR, SHAPE, MATERIALS AND QUALITY?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IN THE CASE OF MECHANICAL GOODS, IS THE DESIGN EASILY ADAPTED TO MINOR CHANGES? REPAIRS?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IS THE SELECTION OF THE DESIGN PRIMARILY A STYLE QUESTION?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HOW LONG CAN THE DESIGN BE MAINTAINED WITHOUT MAJOR CHANGES?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT EFFECT WILL THE DESIGN HAVE ON COST OF MANUFACTURE?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT EFFECT WILL THE DESIGN COST HAVE ON PRICE TO THE CONSUMER?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT KIND OF PACKAGE WILL BE USED FOR THE NEW PRODUCT?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IS THE PACKAGE DESIGN IN LINE WITH CURRENT GOOD PRACTICE?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HOW WILL THE NEW PRODUCT BE PACKED FOR STOCK OR FINAL SHIPMENT?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IS THE STANDARD SHIPPING PACK BOTH SAFE AND ECONOMICAL?								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
13. PRODUCTION FACTORS																	
CAN PRESENT LABOR PRODUCE THE NEW PRODUCT?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IS SPECIAL LABOR AVAILABLE IF NEEDED?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CAN THE NEW PRODUCT BE MADE WITH PRESENT MACHINERY?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WILL PRODUCTION OF THE NEW ITEM BE SEASONAL?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IF SO, WHAT PER CENT OF THE TIME WILL PART OR ALL OF THE PLANT BE IDLE?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CAN PLANT RUN ON OTHER GOODS IN OFF SEASON?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT EFFECT WILL SEASONAL OPERATION HAVE ON COSTS?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT EFFECT WILL PRODUCTION OF NEW PRODUCT HAVE ON REGULAR PRODUCTION SCHEDULE?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HOW WILL CODES, LOCAL LAWS, LABOR AGREEMENTS OR TRADE AGREEMENTS AFFECT PRODUCTION VOLUME AND COSTS?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HOW FAR CAN PRODUCTION BE INCREASED WITH PRESENT EQUIPMENT?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
14. MATERIAL FACTORS																	
WHAT RAW MATERIALS WILL BE USED?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHERE ARE RAW MATERIALS AVAILABLE?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ARE RAW MATERIAL SOURCES DEPENDABLE?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IN AN EMERGENCY INTERRUPTING THE NORMAL SUPPLY OF RAW MATERIALS, WHAT CAN BE SUBSTITUTED?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT EFFECT WILL TRANSPORTATION COSTS ON RAW MATERIALS HAVE ON FINAL COSTS?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT NEW STORAGE CAPACITY FOR RAW MATERIALS AND PARTS STOCKS WILL BE NEEDED AT PLANT?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WILL RAW MATERIAL COSTS FLUCTUATE WIDELY IN PRICE?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15. SERVICE FACTORS																	
WILL THE NEW PRODUCT NEED SERVICEING?														✓	✓	✓	✓
IF SO, TO WHAT EXTENT?														✓	✓	✓	✓
WILL SERVICE BE RENDERED BY THE MANUFACTURER?														✓	✓	✓	✓
WHAT PART WILL DISTRIBUTORS, WHOLESALERS, AND/OR RETAILERS PLAY IN THE SERVICE PICTURE?														✓	✓	✓	✓
WILL FREE SERVICE BE RENDERED THE CONSUMER DURING A GUARANTEE PERIOD? BY WHOM?														✓	✓	✓	✓
WHAT WILL BE THE BASIS OF COMPENSATION OF THE SERVICE AGENCY?														✓	✓	✓	✓
WHO WILL PAY IT?														✓	✓	✓	✓
HOW WILL THE MANUFACTURER'S SERVICE COSTS BE ABSORBED?														✓	✓	✓	✓
WILL SPARE PARTS BE SOLD TO SERVICE AGENCY AND/OR CONSUMER AT COST OR AT A PROFIT?														✓	✓	✓	✓
WHAT SPARE PARTS STOCKS WILL BE NEEDED?														✓	✓	✓	✓
WHAT SPECIAL PERSONNEL WILL BE NEEDED FOR SERVICE WORK?														✓	✓	✓	✓
WHERE WILL SERVICEMEN AND SPARE PARTS STOCKS BE LOCATED?														✓	✓	✓	✓
16. NEW CAPITAL INVESTMENT FACTORS																	
WHAT NEW REAL ESTATE INVESTMENT WILL BE NECESSARY?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT NEW ROADS, SIDINGS, POWER LINES MUST BE BUILT BY THE MANUFACTURER?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT NEW BUILDINGS WILL BE NEEDED?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT NEW RENTAL EXPENSE (PLANT, WAREHOUSE, BRANCH OFFICES) WILL BE NEEDED?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT NEW TOOLS WILL BE NEEDED?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT WILL BE THE COST OF ADJUSTING PRESENT PRODUCTION MACHINERY?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WILL NEW CAPITAL BE NEEDED?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17. RELATION OF NEW PRODUCT TO REGULAR LINE																	
WHAT IS THE RELATION IN QUALITY?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT IS THE RELATION IN MANUFACTURING METHODS?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT IS THE RELATION IN TYPE OF GENERAL CHARACTER OF GOODS?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT IS THE RELATION IN FIELDS OF USE?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT IS THE RELATION IN PRICE LEVELS?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHAT IS THE RELATION IN METHODS OF PACKING AND SHIPPING?				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

FIG. 1 (*Continued*).

purpose of the working plan is to clarify the researcher's own thoughts.

Because it serves these main functions, the working plan is put into writing. An example of a working plan is reprinted at the end of this chapter to make more meaningful the exposition of steps by which it is achieved.[1]

Bibliography

Before beginning to put the working plan on paper, the investigator should extend the bibliography which he began when he made his preliminary survey. In amassing titles of books, articles, and other published material for this bibliography, he will consult known guides to such material and cover the ground thoroughly so that when he is ready to collect data he will be able to go directly to the library, procure the items listed in the bibliography, and set to work. It is to be understood, of course, that bibliographies grow as one discovers new leads during research work; hence a bibliography is seldom complete until the investigation is finished and the report itself all but written.

Objective of the Investigation

The working plan begins with a succinct statement in specific terms of the objective of the investigation. Herein the investigator tells what is already known on the subject and what sources of information he has consulted, presents evidence that the investigation will result in findings not available in previous studies, and explains what he hopes his labor will accomplish. In so doing he delimits the field of his researches and avoids dissipating his energies later. As a general rule, the investigator can state the objective in one specific sentence. When he cannot, there is usually something wrong—either he is trying to attain two or more incompatible objectives, or he does not know exactly what he is trying to find out.

An example of a statement of the objective of an investigation is the following, taken from the working plan for a market study of a food product.

> The purpose of this survey is to provide us with a considerable amount of information on: (1) the extent to which a typical cross section

[1] A preliminary reading of this outline before the reading of the theory of the working plan may be helpful at this time.

of consumers uses various brands of each of the soups; (2) the purpose for which they use these products; (3) the motives which cause them to buy each; (4) the relative importance of various types of outlets selling their information regarding the retail distribution of various brands; and (5) the gathering of a good deal of supplementary information which will be of value to the manufacturer of soups in developing merchandising and advertising plans.[1]

Definition of Terms

It is perhaps significant that German scholarship, noted for its thoroughness, was famed also for its unwillingness to begin with anything other than definitions. The wisdom of such a procedure is apparent to anyone who has read any of the recent literature on semantics, or the science of meaning. Since even ordinary words often mean quite different things to different people, definitions of technical words or words used in special senses are peculiarly necessary.

Adequate definition of terms serving as the basis of an investigation is particularly important. For example, an investigator sent out to count the number of dwelling houses in a four-block area will need to know whether or not to include an apartment house, a church in one wing of which live the minister and his family, and a duplex house; in other words, he must have clearly in mind a definition of "dwelling house" which will exactly serve the purpose of the survey.

Basic Elements Requiring Analysis

The main points arrived at in the second step in the investigation, the preliminary survey, are written into the working plan so that they may be reviewed, criticized, and perhaps added to by the person authorizing the investigation. The investigator will retain only those elements which he has decided are relevant to the solution of the problem, and he will indicate which deserve special emphasis.

Limitations of the Investigation

An investigator usually has to reckon with three factors which determine how comprehensive his study can be. These factors are time, money, and data. Usually, he has to meet a deadline

[1] We are merely assuming that the food product was soup.

and must accordingly plan his work so that he will be able to complete the investigation on time. If he must spend no more than a predetermined amount of money, he needs to plan to incur no unnecessary expenses and to spend wisely the funds at his disposal. Similarly, the amount of data available is something on which he must figure For example, an investigator seeking material for a report on methods of dyeing oriental rugs may discover that almost nothing on the subject has been published and that reputable, capable dyers are few and far between. Hence his working plan should indicate the difficulties in the way of compiling an exhaustive report. A statement of each of these limitations is written into the working plan for future reference.

Scope of the Investigation

A statement of the scope of an investigation tells the extent of the field and in what field data will be sought. If the data are to be gathered by the use of the personal interview, the statement will include such items as the types and numbers of persons to be questioned, the number of cities to be covered, or the number and type of dealers to be approached. The statement of the scope of the investigation may include, in addition, the quantity of data to be secured and the heads under which they are to be classified.

In many an investigation, defining its scope consists in predetermining what constitutes an adequate and a representative sample of the whole group of cases about which one is interested in finding out certain facts.

A manufacturer, for example, who wishes to test out the market for a specific product probably cannot interview all the potential buyers because of the cost involved, and fortunately he need not interview all of them. By securing the reactions of a representative sample he can have an indication of how the product will be received by the market as a whole.

The working plan should contain a brief description of the scope and procedure of the method or methods of sampling to be used, in case the entire field of investigation is not being covered. The following statement of scope and procedure makes clear the size and nature of the sample used in the market study for the food product mentioned before:

Scope of Soup Survey

1. House-to-house interviews with 2,000 consumer families, using the questionnaire entitled, "Your Opinions Will Help Make Soups Better."
2. Special interviews regarding readership of various sections of Sunday papers and familiarity with soup advertising, to be made house-to-house with 100 families who are *not* interviewed with the general questionnaire.
3. Interviews with 150 children between the ages of six and fourteen years.
4. Interviews with grocery stores and combination grocery and meat stores, using the questionnaire entitled "A National Survey of Soups."
5. Interviews with a number of physicians (general practitioners, specialists in gastrointestinal disorders, child specialists, pediatricians, etc.) and with dietitians if possible.
6. Interviews with the leading grocery wholesalers or jobbers in the cities covered by the survey.[1]

An exposition of the theory of sampling is interpolated here, pages 42 to 48, because sampling is a technique widely used in business research in general and in marketing research in particular.[2] Moreover, market research is greater in volume than other types of business research because of a widespread belief among business executives that they can still make business profitable if they can cut costs and increase efficiency in marketing.

Sampling.—The basis of sampling, called the law of sampling, is that *a moderately large number of items chosen at random from a very large number of items should have the characteristics of the larger group.* The law implies, if not a perfect resemblance between the sample and the whole, at least a high degree of resemblance. Its importance will be better understood and appreciated if two principles of sampling and two related principles are given.

Principles upon Which Sampling Is Based.—The first principle of sampling is called *the principle of statistical regularity.* In brief: *If a reasonably large sample is selected without bias from a mass of phenomena, the characteristics of this sample will differ*

[1] From "Instructions to Interviewers, Survey of the Market for Food Product," Batten, Barton, Durstine, and Osborne, Inc.

[2] The information concerning the theory of sampling is adapted from John R. Riggleman and I. N. Frisbee, *Business Statistics*, pp. 21–25.

but little from those of the entire universe.[1] The significance of this principle is that one may, by studying a portion of the phenomena bearing upon a given problem, depict fairly accurately the characteristics of the entire group. It is also a fact that the principle makes possible a material reduction of the work necessary in order to draw accurate conclusions concerning any large group of quantitative data.

As an illustration: If one desires to study the changes in the earnings of factory workers in the United States, he need not include all factory workers nor the workers in all factories. If he studies earning records of 25 per cent of the workers in 25 per cent of the factories, he will probably have as true a picture of the changes as if he had studied the earning records of all factory workers. He must, however, avoid bias in choosing the sample, and he must secure a fair distribution of earning records of workers by areas and by classes. How these two qualities, reliability and proportionality, are attained is explained in a succeeding section, *Selecting the Sample,* in this chapter.

The second principle of sampling, based upon the same reasoning as the preceding, is *the principle of large numbers.* In brief: *Whenever an event may happen in only one of two ways, and the event is observed to happen under the same essential conditions a large number of times, the ratio* p[2] *of the number of times that it happens in one way to the total number of trials appears to approach a definite limit, let us say* P, *as the number of trials increases indefinitely.* For example, in a bank with a large number of branches, the proportion of the number of customers having accounts with balances below $100 may vary greatly from week to week among different branches, some branches having a smaller number than the preceding week, other branches having a larger number. For the bank as a whole, however, the *relative* number of accounts less than $100 may not change greatly from one week to the next.

A related principle, referred to above, is the *principle of small numbers.* A short statement of the principle is: *If, in a group of quantitative phenomena selected without bias, a small portion of the*

[1] Universe: the whole group of cases about which one is interested in finding out facts. Sample: a certain number of those cases, picked at random or otherwise from all those in the particular universe. Ezekial Mordecai, *Methods of Correlation Analysis,* p. 13.

[2] *p* represents the proportion of favorable occurrences.

group deviates sharply from the characteristics of the remainder of the group, this tendency will persist no matter how large the group may be made and irrespective of the number of samples selected. Hence, if one makes an analysis of the balance of savings accounts in a large number of branch banks, even though the branches are located in quite different sections of the community, he may find that each branch will have a small number of savings accounts in which the balances are more than $10,000.

Another corollary of the principle of statistical regularity is *the principle of decreasing variation.* In brief: *As a larger and larger proportion of a group of phenomena is selected by the cumulation of successive unbiased samples, the characteristics of each enlarged sample (namely, the average, the deviation, the skewness, etc.) will tend to differ less and less from the characteristics of the preceding (smaller) sample and from the characteristics of the group as a whole.* Hence, if one's samples represent increasing proportions of the checks presented at a bank for payment from day to day, one could approximate with increasing accuracy the distinguishing characteristics of all checks. It is clear that the application of this principle makes possible the determination of the size of the sample (in proportion to the whole of the data) which must be taken in order that the characteristics of the sample may, within prescribed limits of accuracy, be attributed to the whole group.

Selecting the Sample.—It is obvious that a representative sample is one which reproduces, on a small scale, the universe under consideration. It is also obvious that a sample must be representative to a practical degree, the meaning of which term is explained in the next section, *Checking the Adequacy of the Sample.*

Selecting a representative sample for the problem at hand is no easy task; it requires intelligent application of statistical principles. Depending upon the requirements of the particular case, an investigator usually uses either of the following methods: (1) random sampling or (2) directed sampling.

In strictly *random sampling* (not commonly possible in business statistics), any item of the total number of cases has as good a chance of being included as any other. For example, let us suppose that one draws the prices of 50 commodities from a group of 1,000 prices which have been marked on small cardboard disks.

and mixed well. Such selection is *random* insofar as the 1,000 prices are concerned.

In directed sampling (commonly employed), one makes a distinct effort, by using a system of control in the selection of data: (1) to increase the certainty of a proportional representation from the various related types and groups of elements insofar as those types or groups are known to exist or to have a bearing upon the problem at hand; and (2) to exclude (to save time, energy, and expense) those types or groups which are known to have no bearing upon the problem at hand. To illustrate directed sampling, let us assume that the researcher takes, as his sample, the prices of the 50 most important articles in the budget of the average family. It is obvious that the second sample is a more reliable basis for computing an index number as a measure of the changes in the cost of living than the first sample is.

Dividing up the whole into classes and taking samples of each class will increase the chances of selecting a fair sample where the total data are not homogeneous with reference to the purpose of a particular investigation. In a sample of a survey for the purpose of determining the percentages of residences vacant, one increases the degree of accuracy of the sample by taking a random sample of all single-family houses, of all double-family houses, and of all apartments, and then weighting the figure for the situation as a whole in accordance with the proportions of these different types of dwellings. Within each class, some practical method of making the random selection must be determined. The sample of single houses might be taken on the basis of regular intervals, determined by drawing lines a mile apart north and south and east and west and then covering the streets nearest the lines.

The principle of getting a fair sample, just illustrated, is of almost universal application in sampling operations.[1] In each case where this principle is applied, there will be some variation between the sample and the whole. How great the degree of variation may be without causing erroneous conclusions cannot be said arbitrarily. Always the use to be made of the sample affects the degree of variation permissible. A practical check on

[1] The method of predetermining the size of a sample according to the degree of accuracy required is explained in Appendix I.

the degree of variation permissible is given in Appendix I. In using it, however, one needs to understand that neither it nor the mathematical tests given in books on business statistics are to be substituted for judgment and experience in selecting samples and in interpreting results of the sampling process.

Checking the Adequacy of the Sample.—The "stability test" of sampling is used as a rough check upon the adequacy of a sample. The test may be made in either of the following ways:

If one is testing the sample by method *A*, the first step is to divide the original sample by means of random sampling into two equal samples.

The second step is to note whether or not the characteristics of the divided sample (as shown by the two smaller samples) differ materially from the characteristics of the original sample.

To illustrate: If we study the changes in the number of persons employed in factories by means of a sample containing, let us suppose, 20 per cent of all factories, then the adequacy of the sample could be roughly checked by dividing the total sample into two groups, each containing 10 per cent of all factories, and by comparing the data of these small groups with the results shown by the entire sample. A variation of the method, sometimes desirable, is to divide the original sample into four equal parts and to see if the differences between the averages of the four groups are within the required limits of accuracy.[1] If they are, the totals should be satisfactory.

If one is testing the stability of a sample by method *B*, one selects from the original data a new unbiased sample, equal in size to the sample already taken, and compares the results obtained from the two equally large samples. It is not theoretically necessary to exclude from the second sample all items which were included in the first sample; it should be unbiased, however. For example, if, as in the above illustration, we wish to study the changes in the number of persons employed in factories by means of a sample containing 20 per cent of all factories, we can check the adequacy of the sample by taking a second sample of 20 per cent of the factories and comparing the results obtained from the two samples.

[1] A table indicating size of sample within predetermined limits is reprinted in Appendix. I. Copyrighted, 1932, by the President and Fellows of Harvard College.

It has already been said that the number of items in a sample will vary according to the extent of error permitted by the conditions of the problem. Sometimes a sample small in size indicates to a satisfactory degree the characteristics of the whole from which it has been taken. If, for example, one wishes to determine the marketability of a Cuban confection in the United States, one can make a satisfactory test of how well it sells by placing it in a reasonably large number of representative stores in a few communities. However, a sample relatively large in size would be necessary, in other instances, to indicate the characteristics of the whole. For example, if the directors of a large company are considering the adoption of a pension plan and need to know how many years it will be on an average before all employees reach the retirement age, they will not find a small sample of employee ages adequate to their purpose. In the first instance, the required number of cases can be small because of the homogeneity of tastes of the people of the nation selected and because the decision made on the basis of the sample need not be final. In the second instance, the required number of cases needs to be large because employees have many and widely varying ages and because the action taken on the basis of deductions made from the sample would be costly since it is final.

Two practical principles helpful in determining what size a sample must be to be adequate are seen in the above illustrations: namely, (1) that the number of cases required in a sample increases as the variation in the individual items increases, and (2) that the number required also increases as the required accuracy of the results increases.

If a sample is judged inadequate through the application of the "stability test" or one of the mathematical tests, probable error of the mean, or the standard error of the mean explained in Appendix I, another principle of sampling can be applied, *i.e.*, that of increasing the size of the sample until it is adequate. *The principle is that the accuracy of a sample increases as the square root of the size of the sample increases.*[1] To double the accuracy of a

[1] Explanation of the statistical technique of sampling, in addition to that given in Appendix I, may be found in (1) John R. Riggleman and I. N. Frisbee, *Business Statistics*, Chap. XI; (2) American Marketing Association, *The Technique of Marketing Research*, Chap. XX; and (3) Theodore H. Brown, *The Use of Statistical Techniques in Certain Problems of Market Research*, pp. 10–13.

sample, one must quadruple its size; to treble its accuracy, one must increase the number of items to nine times the former number. As an illustration: If there are 100 items in a sample, and it is desired to double the accuracy of the sample, the square root of the size of the sample, 10, will be obtained. This will then be multiplied by 2, resulting in a product of 20, which will be squared, indicating that 400 items are required for a sample twice as accurate as 100 items. Similarly, for a sample three times as accurate as 100 items, the square root of 100 (10) will be multiplied by 3 and the result (30) will be squared, giving 900 as the number of items needed for a sample three times as accurate as 100 items.

Method of Gathering Data

The next section of the working plan describes the methods of obtaining data. Whether data needed to solve the problem are to be obtained from office records, from the library, through interviews, through the mail questionnaire, by experiment, or by simple observation, the working plan clearly outlines the means to be used in gathering them. The explanation of the method helps to prove its essential soundness to those concerned with the investigation. The explanation also calls forth criticism, suggestions, and advice concerning the method. It is a good plan to indicate clearly, in outline form, the method of securing data concerning each of the elements listed in that section of the working plan which is headed "Basic Elements Requiring Analysis."

Detailed instructions as to interviewing, for example, ordinarily are given to an investigator with the questionnaires and hence they should be included in the working plan. The working plan should, of course, include a copy of the questionnaire, if any. Further discussion of methods of gathering data, as well as examples of questionnaires used, will be found in Chaps. IV and V.

Method of Organizing Data

Many times, in framing the working plan for approval, it is necessary to give detailed instructions on procedure, both as to collecting data and as to handling them when collected.

Determining the best technique for recording, analyzing, and using data is a matter of vital importance in making the working

plan for an investigation. The two forms most often used for tabulating data are the counting sheet and the recapitulation sheet. The counting sheet is that form on which the tabulator makes the first record of answers to questionnaires secured by mail or through interviews, or makes the first record of information attained in interviews. The recapitulation sheet is a digest of answers recorded on the counting sheet. (Figure 13 in Chap. VI illustrates the counting sheet, and Fig. 14 the recapitulation sheet.) Examples of both forms should be attached to the working plan. For special purposes other forms may be devised. The various techniques of organizing data are discussed in detail in Chap. VI.

Testing the Working Plan

Working plans for extensive and costly investigations are tested on a small scale to determine their soundness. The test is concerned with the quality of the questionnaire, the fitness of the investigators for their work, the rightness of sources of information, and the feasibility of the proposed methods for procuring information. The test is designed to answer the all-important question: Is the plan sufficiently sound and comprehensive to accomplish the aim of the study?

The nature, scope, and method used in testing a working plan vary with the particular study. Preliminary to the investigation for Sun Screen, which covered 74 cities and towns from New York to San Francisco and from New Orleans to Chicago, a test was made in one city which included 24 building managements, operating 73 office buildings and 7,800 apartment units. For another study, mail-order consumer research, the test included 33 interviews in one county, 10 of farm families, 8 of village families, and 15 of town families.

Work Progress Outline

Since the investigator must often meet a deadline and yet stay within a budget, he should include in the working plan a detailed outline of what he proposes to do each day, week, or month that he is working on the project, together with a plan of disbursements during the period. Plans for a field survey should specify the amount of time needed for preparation of forms; for telephone, mail, or personal interviews; for editing, tabulating, com-

puting percentages, interpreting results; for writing, typewriting, and rewriting.

It is highly important to prepare such an operating schedule. The time allowed for completing the investigation should be divided according to the necessities of the various operations that constitute the research. In some researches, one operation hinges upon another. In others, a number of operations can be carried on simultaneously. All need to be coordinated in a carefully worked-out program. This program should be recorded on master control sheets which provide space for checking the daily fulfillment of previous assignments.

Outline of the Report

The tentative outline of the final report has been blocked out roughly in the second step of the investigation, the analysis of the problem. As soon as the investigator has reduced the problem to elements, he knows the topics to use as a guide in framing questions for the questionnaire. As soon as he knows the relative importance of elements, he knows the arrangement to give the material in his outline. Knowing topics and arrangement, he finds it a simple matter to break major problems into minor problems, to indicate the subordination of minor problems to main problems, and to draw up a rough outline of the final report.

Digest of Impressions.—As the preliminary survey serves to give the investigator, who makes it, a clear conception of what is known of the perplexing situation out of which a business investigation springs, the working plan serves to present to the client or executive, who passes upon it, the digest of these same impressions. The working plan usually gives this digest of impressions at the beginning. The digest of impressions in the report about Sun Screen, referred to on page 30, reads as follows:

Our experience in St. Louis, in which we obtained the reaction of 24 building managements operating 73 office buildings and 7,800 apartment units, has increased our enthusiasm for Sun Screen. A sales department, however, could waste opportunity, misspend money, and possibly retard the natural growth of sales volume, if activity became separated from conservatism and wisdom.

Some markets are profitable; others are not at this time. And the methods of distribution and promotion will have an important bearing upon sales volume and sales costs.

The best sales procedure is not yet evident and needs to be determined. The St. Louis situation is discussed in this presentation.

We suggest that you consider the advisability of having our organization use three months, prior to getting into the production and the sale of Sun Screen, for market analysis, determination of sales policies, and formulation of plans for sales organization and promotion. Then—let us execute the selling job.

Tentative Plan of the Final Report.—The following outline suggests the tentative form of organization which material assumes in the working-plan stage of the investigation. Although it needs much working over to distinguish between main and subordinate points, it is the basis of the finished outline.

Determination of Classes of Apparatus Which Should Be Manufactured in Blank Products' Shop

Purpose.—This study is to be directed toward the definition of the responsibility and scope of the Blank Products' Shop, with particular reference to the character of work for which it should function and to the factors which influence the transfer of work out of this branch to the operating departments of the works.

Digest of Impressions.—As the Blank Products' Shop has been set up to manufacture with economy and dispatch certain classes of apparatus up to a point where the production of such apparatus is no longer special to the methods and procedure of the operating branch, it is intended to direct automatically its manufacture in the most economical channel.

Tentative Plan of the Final Report.—The study will proceed on lines calculated to provide the answer to the following points:

1. What factors should influence the placing of work in the Specialty Products' Shop for initial manufacture?
   - *a.* Apparatus in which the design has not been fully worked out?
   - *b.* Apparatus to meet requirements essentially different from those applied to our regular telephone product?
   - *c.* New apparatus upon which future requirements cannot be set with certainty?
   - *d.* Apparatus for which the demand is intermittent?
   - *e.* Apparatus susceptible to frequent design changes?
   - *f.* Apparatus of a highly competitive type not subject to the usual quality standards?
   - *g.* Emergency orders for the production of which standard tools and facilities are not available?
   - *h.* Apparatus requiring specialized treatment to produce?
   - *i.* Special orders for experimental or development work which would disrupt the practice in the operating branch?
   - *j.* Apparatus ordered in quantities which do not justify the cost of tools which would be necessary for production in the operating branch?

2. What are the considerations which would indicate the transfer of work from the Blank Products' Shop to the operating branch?
   a. What stage of design of apparatus?
   b. At what point in production program?
   c. Similarity in character or type to standard telephone apparatus?
   d. After elimination of all design or manufacturing troubles?
   e. When operations and methods have become fixed?
   f. Future demand and its effect on standardized tool equipment?

Preliminary Statement of Conclusion.—After these points have received proper consideration and have been reduced to clear definition, an instruction or routine will be issued to guide the future assignment of work.

Statement of Expected Results.—The final section of the working plan is really a restatement in more general terms of what was said in an earlier section entitled Objective of the Investigation. Under Expected Results, the investigator explains as specifically as he can what he hopes the investigation will accomplish and what the consequences will be for the person or company authorizing the investigation if these hopes are realized. This conclusion gives the expected result, not the conclusions. They give the authorizer or adviser of the study an idea of the practicability of the plan of procedure to enable him to judge, to a certain extent, whether or not the possible findings will be worth the anticipated expense. The last three paragraphs of the following working plan of the investigation for Sun Screen state the results that the client authorizing this particular investigation can anticipate as a result of the investigation.

DEAR MR. SMITH:

According to the conversation in your office with Mr. Doe and yourself July 8, I enclose an outline of the proposed market analysis for Sun Screen, together with our estimate of the cost of this work.

Scope.—The proposed analysis will include a thorough personal investigation in approximately 15 cities located in all sections of the United States. Details of our report covering this market analysis have been discussed with you, and here we will outline our proposal only briefly, showing what it will include.

Proposed Contents of the Report

First: An estimate of the amount of capital necessary to invest in the marketing of Sun Screen, including selling and promotion expense, and the approximate time required to put the product on a basis of profitable returns on the money invested.

Second: A first-, second-, and third-year marketing plan. This three-year plan based on measured facts will enable you to eliminate

costly trial-and-error methods and intelligently to market Sun Screen when you are ready to begin production. You will find our report and plan simple to understand and easy to use. Every statement will be backed by reasonable proof.

Third: Our report will indicate, on the basis of measured facts (*a*) what markets are most readily available and should be the focus point for primary selling efforts, (*b*) through what outlets these markets can best be reached for proper distribution, (*c*) wholesale and retail prices, terms, and discounts.

Fourth: We will determine sales resistances, sales appeals, and the exact nature of the competition Sun Screen will be forced to meet.

Fifth: We will determine the most profitable markets and the cost of selling them, as well as the best and most practical methods. This may vary in different parts of the United States. The size of sales organization required and the caliber of men needed to do this selling job will also be determined.

Sixth: Our market analysis will give you factual and directional foundation for sales and advertising efforts. And incidentally, our personal investigations during the course of this study will have an educational and missionary sales value through the many contacts established in all parts of the country. This point should not be overlooked in weighing the value of the proposed work.

Time.—The time required to complete intelligently and successfully this analysis we estimate at approximately five months, *i.e.*, 22 or 23 weeks. Actually when we get into the work it may be possible for us to see a way in which this time can be shortened. It is always our policy to give our clients the benefit of any possible saving. On the other hand, it may seem wise to expand the investigation on certain points to obtain adequate information, but at the most this should not require more than several weeks additional.

Cost.—The cost will be as follows: ____hundred dollars per week, for every week we are engaged in the study plus necessary expenses incurred. These expenses include traveling, field investigators, clerical labor for tabulations, charts, etc., and would run from a low of about____dollars to a high of around____dollars some weeks. We estimate an average weekly expense of____dollars. Thus the total cost will be approximately____dollars per week, or____dollars for the five months.

Observations on Proposed Plan.—In the event you do not wish to start by marketing Sun Screen in all parts of the United States you could save some money on the cost of this investigation by eliminating certain sections of the country. However, this in all proba-

bility would be false economy, because one important object of the research is to determine where Sun Screen can be sold in greatest volume and at lowest sales expense during the first year, while manufacturing costs are high. It would, of course, cost more in the long run to study conditions in one part of the United States now and in another part later. You can have a complete perspective only by having a complete picture.

As stated, this proposed market analysis as an investment will pay for itself many times over by (*a*) eliminating costly trial-and-error selling, (*b*) enabling you to conserve your resources through operation of a sound merchandising and sales policy, (*c*) serving as a check on sales and advertising expense, (*d*) increasing sales volume from the moment you start production, and (*e*) making sales effort more efficient.

You will have knowledge of the correct course to pursue, the correct methods to operate, the cost of selling, and how long it should take for your investment to pay out, through the possession of measured facts and our outside viewpoint, obtained through a scientific approach to your sales problem by reputable men with over ten years experience studying sales problems for representative manufacturers, some of them leaders in their respective fields. For instance, we recently completed a job for Sears, Roebuck and Company.

We are prepared to begin work on this market analysis immediately and would remind you that in order to have it completed by January, 194–, it should be started in the near future.

Thank you for the opportunity to figure on this work. We are very enthusiastic about Sun Screen and the many opportunities for it which we visualize and would consider it a real privilege to help you launch it on the market successfully.

Very truly yours,
THE ARTHUR C. WEICK COMPANY

CHAPTER IV

COLLECTING DATA

I. Methods of Collecting Data—II. Bibliographical Research: *A.* Definition; *B.* Importance; *C.* Procedure; *D.* Using basic sources: 1. Indexes in general use; 2. How to use indexes; *E.* Preparing the bibliography; *F.* Determining the applicability of bibliographical data; *G.* Determining the reliability of bibliographical data; *H.* Taking notes; *I.* Making the final bibliography—III. Observation: *A.* Definition; *B.* Types; *C.* Uses; *D.* How to observe; *E.* Advantages and disadvantages; *F.* Experiment—IV. Interview: *A.* Definition; *B.* Types; *C.* When used; *D.* Disadvantages; *E.* Advantages; *F.* Who is interviewed; *G.* Requisites of the interviewer; *H.* Training of the interviewer; *I.* Technique of the interview.

Collecting data, the second step in the research procedure, is bringing together material to be analyzed, compared, and interpreted for the purpose of drawing conclusions and making recommendations.

Although each step in the research procedure is important, collecting data is considered the foundation of all research because of its strategic position in relation to the rest of the investigation. On the pertinence and quantity of data and on their completeness depend the processes of both organization and interpretation.

METHODS OF COLLECTING DATA

Data are primary or secondary. The first are unrecorded and call for field research. The second are recorded and may be procured through consulting office records or bibliographical material. Collecting extensive primary data usually calls for group action—building up an organization of interviewers, inspectors, and supervisors, or using mail questionnaires; collecting secondary data usually calls for individual action. The techniques used in group action are observation, interview, and the mail questionnaire. Those used in individual action are examination of records and perusal of reference books.

Observation, experiment, and office and bibliographical research are the simplest and most intensive types of research;

interviews and mailed questionnaires are the most complicated and most extensive types. In any investigation, the method of gathering data which promises to be most fruitful will be used first. This is usually the bibliographical method, because frequently pertinent information is readily accessible in libraries and office records. Titles of books, periodicals, and other publications available in library stacks may be found through the use of the card catalogue. Company records may yield a rich reward if satisfactory internal statistics have been kept, such as volume of production or sales by product, by salesman, or by territory. Moreover, they give data which can be found nowhere else. Company records, although not necessarily the most important or the most significant, are the most tangible and most reliable of all types of data. The advantage of these two sources of data is that they are inexpensive and accessible.

Personal visits and interviews may yield three or four times as much information as the above-named methods of investigation and hence are to be relied upon when all else fails. They are likely, however, to be a costly method of gathering information if the nature of the investigation necessitates interviewing specific individuals. Such appointments are difficult to arrange because business and personal affairs interfere and because the persons to be interviewed are likely to live distances apart. On the other hand, personal interviews are probably not a costly method when an investigator may make calls in a small area or interview anyone he meets.

The mail questionnaire is used when the success of an investigation depends upon getting information from a relatively small number of people in widely scattered locations; one might wish, for example, to get the opinion of the president of Rotary in each town of the United States with a population of 100,000 or more. Unless the investigator has a representative in every town of 100,000 in which there is a Rotary club, he can reach these presidents best by mail. The mail questionnaire and the interview are used after published sources have been exhausted and internal records of the company have been utilized to the limit. The disadvantages of the mail questionnaire are that it takes time to secure results and that it takes considerable skill and knowledge in its use to make it successful.

In surveying the possible methods to be used in a specific investigation, one will find that every investigation is a law unto itself. He should know each method of collecting data and the factors which determine its use in order to select the one most valuable for the investigation at hand. In many surveys, every method of investigation is used. Bibliographical research is almost always used before any final conclusions are formed and, as has been said before, it is usually the first method utilized.

BIBLIOGRAPHICAL RESEARCH

Definition

Bibliographical research is the seeking of written data or secondary data in company records or in books, periodicals, catalogues, pamphlets, monographs, bulletins, and newspapers.

The data attained thus may sometimes be applied to the study in substantially the same form in which they are found; at other times, they have to be worked over and digested. The sources of bibliographical data are public, company, technical, or specialized libraries; commercial and governmental agencies which make a specialty of collecting data; and current publications which are source books of information. The data are located through the card catalogues of libraries and by the use of such books and indexes as the *United States Catalog*, *The Cumulative Book Index*, the *Industrial Arts Index*, and *The Public Affairs Information Service*. It is as essential for a research man to know how to use bibliographical aids in his work as it is for writers to know how to use the dictionary.

Importance

The businessman undertaking a study will find it valuable to begin bibliographical research as soon as he has defined his problem and divided it into its component parts. By doing this type of research at the beginning, he may save himself much labor, time, and expense, because it is not unusual for him to find the proposed study partially, or completely, made by someone else. He needs to know, moreover, all that others have done along the same line and whether or not others are working in the same field. Thomas A. Edison said:

When I want to discover something, I begin by reading everything that has been done along the line in the past; I see what has been accomplished by great labor and expense in the past; I gather the data of many thousands of experiments as a starting point, and then make many thousands more.[1]

To follow a procedure similar to Edison's, the research worker must know how he can find all the available and pertinent information with the utmost dispatch. He should find all old information which is pertinent; he may find new information; and he may find a method of research used in a related field which he can use in his own research even if his material is different. Skill in bibliographical method will greatly increase his efficiency in research work.

Procedure

The research worker's first step will be to consult certain indexes to see if there is a bibliography on his subject already prepared by a librarian, association, or research organization. Some bibliographies are listed in the *Public Affairs Information Service.* A new service, called *The Bibliographic Index*, is likely to prove of value to the researcher. Indexes which the U. S. Library of Congress, Washington, D. C., have compiled are listed under U. S. Library of Congress and under particular subjects.[2]

If there is a prepared bibliography on his subject available in any library, it will be procured for him by the library in which he is working or it will be copied at a nominal price by the library owning it. Bibliographies come in typewritten form and vary in length from three or four pages to twenty or more.

If there is no prepared bibliography in his field of interest, the investigator will make his own bibliography—a list of books and articles relating to the subject matter of his investigation—to get a comprehensive view of what has been published on his problem, who has published it, and where it may be procured. If a bibliography is found, the investigator may need to make additions.

So great has been the interest in research during the last 15 years that governmental agencies, as well as commercial agencies, have published indexes which have provided a wealth of informa-

[1] J. EIGELBERNER, *The Investigation of Business Problems*, p. 116.

[2] Other guides to bibliographies are Swanson's *Guide to Government Publications* and the American Library Association *Index, Catalogue,* and *Booklet.*

tion of interest to men in all types of business. These indexes list books, bulletins, and articles and hence provide a short cut to the preparation of a bibliography on a specific subject.

Using Basic Sources

Sources of bibliographical material are almost innumerable. This discussion will name and describe a few indexes in such general use that an investigator in almost any field should consult them in starting his bibliographical research. The discussion will be followed by a list of basic sources which will be suggestive to the investigator collecting material. For indexes in specialized fields, the investigator will perhaps find no better source of help than Coutant and Doubman's *Simplified Market Research*, pp. 43–86.

For most purposes the best place to start looking for basic data on almost any subject is in the publications of the Federal government. Their publications are all outlined in the little book *List of Publications of the Department of Research*, obtainable from the Superintendent of Documents, Washington, D. C., or your public library.

Indexes in General Use.—The *United States Catalog* and supplements provide an approximately complete list of books "in print." Since 1928–1929 the *Catalog* contains most of the books printed in the English language in English-speaking countries, lists them by author, title, and subject; and gives under each heading the title, author, publisher, date of publication, number of volumes, and price.

The Cumulative Book Index lists the books published during the periods between publication of new editions of the *United States Catalog*. This index is issued monthly and is cumulated quarterly and yearly. *The Cumulative Book Index* merely supplements the *United States Catalog*.

The *Industrial Arts Index*, issued monthly and cumulated quarterly and annually, is of especial interest to those interested in economics and commerce in general and in distribution in particular. It has, since 1913, indexed technical periodicals as well as those in the fields of architecture, business, industry, engineering, and chemistry.

The *Public Affairs Information Service*, issued weekly and cumulated monthly, bimonthly, and annually, is most helpful in eco-

nomics, commerce, finance, and political science. Excluding material in newspapers and in specialized or technical journals, it lists material issued by the Federal, state, and local governments, chambers of commerce, research organizations, publishing firms, and private individuals. The listing of the addresses of trade directories and organizations is a particularly valuable feature.

The *New Tork Times Index*, formerly published quarterly and since 1930 published monthly and cumulated, is a notable source of news items, especially because it gives dates of news which may be described in more detail in other and smaller papers. Without such an index, a search for specific news items would be endless.

The *Readers' Guide to Periodical Literature*, issued monthly and bimonthly and cumulated semiannually, annually, and by decades since 1900, is an index to articles appearing in a large number of periodicals read by the general public.

Other basic sources are the following:

Poole's Index to Periodical Literature, 1802–1916
International Index to Periodicals
Engineering Index
Agricultural Index
Accountants Index
Union List of Serials of Libraries of the United States and Canada
Annual Magazine Subject Index
Index to Legal Periodicals (compiled by American Association of Law Libraries)
Index to Legal Periodical Literature (edited by Jones and Chipman)
Legal Periodical Digest
Book Review Digest
Commerce Yearbook
Shipping World Yearbook
Social Science Abstracts (March, 1929, to January, 1933)
A World List of Scientific Periodicals
American Catalog of Books, 1876–1910
English Catalog of Books, 1801 to date
Catalogue générale des livres imprimés de la bibliothèque nationale (Bibliothèque nationale, Paris)
Gesamt Katalog der preussischen Bibliotheken
Check list of United States Public Documents, 1789–1909
Poore, A Descriptive Catalog of the Government Publications of the United States, 1774–1881
Ames, *A Comprehensive Index to the Publications of the United States*, 1881–1893
Publishers' Trade List Annual
Kelly's Directory of Merchants, Manufacturers, and Shippers of the World

Thomas, *Register of American Manufacturers*
Moody's *Manual*
Poor's *Manual*
Ayer's *Directory of American Newspapers and Magazines*
Cannons, *Bibliography of Industrial Management*
Newark (N. J.) Public Library, 2600 *Business Books*
A Manual of Style, 10 ed., University of Chicago Press, Chicago, 1937
Berg, Rose M., *Bibliography of Management Literature*, American Society of Mechanical Engineers, New York, 1931; Supplement, 1937
Ridley, Clarence E., and Orin F. Nolting, *Municipal Year Book*, International City Managers' Association, Chicago, 1934
Schmeckebier, Lawrence F., *Government Publications and Their Use*, 2 ed., Brookings Institution, Washington, 1939
Style Manual, rev. ed., Government Printing Office, Washington, 1939
U. S. Bureau of Foreign and Domestic Commerce, *Statistical Abstract of the United States*, Government Printing Office, Washington
U. S. Bureau of Foreign and Domestic Commerce, *World Economic Review*, Government Printing Office, Washington, 1934
Mudge, *New Guide to Reference Books*
Who's Who in America
Statistical Abstract of the United States
World Almanac
Book lists from publishing houses
Periodicals giving lists of latest publications in abstract form

The following list of additional source books gives an idea of the variety of available material. For others, ask the local librarian for help.

Rand McNally, *Atlas of the World*
Shepherd, *Historical Atlas*
Dictionary of American Politics
Statesman's Year Book
American Art Annual
Lamb, *Biographical Dictionary of the United States*
Hasting, *Dictionary of the Bible*
Strong, *Concordance to the Bible*
Cruden, *Concordance to the Bible*
Bartlett, *Concordance to Shakespeare*
Grove, *Dictionary of Music and Musicians*
Farrow, *Military Encyclopedia*
Ackermann, *Popular Fallacies Explained and Corrected*
Bartlett, *Familiar Quotations*
Brewer, *Dictionary of Phrase and Fable*
Cushing, *Initials and Pseudonyms*
Cambray, *Dictionary of Political Phrases and Allusions*
Hayden, *Dictionary of Dates*
American Men of Science

Dictionary of American Biography
Dictionary of National Biography
American Labor Year Book
Encyclopedia of Banking and Finance
American Year Book

How to Use Indexes.—Although indexes are designed for general use and hence are simplified as much as possible, the beginner may find the following points helpful:

1. If abbreviations are not clear, there is a key to them on one of the pages in the front of the cumulated volumes.

2. Classification of material in a particular index is arbitrary; the beginner, therefore, has to become acquainted with the plan of a particular index to use it to the best advantage. A knowledge of the plan will enable him to discover other references listed under related headings. The investigator may secure help from librarians in this regard.

3. If few references are given for his special topic, the beginner should consult the more general topics of which it is a part. For example, if the topic Sales Letters does not yield sufficient references, he should consult Commercial Correspondence and Business Writing.

4. The titles of books and pamphlets are often so general that one must consult their tables of contents to discover whether or not they are of value in studying a specific subject.

5. Experienced research workers consult from five to ten volumes of annual publications, usually beginning with the latest and working back. The nature of the study will determine whether or not one needs to trace historical developments or build an extensive background. One who needs to acquire a background for the study will consult a greater number of annual volumes.

Preparing the Bibliography

In compiling the bibliography, the investigator will find himself putting each reference to a rough test to determine its applicability and value before deciding upon its inclusion. Each unit of the reference tells something of importance.

For example, the following reference suggests certain considerations:

BROWN, F. C., "Cost of Deflation in Tires," *World's Business*, 10: 24, December, 1922.
AUTHOR: Is Mr. Brown known? Is he a production man or an economist?
TITLE: Is "cost" a general word or a technical accounting term? Does "deflation" mean physical or economic?
MAGAZINE: Does this magazine carry technical or non-technical business articles? Is this article more apt to be economic or physical?
LENGTH: Can this subject be covered adequately in one page?
DATE: Is an article published in 1922 too old for your purpose?

Of course it is impossible always to determine from the reference the desirability of an article, but a little thought on various units may prevent either loading the bibliography with obviously useless entries or overlooking some good references not apparent at first glance.

In preparing the bibliography, the investigator will find that cards are perhaps the best method of recording references because cards are easy to arrange. He should write each reference on a separate card, usually 3 by 5 inches, though some researchers prefer the 4 by 6 size. He should include information to identify the book easily, usually listing the following details:

a. Name of author in full, surname first.
b. Title of book or article.
c. For a book: edition, place of publication, publisher, date of publication, number of volumes if more than one, and number of pages.
d. For an article: title of periodical, volume number, page number, date of issue (month, day, and year) of the periodical.

Additional information, not to be included in the final bibliography, may be noted on the card; as, for example, the library call number, the scope of the book, bibliography included in the book, the source of the reference, etc.[1]

When the investigator is preparing his bibliography from the card catalogue of a library, he will find it wise to add the call number of a reference. The call number is a convenience when he wishes to make use of a particular book either to take notes or to check references to it later. He will find a book has one or more entries in the card catalogue: one under the author's name; another under the first word of the title; and a third under the subject. A card catalogue containing author cards, title card,

[1] E. C. WOOLLEY and F. W. SCOTT, *College Handbook of Composition*, 3 ed., p. 22.

and subject card arranged alphabetically is called a dictionary card catalogue. The author card is the main entry card because it is the first or principal card made for books where the authors are known. If the author of a book is unknown, the main entry card is under the title. If one forgets the surname of an author of a book, one will save time by seeking the title card rather than the author card. For libraries to list subject as well as titles in the card catalogue is common practice throughout the United States. Individual libraries may vary the number of subject cards included for any one book, however. Few libraries attempt an elaborate listing by subjects, or cross indexing, since such a policy would involve considerable labor and expense because of duplication of cards. Furthermore, cataloguers often are not qualified to give more than two or three accurate subject headings for books.

Since the bibliography is for the investigator's use only, it is usually written in longhand; nevertheless, it must be neat and legible and must have sufficient marginal space to permit such checks or comments as are needed for future use. This list, which serves as a working guide, is not to be confused with the final bibliography included in the report, which gives only those references actually found helpful in making the study.

Determining the Applicability of Bibliographical Data

As soon as the investigator judges that his bibliography is ample for his purpose, he should examine the books and articles to obtain a general idea of the literature available and to appraise it for its adequacy and its importance. If he has a guide to books or to shelves in the stacks of a library, or if he can gain access to the particular shelves containing books on his special subject matter, he can inspect them without the usual delay involved in presenting slips at a call desk.

A number of purposes are served by this sampling of the bibliography. The investigator will ascertain whether he can secure what he wants from his local library. Arrangements may often be made to obtain material not locally available. Some of the large libraries will have pages from any book in the library photostated. Microphotography permits reproductions of magazine articles and books, at small cost, less than that of photostatic or typewritten copies.

The first sampling of the bibliography will cause the researcher to discard some material. It may cause him to search further and hence to discover other material which promises help. Having some familiarity with the printed information in his field, he can decide what further information he needs and by what methods he can obtain it. This preliminary sampling should also make him realize the necessity of focusing his attention upon the information of most importance in solving his problem and hence of avoiding the usual waste of time consumed in pursuing related but not pertinent aspects of a problem. He may find that he needs to define his problem more accurately and to make a second tentative outline to guide him in continuing his bibliographical study.

An investigator needs to look for certain things in books in order to appraise their value for his study. The title page may indicate the profession or business of the author and his standing in it. The copyright date of the book tells how recent is its information, an important point in dealing with such rapidly changing developments as those which occur in advertising, for instance. The number of editions show how well the book has been received. The name of the publisher, combined with that of the author, helps the research worker to judge the quality of the information. The preface gives the author's reasons for writing the book and its scope. The table of contents is usually a topical outline of the contents, which suggests the scope and amount of detail of the text. The investigator should also scan the introduction, appendix, and index, in addition to paging through the body of the book for a clearer impression of its contents.

Determining the Reliability of Bibliographical Data

Thus far, in our consideration of sources, we have been concerned with where bibliographical data may be found and their applicability to the problem. Of equal importance is our concern about the reliability of the data.

In testing the reliability of data, we consider the text and its authorship. The inquiry as to text has to do with

> . . . the determination of all the conditions which may have influenced the production of the document—the date, the place, the purpose, and

the circumstances of its composition; the text, whether in complete form or partially destroyed and whether susceptible of emendation.[1]

In examining the qualifications of an author, one should identify him and then attempt to learn something about his training, experience, business connections, and previous publications. One source of such information concerning the author of a book is the published reviews of the book. Many books are reviewed in the *Book Review Digest* for the year in which the book appeared.

In determining the reliability of published works, the following check list of questions is helpful and suggestive:

1. Why did the author write the document?
2. Is there any indication that facts, generally accepted as true, have been distorted or presented in an unfamiliar sense?
3. Is the author's position entirely independent?
4. Is there any reason to suspect the author of special pleading?
5. Does the author show any bias or prejudice of any sort?
6. Is the author in a position to observe personally the facts he reports?
7. Is the author an accurate observer?
8. Is the author an accurate reporter?
9. When did the author record his observations?
10. Are the facts of such character as could be learned by observation alone?[2]

Taking Notes

While consulting reference books, the research worker will, of course, record pertinent information to be used in the text or footnotes of the report. Cards 4 by 6 inches in size are most often used by researchers for note taking, although some workers prefer either the 3 by 5 or the 5 by 8 size. Some workers use cards of different colors to indicate divisions of material. Others prefer to use pages from loose-leaf notebooks, especially for brief studies. Either may be classified under main headings and subheadings corresponding to the headings and subheadings used in the topical outline drawn up in the second stage of research procedure. The person taking notes should use the heads on cards and file accordingly. Notes should be headed by the entire book title.

[1] WALTER E. SPAHR and JOHN R. SWENSON, *Methods and Status of Scientific Research*, p. 77.

[2] *Ibid.*

In taking notes one finds, through experience, that it is better to read through the information and to record its gist in the form of summaries rather than to take extensive quotations. Quotations can be recorded whenever it is thought desirable to use them as an integral part of the text of the report, but the frequent use of quotations tends to make a wordy style and tedious reading. Notes should be full enough to serve their purpose when the text is being written. They should be arranged in the order of their importance to the study so that the most important ones will come to the writer's attention when they are needed. The important ideas of the author are likely to be found in the topic sentences of paragraphs; hence, scanning them is important.

Making the Final Bibliography

A list of books and articles consulted and found useful during an investigation is an essential part of a report. It usually is placed at the end, but sometimes the references used in preparing each division of the report follow immediately the division.

The alphabetical arrangement of authors is most useful for bibliographies since it facilitates finding a particular author and his work. It is used when a subject is treated expansively. An illustration is that in a well-known report on smoke abatement.

ATWATER, C. G., "Smokeless Fuel for Cities, Its Relation to the Modern By-product Coke Oven," *Cassier's Magazine*, 30: 313–345, May-October, 1906.

BAILEY, G. H., "The Air of Large Towns," *Science*, 22: 197, January, 1893.

BARR, WM. M., *Combustion of Coal and Prevention of Smoke*, Harper & Brothers, New York, 1904, 411 pp.

At present, there is a tendency to arrange items of a bibliography in the order in which references have been made to them in the text. The disadvantage of this arrangement is that one has usually to search through the entire bibliography to find an article by title or by author.

Bibliographies arranged by topics, with alphabetical arrangement of author or title under each topic, are useful in discovering the material available on a given subject. Because this arrangement is difficult and causes repetitions of titles, such bibliographies are less usual than the alphabetical form. An example is the "Bibliography for Marketing Research" in the *Technique of Marketing Research*, pp. 403–422, in which topics are

classified under headings: Advertising, Economics, Graphic Presentation, etc. The topics listed under advertising are

AGNEW, HUGH E., *Advertising Media*, D. Van Nostrand Company, Inc., New York, 1932.

BORDEN, N. H., *Tests of the Consumer Jury Method of Ranking Advertisements*, Harvard University Press, Cambridge, 1935.

CAPLES, JOHN, *Tested Advertising Methods*, Harper & Brothers, New York, 1932.

FIRTH, L. E., *Tested Advertisements*, McGraw-Hill Book Company, Inc., New York, 1934.

LUMLEY, F. H., *Measurement in Radio*, Ohio State University, Columbus, 1934.

STANLEY, THOMAS, *The Measurement of Advertising Effects*, Doubleday, Page & Company (now Doubleday, Doran & Company, Inc.) Garden City, N. Y., 1935.

OBSERVATION

Definition

Observation, used in a loose sense, means seeing merely; in the specific sense of research method, it means seeing with a purpose. It is more than looking at something with the eyes; it is mental perception. It is sensing the import of something. It depends not only upon good eyes and ears; it depends also upon sufficient background of knowledge and experience in the field of study to permit the observer to see what is the significance of the things or facts observed to the solution of the problem before him.

Types

Observation is of two types—observation of phenomena under real conditions, and observation of phenomena under controlled conditions, called experiment.

As an example of observation under real conditions, one may cite the method which a chain-store system uses in collecting data relative to locating a store on one corner of the intersection of two streets. Investigators are detailed to find the volume of traffic, vehicular and pedestrian, passing a prospective location, according to the season, the day, the hour, and the weather. It is obvious that the investigator does not control conditions, and hence that the observation is made under real conditions. If, on the other hand, the investigator is trying to decide what conditions should determine the location of the cigar counter in a drug-store, he will study the number and amount of sales when the

counter is near the door; near the soda fountain; in the center of the room; or in the rear.

Uses

There is no hard and fast rule to determine when observation, experiment, or both observation and experiment should be used as methods of securing information. The judgment and skill of a researcher are always indicated by his choosing the method of gaining information best suited to a particular problem. By this token, both the observational and the experimental methods have been employed in studies concerned with marketing operation, production, finance, and banking. The observational method is now employed in the field of market analysis, where, in the past, the interview method was employed almost exclusively. For example, if a market analyst now wishes to know what brands of food housewives use, he may not interview them; he may secure access to their pantries and make an inventory of brands of foods on shelves. He may not query them about brands of tooth paste, soap, lotions; he may get permission to make an inventory of these items in bathroom cabinets and on bathroom shelves.

The market analyst explains his switch from the interview method to the observational method by saying that expressed market action on the part of consumers is a better gauge of consumer preference than the statement of consumers concerning brands used. He explains that the observational method is similar to the newer psychological approach, which studies psychological problems from the physical and mechanical point of view, observing only overt behavior and drawing conclusions from the actions or responses which are observed.

How to Observe

When an investigator uses the observational method, as a means of securing data, whether his studies are in the field of production, operation, or distribution, he will, of course, record things which come to his notice. He will make an effort to see whether they throw light on the problem which he is attempting to solve. Experience demonstrates that people are not equal in powers of observation and that the same person is not equally skillful under all conditions. An experienced observer ordinarily

gets better results than the raw recruit, and both observe more accurately when rested than when fatigued.

Defects in the observational method fall into three main categories:

1. The observer overlooks a detail or fact.
2. The observer, through prejudice or fear, adds elements which do not exist.
3. The observer fails to see parts in relation to the whole.

To overcome these defects in observation, the investigator should look for certain properties of data. He may well check the data he finds against the following list of qualities:

a. Accuracy is the basis of all observations. This requires a search for the real, underlying facts as well as an accurate recording of them.

b. Reliability of data is also a fundamental requirement. The ordinary rule is to procure data as close to the original source as possible. The information obtained and the sources from which it is taken must be of a nature which can be verified.

c. Impartiality must be absolute in presenting data. Questions must be so worded as to give no clue to the desired answer. No guiding of results in any way is permissible.

d. Applicability of facts gathered to the problem in hand is necessary. There should be no gathering of data merely for the sake of doing so. All data should be pertinent to the specific case.

e. Availability of data obtained is important. The observations should be recorded in such form that they will prove intelligible for purposes of analysis and comparison.

f. Comprehensiveness demands that all necessary data bearing on the subject are gathered. The omission of one factor may overbalance the results.

g. Representativeness requires that the observations gathered should be fully indicative of conditions in the whole field. Sufficient data from each group investigated must be secured to make the results representative.

h. Judgment in weighing, assorting, and evaluating the information obtained in the interviews is essential. No pertinent fact should be omitted, no extraneous fact included, when formulating a judgment.

i. System is needed to make observations quickly, thoroughly, and at a minimum expense.

j. Control of observations should be exercised insofar as possible; that is, care must be taken to see that observations made in a given case will produce results. Decisions must be made as to the number of

observations required and under what conditions they shall be made. Control is essential to the success of any organized survey.[1]

Advantages and Disadvantages

The advantages claimed for the observational method over the personal interview and mail questionnaire method are that

1. It is more objective and accurate.
2. It tends to eliminate the human element.
3. It makes the observer a reporter of human behavior rather than an interpreter of it.

The peculiar asset of the observational method is that things one perceives himself make a deeper and more lasting impression than those reported to him by others. The true significance of the data is likely to become a part of the observer's experience and hence to give him greater help in solving his problem.

On the other hand, certain disadvantages are leveled against the observational method. It is considered to be more costly than the survey method, and it may be much slower. For example, an observer stationed at a hosiery counter to find out whether or not a customer will accept a substitute brand can only record a fact when the phenomenon occurs and as frequently as it occurs. If he wishes to make an inventory of a pantry or a bathroom, he must first gain admission to the house and permission to make the inventory. In the same length of time, he could dispatch many questionnaires.

A second disadvantage of the observational method and perhaps its greatest disadvantage is that it gets at motives—in purchasing, for example—only insofar as they express themselves in overt acts. The assumption that the overt act is a sufficient basis for interpreting the motive behind the act may, or may not, be true. Because the method shows only what people have done or are doing, not necessarily what they will do or why they will do it, the researcher must be careful in his interpretation of results arrived at by observation. Another and an important disadvantage of the observational method is that one is likely to be so impressed by isolated cases of a phenomenon that he thinks it occurs frequently. He may argue his case on the basis of one or two examples, as does the person who says, "It was a very hot summer," because there were two or three extremely warm days.

[1] PERCIVAL WHITE, *Marketing Research Technique*, p. 59.

Until the observational method has been perfected, results secured through it need to be checked by results secured through other methods of gathering data.

Experiment

Thus far in our discussion of the observational method and the experimental method we have followed the lead of J. Eigelberner in considering experiment "simply observation plus the alteration of conditions at will."[1] Researchers using the experimental method in the laboratories of physical science do not experience great difficulty in controlling variables such as temperatures, quantities, etc., and keeping stable the item being measured. Researchers using this method in the field of production likewise have controlled conditions almost as in a laboratory. They, have not, however, been able to apply the experimental method in the field of distribution with equally happy results; in this field the experiment method is still in the pioneering stage.

For the information of readers who may judge it the best method by which to secure data in research, particularly in marketing, we call attention to four fields in which its use has been extensive.

1. In testing advertising campaigns and advertising media
2. In testing sales-promotion devices
3. In determining prices
4. In testing products and packages.[2]

INTERVIEW

Definition

An interview, defined as "a conversation with the purpose of tapping a reservoir of unrecorded experience," is one of the most common means of securing information. Everyone uses the interview method to secure information; salesmen, psychiatrists, personnel managers, lawyers, social workers, and reporters find it an indispensable tool of trade. An executive's conversation with his colleagues, employees, and customers, whose knowledge and opinions he often seeks in the process of making decisions, is also an interview.

[1] J. EIGELBERNER, *The Investigation of Business Problems*, pp. 92–93.

[2] For an explanation of particular techniques for each use, see Lyndon O. Brown, *Market Research and Analysis*, pp. 98–104.

Types

There are two main types of interviews: the personal interview, in which the investigator and the respondent meet face to face; and the telephone interview, in which the investigator obtains his information from the respondent by the use of the telephone.

In the telephone interview, the investigator will use a questionnaire carefully prepared in advance, because experience has shown that the respondent will answer willingly only a very limited number of questions, and the success of the interview depends very much upon making each question count because of its wording. For example, interviewers handling coincidental telephone surveys are instructed to say, "This is the Radio Bureau. Will you please tell us what radio program you were listening to when called to the phone?" It is necessary to ask the question in this way to avoid a reply that the radio was just shut off in order to answer the phone. The investigator making the interview in person may conduct it informally or according to a prearranged pattern. We shall not concern ourselves in this section with the subject of preparing the questionnaire frequently used in interviewing, since it is included in Chap. V as a part of the discussion of the mail questionnaire.

Here we are concerned primarily with the personal interview as a process in which a number of field workers or reporters are routed through the area under study and are equipped with a prepared list of questions, on which they are to report the results of individual interviews.

When Used

The interview may be used to secure objective facts, such as statistics on frieght-car loadings or number of times a retailer turns his stock; subjective data, such as individual opinions, attitudes, and preferences, as for silver patterns or for fragrance in toilet articles; and interpretations, such as explanations for using one air line rather than another.

Interviews, both personal and telephone, are also the means of checking the usefulness of mail questionnaires and the reliability of answers to them. By means of the interview, for example, it was discovered that answers to a mail questionnaire in a survey to test the influence of advertising on a product were not representative of the entire group to which the questionnaires had been

sent. Random interviews with a few of the women to whom questionnaires had been sent disclosed that only those who were already favorably disposed toward the product before the advertisement appeared had replied to the questionnaire.

The personal interview is generally regarded as the most effective method of getting information. It is used when the commercial problem is complex and when the information needed to solve it cannot be secured easily in any other way. It is a well-known fact that many will give information orally who will not put it in writing.

The personal interview is also generally considered the most costly, which may or may not be true. On the subject of cost of interviews, the following is worth pondering:

> Mail questionnaires are much less frequently used than formerly in professional research. Many research organizations have representatives in all parts of the country, and when so set up, it is demonstrable that personal interviews can be obtained at lower cost with greater accuracy and correct spotting by types of people and by geography. Control of these elements is lost in the mail questionnaire. Usually the responses are 10 per cent to 15 per cent; the cost of materials and postage is frequently higher, per interview secured, than the entire cost of the personal interviews. . . . In one community, on random calls, one investigator can gather as many personal interviews in ten days as can be gathered by a mailing to 5,000 names with responses lagging over several weeks. However, where names of people who are to be interviewed are specified, personal interviewing goes slow because of difficulties in contacting the specified people, perhaps at addresses far from each other.[1]

Although the personal interview may be expensive to conduct, the telephone interview permits wide coverage of the middle- and upper-income groups in a limited locality at a relatively low cost. It permits calls at a specific time of day, and the interviews may be spread to any section of the city desired. The telephone interview has been used widely to check radio audiences and the price of foods. As a means of gathering information, it has grown rapidly.

The Arnold Research Service, predecessor of the Market Research Corporation of America, has made the following list of

[1] FRANK COUTANT and J. RUSSELL DOUBMAN, *Simplified Market Research*, p. 90.

the circumstances when telephone interviews can and cannot be used to advantage.

Telephone interviews can be used to advantage:

1. Where the information to be obtained is fairly limited.
2. Where the cost is an important factor.
3. Where widespread and unclassified interviews are desirable.
4. Where classification by type of neighbor alone is necessary.
5. In reaching selected names, such as
   a. Individual magazine subscribers.
   b. Known purchasers of certain products.
   c. Automobile owners from lists.
   d. Certain classes of business people where lists are available.
   e. Certain types of stores.
6. Where a great many interviews must be made within a very limited length of time (as during the course of a given radio program or when a widespread, quick checkup is desired).
7. Where definite facts alone are necessary.
8. Where housewives alone are to be interviewed.
9. Where businessmen must be reached either at the office or at home.
10. As a check on radio programs heard and preferred.
11. In preference to mail questionnaires, because the number of returns and the cost per return, the time to be consumed, and the type of neighborhood, can all be controlled. The cost is rarely greater than mail and may be very much less.

Telephone interviews should not be used:

1. When the information to be obtained must be classified as to
   a. Buying power
   b. Rental value
   c. Income
   d. Age
   e. Nationality
   f. Intelligence, etc.
2. When observation is an important factor.
3. When the questionnaire is lengthy or the information desired is extensive, there is little advantage in cost and results are definitely less accurate.
4. When an analysis of attitude is desirable.
5. When the comment and interpretation of the answers vitally affect the results.
6. When a discussion of new uses, criticisms, appeal, etc., is desirable.
7. When the interviewer's intelligence and training must evaluate and correct the answers and discard the palpably questionable or false.[1]

[1] American Marketing Association, *The Technique of Marketing Research*, pp. 126–127.

Disadvantages

The personal interview has certain weaknesses as a method of gathering data which can be overcome if they are recognized. Answers may be inaccurate and offhand; they may be exaggerations; they may be influenced by what the respondent thinks the interviewer wishes to hear; or they may be flippant or untruthful. The flexibility of the interview gives an opportunity for extending the work along unprofitable lines and of wasting time and hence money. The inexperienced interviewer does not distinguish between opinion and fact. He may give too much weight to the answers of subexecutives and employees who think they know just what is wrong with a business and who have for it a simple solution.

The usefulness of the personal interview is always restricted by the limitations of time, space, and expense. Whenever the time or scope of a study necessitates gathering information quickly and perhaps employing inexperienced field men, errors are likely to creep in.

In telephone interviews, certain weaknesses are inherent, such as:

1. There can be no visual check on the respondent.
2. There can be no opportunity for observation.
3. There can be no material for comment as an aid to interpretation.
4. There can be no way to forestall or overcome the possible nuisance reaction of respondents.
5. There can be no means by which the interviewers can correct the answers and discard the manifestly incorrect and false.

Another weakness of the telephone interview is that not everyone has a telephone; and the telephone is too costly an interview except for investigators within a given city. The number of questions which will be answered over the telephone during any one interview, as has been said, is small because many people are irritated by being called to the telephone to answer questions in which they have no personal interest. The anonymity of the telephone interviewer also works to his disadvantage.

Advantages

There is an old saying, "In a multitude of minds, there is wisdom." The truth of this saying is one reason for conferences on

important matters. It is also a reason why many people who will not answer a mail questionnaire will answer questions in an interview; they will give fresher information; they will volunteer information.

If the interviewer tactfully controls an interview, he can make it as flexible a method of getting data as is observation. He can change the technique of his questioning to suit the circumstances. The interview may approximate the atmosphere of the dinner table or of the smoking car in inducing people to pour out spontaneous comments, ideas, and suggestions. And the fact that it may be informal gives it many an advantage over other methods of getting data.

Over the mail questionnaire method of securing information, the personal interview has the five following special advantages:

1. The interviewer can, to some extent, control the situation.
2. He can interpret questions.
3. He can clear up misunderstandings.
4. He can secure fully and accurately the most representative replies.
5. He will receive firsthand impressions which will throw light on the data procured by his questions.

In cases where the only data available are the opinions of experts, the interview is extremely valuable. By interviewing a number of experts, the investigator can determine what the consensus is, and he can be guided accordingly. For example, in considering the launching of a new business, an entrepreneur would wish to interview specialists carefully chosen from varied fields—such men as efficiency engineers, bankers, presidents, and executive secretaries of trade associations, experts in advertising and selling, lawyers, and prominent wholesalers and retailers. He may also wish to interview the promotion heads of newspapers and magazines.

Who Is Interviewed

Although the interview is a valuable tool because it provides a means whereby the advice of several experts may be obtained, it is a useless tool unless the interviewer chooses carefully the persons whom he plans to approach. If the purpose of the investigation is to discover trends, foresight and astuteness in picking out those who are best fitted to supply information on the subject not

only save considerable time, but also make the results of the survey more authoritative. If the purpose is to sample opinions or facts in a consumer survey, the care with which representative respondents are chosen may well determine the success or failure of the survey. The reader will recall that in the illustration of the food consumers' survey in Chap. III,[1] the investigation was planned to cover a given number of respondents in each stratum. The following instructions to interviewers indicate how definitely they are instructed as to the people they interview:

Approximately 20 per cent of the interviews should be made with families in the "prestige" group—the families of professional men, executives, semiprofessional people, owners of businesses, etc. The remaining 80 per cent are to be made with the families of wage earners—mechanics, policemen, factory workers, skilled and unskilled laborers, railroad workers, clerks, truck drivers, janitors, etc.

The interviews with families in the Canned Soup Survey and in the Readership Survey are to be made on the street which represents an accurate cross section of the total population of your city. Eighty per cent of the interviews are to be made in a single-family home and 16 per cent in multifamily dwellings.

Of the calls made on dealers, 70 per cent are to be independent and 30 per cent are to belong to the corporate chains. Interviewers are instructed to obtain interviews with the husband or with the other male members of a family whenever it is possible to do so. Children are to be interviewed to provide the company with direct information on their reactions toward the soup and advertising for it. Physicians and dietitians are to be interviewed, also.

Requisites of the Interviewer

As every research expert knows, an interview is no better than the man who makes it and a survey is no better than the total abilities of all the men engaged in interviewing. Hence, high standards must be maintained in the selection of men who make interviews, in their training, and in their control and supervision. The minimum requirements made of the interviewer are that he have a good education; that he be energetic, neat in general appearance, and assured and self-confident in approach; that he be a man of strict integrity, persistence, and tenacity. Preference is usually given to the "salesman" type of interviewer, since he must sell the respondent on the idea of giving the information

[1] P. 42.

desired of him. He must be a good listener and a tactful guide of the conversation to keep it relevant. This responsibility requires the interviewer to have good manners and good judgment. Special skills, such as ability to type well and to drive a car, are assets for the interviewer who seeks to do with speed and accuracy the kind of research which requires him to make many interviews over wide areas and to report them.

Heads of research companies and writers on the subject put a great deal of emphasis on the type and qualifications of men to make interviews. The following is the list of Bingham and Moore, whose *How to Interview* gives an exhaustive treatment of the subject of interviewing. They differentiate between interviewers of the "masses" and of the "classes." Those who interview all classes of people should have

1. Acceptable personality
2. Robust health and energy
3. Initiative in gaining interviews
4. Good memory
5. Truthfulness or accuracy of report[1]

Those who interview executives and other authorities to secure basic facts and expert opinion should have the following characteristics in addition to those given above:

1. Ability to express themselves clearly in writing
2. Good judgment
3. Imagination under control
4. Special education in business so they can digest facts as they are given to them, make deductions promptly, and get a complete picture in one interview
5. Ability to contact people of all classes
6. Insatiable curiosity and an inquiring mind which can be satisfied only by the reasons back of the facts
7. Ability to record with precision and without color or bias information obtained from others[2]

An especially high type of personnel is required where the interviewer without supervision plans and conducts his interviews. He must be resourceful, if he is to gain an interview; pleasing, if he is to induce people to answer his questions; diplomatic, if he disagrees with his respondent; alert, if he is to keep the interview

[1] WALTER VAN DYKE BINGHAM and BRUCE VICTOR MOORE, *How to Interview*, p. 105.
[2] *Ibid.*, p. 114.

on the right subject; and a good general, if he is to control the interview so that he gets the information he desires in the minimum of time and without friction.

Training of the Interviewer

In addition to pleasing personal characteristics, the successful interviewer needs to have a thorough training in the fundamentals of his task. Every research department of a corporation or company specializing in research has its own ideas of choosing and training men. The description of the course of training given novice investigators by the Hooper-Holmes Bureaus, Inc., who have long made confidential reports to insurance companies and more recently radio-listening surveys for the Joint Committee on Radio Research, are suggestive.

All inspectors are employed and trained by our branch managers. Therefore, the methods used in training inspectors vary somewhat in our 80 branches, owing to local conditions.

In general, however, every man in his training begins in the office learning what our business is about, studying our various forms of reports, of which there are about 110, and studying our Inspector's Manual. He reads many completed reports by fully trained inspectors. He is taught how to use the numerous directories, how to use our own extensive files of data, and how to consult court and police records and other official sources of information.

After several weeks of this office work, the man in training is assigned simple life or credit cases in residential districts, where he verifies informants, while an older man is working the chief sources of information. During this period, the man in training is under the direction of the Chief Inspector, who is generally the best inspector in the office and the oldest in years of service. Frequently, the man in training accompanies the Chief Inspector, or a more experienced man, on his rounds, seeing how informants are selected, approached, and questioned. In many offices, the new man is assigned to several fully trained inspectors, so that he may observe and learn many ways of accomplishing his purpose.

In the offices which do not send men along with older inspectors, a recheck in the field is made of all the interviews of the new man so that his ability and accuracy can be checked and his faults pointed out.

If his progress is satisfactory on this work during his first month or two, he is assigned simple cases. All of his work is carefully reviewed by the Branch Manager or Chief Inspector, and his mistakes pointed out. Frequently all his work in the field is duplicated by another

inspector and omissions, mistakes in judgment, and discrepancies are shown to him.

Usually, after six months of this intensive training, a new man is capable of handling almost any kind of case or survey, although many men require a year of such training before they reach this point. By this time the Chief Inspector and Branch Manager know what kind of work the new man is best equipped to handle, and he is assigned a definite territory in a residential or business district.[1]

According to the American Marketing Association, the minimum training should give interviewers

. . . a general outline of the study; a description of the whole field to be covered, as to its characteristics; some instructions as to the reporter's conduct in the field; a practical understanding of the objectives; the significance of each question; the importance of a true and full answer; and certainly, the most emphatic precautions against bias.[2]

Technique of the Interview

Since interviewing is an art instead of an exact science, proficiency in it is a combination of a great many specific habits, skills, and techniques. The instructions to the interviewer are simple enough, as shown by the following; skill in their application however comes only with practice.

1. Give your own name and that of the company for which you work unless instructed otherwise.
2. Gain the confidence of the respondent by a frank explanation of the purpose of the survey and the use to which it is to be put.
3. Arouse some desire or interest on the part of the respondent.
4. Show that co-operating by giving information is helping to find truths.
5. Secure specific and full information immediately.
6. Close the interview promptly.
7. Express appreciation to the person who has granted the interview.[3]

A sympathetic hearing is secured by the interviewer through the adroitness and skill practiced by the salesman. He may impress the respondent that his or her family is speaking for

[1] From "Why Hooper-Holmes Produces Results in the Market Research Field," a brochure distributed by the Hooper-Holmes Bureau, Inc.

[2] American Marketing Association, *The Technique of Marketing Research*, p. 52.

[3] WALTER VAN DYKE BINGHAM and BRUCE VICTOR MOORE, *How to Interview*, p. 105.

thousands of other American families. He may mention the name of an acquaintance in common; he may show that he has nothing to sell; he may take the respondent into his confidence. He should be understanding and sympathetic with the mood of the respondent; he should not cross-examine or nag; and he should usually not refer to the prepared list of questions. Necessary facts jotted on a newspaper or envelope may prevent the respondent from "freezing up," as he may do if he sees his answers carefully recorded on a formidable printed form.

The principles that govern an effective interview are so many that they cannot be set down and illustrated in the scope of this book. Those who wish to pursue the subject further will find an excellent chapter, entitled "Learning How to Interview," in *How to Interview*.[1]

[1] *Ibid.*, Chap. III.

CHAPTER V

COLLECTING DATA: QUESTIONNAIRE

Mail Questionnaire: *A.* Definitions; *B.* Types; *C.* Elements; *D.* Subject matter; *E.* Grouping and arrangement of questions; *F.* Phrasing questions; *G.* Salesmanship: 1. In the covering letter; 2. In the mechanics of the questionnaire; *H.* Number of questionnaires; *I.* The mailing list; *J.* Pretesting mail questionnaires; *K.* Following up the questionnaire; *L.* Checking results of the questionnaire.

MAIL QUESTIONNAIRE

Just as the interview has been the most frequently used method of collecting unrecorded data near at hand, the mail questionnaire has been the most frequently used method for collecting them when they must be obtained from a relatively few people living in widely separated areas. Today, as was indicated on p. 74, the mail questionnaire is being supplanted by the personal interview as a method of procuring unrecorded data both near at hand and in widely separated places. The reason for this change is that many research organizations, as a result of finding that the mail questionnaire is less effective than the personal interview in cost, in accuracy, and in the correct spotting by types of people in different territories, have employed representatives in all parts of the country to do research work.[1]

The purpose of the questionnaire is to procure a cross section of fact, opinion, or cases to be used in solving a problem. Because of the importance of the mail questionnaire in research work in many branches of business, even though it has lost some favor in marketing surveys, it is given a separate chapter.

Definitions

The questionnaire is a carefully prepared series of questions which have been duplicated, typed, or printed, and distributed to a predetermined number of people on a mailing list in order to

[1] For further discussion of this relatively new point of view in regard to personal interviews as a method of securing unrecorded data, see Frank R. Coutant, "Mr. Dough, Your Neighbors Like Consumers' Surveys," *Printers' Ink*, 165: 13: 42, December 28, 1933.

procure information from them. A good questionnaire is one that procures from the mailing list enough replies, and representative replies to be useful in solving the problem responsible for the investigation. A letter, designed to arouse the interest and effect the co-operation of the recipient, usually accompanies the questionnaire. It is called the *covering letter.*

Types

The major classifications of the questionnaire are (1) mail, (2) personal interview, and (3) telephone. Each type of questionnaire has individual characteristics which make it the most appropriate of the three types for procuring information for a specific problem. No one of the types is superior to the other for all purposes.

The mail questionnaire has many assets. It is a good method by which to procure quantitative data under certain circumstances. It will procure factual data where the questions are clear and easy to answer. It is considered to have economy when a relatively few specific and widely separated people should be reached; flexibility; and orderliness. Its cost is only that of preparation, handling, mailing, and return postage. Although the total cost of the successful questionnaire may be high, since this cost must include the cost of the unanswered questionnaire as well as that of the answered one, it is still likely to be less than that of the personal interview when the investigator wishes to reach the people specified. How much less is the cost of the mail questionnaire depends upon how high is its percentage of replies.

The mail questionnaire is flexible because it may be directed to any class of people or to any territory; in other words, it provides wide geographic coverage. A good questionnaire may be multiplied by the hundred, the thousand, or the hundred thousand, while a good interviewer obviously cannot be so multiplied. The mail questionnaire is a controllable sampling technique: it provides, for example, an orderly method of reaching every fifth, tenth, or hundredth person on a mailing list. It is better adapted than is the personal interview to securing information from apartment-house dwellers. It encounters no difficulty in entering doors, while the personal interviewer is likely to be refused admittance unless he is personally known by doorman, housewife, or head of the family. Perhaps its greatest asset is that the answers

it secures are likely to be more accurate. The human element, which sometimes causes bias in the interview, has been to some extent eliminated.

On the other hand, the mail questionnaire has certain limitations. Its first limitation is, as has already been pointed out, that the cost per completed return, or per usable return, may be high. If each questionnaire costs 10 cents, as a result of the cost of the mailing list, the paper and envelope, the typing, multigraphing or printing, the folding, stuffing, addressing, and stamping; and if returns are 10 per cent, the cost completed return is $1, a cost higher than that of most interviews. If the individual questionnaire costs 20, 30, or 40 cents, as a result of an excellent grade of paper and cover page, the cost per completed return will increase accordingly. Even if the double post card is used, and its returns are 10 per cent, its cost may be 20 cents.

Another limitation of the mail questionnaire is that it is a slow method of securing information. Not only are the mechanics of building a mailing list and preparing and mailing the questionnaire time-consuming, but the time required for sending the forms and for receipt of replies through the mails is considerable. Questionnaires mailed in New York for the Pacific Coast, unless sent by air mail or telegram, will require a week at least for first returns, and three or more weeks for final returns. Studies made by the personal-interview method, when an organization is available, can be made in less than a week.

A third limitation of the mail questionnaire is that it is not suited to obtaining certain types of data. The trend in commercial research is to discontinue its use in securing subjective data such as why a person prefers one product to another. The mail questionnaire cannot secure accurate data about the age of people or their economic condition. It cannot vary the order of questions to suit the individual case of the respondent. It cannot procure much of the voluntary information which many correspondents give to an interviewer.

A fourth limitation of the mail questionnaire is that it can contain only a few questions. Except in cases where the respondent is under obligations to answer questions, as many are who receive requests from various departments of the government, questionnaires with few questions will receive more replies than those with many questions.

A fifth limitation of the questionnaire, and perhaps its grestest weakness, is its inability to procure a representative sample. Those who answer are a selective group, *i.e.*, users of the products are more likely to respond to a consumer survey than non-users. The middle-income class of people respond better than do the low- or the high-income class. People who like to write will respond in greater numbers than those who do not like to write. People of some sections of the country will respond better than those of another section, or the inhabitants of one city better than those of another.

The assets and limitations of the personal-interview questionnaire and the telephone-interview questionnaire have been presented in the preceding chapter on page 77.

Compared with the questionnaire used in the personal and telephone interviews, the mail questionnaire is an unyielding form of investigation. Alterations, modifications, and explanations are impossible after it has been sent out. On the other hand, it avoids the bias which may result from personal interviews; it sometimes procures extensive data at a reasonable cost; and its questions are usually answered by people who give time and care to the task.

Elements

The standard elements of the questionnaire, examples of which are given below, are (1) name of the company making the survey or its agency; (2) subject with which it deals; (3) covering letter; (4) explanations; (5) corollary information; and (6) identification. These elements are illustrated below.

1. The name of the company establishes a contact between the writer and the recipient, *e.g.*:

(*a*)
DEPARTMENT OF COMMERCE
Bureau of Foreign and Domestic Commerce
Marketing Research Division
Washington, D.C.

(*b*)
BETTER HOMES AND GARDENS SURVEY
(November, 1938, issue)
Meredith Publishing Company
Des Moines, Iowa

2. The subject of the survey appears on the front of a questionnaire made up like a booklet. Like the title of a booklet, it appears at the top of the cover page of the questionnaire. Illustrations of the subject are:

a. Size of Audience for Jack Hilton Broadcast
b. Business Research Corporation Store Service Survey

3. The covering letter and/or prefatory paragraphs are an important element of the questionnaire because they can help to bring answers. What is said in the covering letter and how it should be said are determined by the respondent's degree of interest in the subject being investigated. If he is interested, he will answer a direct and brief request for co-operation. For example, most women are interested in house plans. The request for preference in house planning used by the Long Beach Company, Michigan City, Ind., brought a satisfactory number of replies. It reads:

Covering Letter

As you know, there is an acute shortage of modern, livable homes in Michigan City. The shortage has existed for years. Everyone complains—and no one has done anything.

Now the Long Beach Company is going to build those badly needed homes—lots of them. The purpose of the enclosed questionnaire is to determine exactly what kind of homes to build—what kind of homes Michigan City people want.

Filling out the questionnaire will tell us just what *you* think those homes should be like. Your ideas will be combined with those of your friends and neighbors in making plans for the first of the new homes we are going to build. This first home will be a *model home!*

Filling out the questionnaire will be fun, then, for you'll actually be planning a real home. And filling out the questionnaire will be profitable, too, for the Long Beach Company is giving a *free 1-year subscription to* BETTER HOMES AND GARDENS to everyone returning the questionnaire.

So sit down now and fill out the questionnaire. Then drop it in the mail-box—no postage is required—and your subscription to BETTER HOMES AND GARDENS will begin with the next issue.

In advance, thank you for your co-operation and help in planning Michigan City's Model Home.

Very truly yours,

Prefatory Paragraphs

Will You Help Us Plan a Home?
The Long Beach Company
Builders of Long Beach—the Ideal Community

This questionnaire has been prepared so that you may help us plan an ideal home in Long Beach . . . a home for Michigan City people.

By filling out and returning the questionnaire, you will be doing a service to yourself and to all Michigan City, and we earnestly solicit your co-operation. Remember—returning the questionnaire obligates you in no way. You need not sign your name to the questionnaire if you do not wish to do so.

So, fill out the questionnaire, and return it now—before you forget. Thank you for your help.

A second common method of getting co-operation for a questionnaire is to offer a premium or reward. *Successful Farming*, published by the Meredith Publishing Company, offered a choice of a book, *My Garden Helper*, or *Ideas That Work*, to subscribers for filling out and returning a questionnaire of 12 pages in booklet form.

A third method is to appeal to the instincts of helpfulness, pride, self-interest, or vanity of those being questioned. The request for co-operation at the beginning of a survey for food reads: "You are the spokesman for hundreds of American families." Another from the editor of *Esquire* magazine reads: "Would you go out of your way to help us stay on the good side of one of our advertisers?" And still another from a research consultant says: "A manufacturer has employed me to do something for him, and I need your help."

A fourth, and often-used, method is to promise to send a digest of the results of a questionnaire. This appeal is most effective when the questionnaire is sent out over the name of a person whose position gives assurance of the promises being kept and of the recipient's receiving information in which he has a self-interest. For example, Professor Howard Hovde's covering letter for the questionnaire on *Payroll Policies in Philadelphia* contains this promise: "You will be furnished with the compilation of the results. All individual returns will be held in strict confidence; only total figures and percentages will be used in the report. This is the first time a study of this nature has been made."

A fifth method is to appeal to the respondent's sense of humor. It is employed effectively by *Time*. The frankness of the appeal is disarming. The request reads: "An illuminating inquisition of *Time's* subscribers. Like all questionnaires, this one is an imposition, although it is more interesting than most, and will not take five minutes to check. The answers to the questions

will materially aid *Time* to make *Time* a better magazine for its readers." *Time* appealed partly to pride and partly to humor, beginning its questionnaire with: "Do You Own a Horse?" and by illustrating it with the hilarious drawing of a good-humored nag.

4. Explanations, the purpose of which is to persuade respondents to answer and to make answers accurate, should be complete and, of course, courteous. Usually explanations consume a few lines only of the questionnaire, such as those of the pay-roll policies survey just referred to, which reads:

> The individual returns of this survey will be held in *strict confidence*, and destroyed as soon as the total figures have been compiled. The purpose of this study is to determine the relationship of pay rolls to the time of payment by volume and by days of the month, and has been described more fully in the attached letter. The information which is sought will be used for statistical purposes only. The complete results of this study will be made available to you.

Explanations have come to occupy considerable space in the questionnaires of some companies, General Motors Corporation, for example. Its two-page questionnaire on General Motors automatic transmissions devotes two 8½- by 11-inch pages to definition, explanation, and illustration, in order to help the respondent to answer the questionnaire intelligently.

5. Corollary information, such as the occupation, sex, age, nationality, and income of the respondent, will serve as a basis for proper classification and interpretation of results.

An example of corollary information is the items asked for in a *Better Homes and Gardens* survey.

Reader's Name_____ Sex: M.____ F.____ Date_____
St. & No._____ Home: Owned____ Rented____ Apartment____
Total Family Income (all members in home): Under $1,000____; $1,000 to $1,999____; $2,000 to $2,999____; $3,000 to $4,999____; $5,000 to $9,999____; $10,000 and over____.

If those drawing up the mail questionnaire could appreciate the light that some of the corollary information throws on replies, they would more frequently design the mail questionnaires to include it. What women spend for hose becomes more significant when broken down by age, by place of residence, by income, by occupation or vocation, all of which items can be a part of corollary information.

6. Identification is usually provided on the mail questionnaire form, *i.e.*, spaces for the name and address of the respondent and the date on which the questionnaire is filled out. Such blanks are usually placed at the end of a questionnaire rather than at the beginning. Respondents may fill in name and address blanks at the end as a matter of course; they may assume a defensive attitude toward blanks at the beginning. If it is felt that the request for names and addresses will decrease the number of replies, and names are significant to the study, serial numbers may be used to identify the persons replying and to indicate the numbers of the returns; in other words, the questionnaire may be keyed. Many questionnaires do not call for names to be signed. Geographical identification can be attained through using a different color of paper for each part of the country.

Subject Matter

Much of the success of the questionnaire depends upon a correct decision as to what and how much ground shall be covered —what questions shall be asked. Such a decision results from a full understanding of the problem and the information required. If the working plan has been made wisely, the general nature of information to be sought by the questionnaire has already been decided upon, and at this stage of the particular piece of research it is necessary only to define the information sought.

There are at least two procedures followed in deciding what questions to include in a questionnaire. Some researchers begin by writing down all the questions which at first thought seem significant to the purpose of the study; then they reduce them to a practical basis by combining certain questions and eliminating others; and finally they arrive at only the basically important questions.[1] In the early stage of the first procedure, they pay little attention to the form or to the importance of the questions. They select the questions by procuring answers from perhaps 500 persons to see what questions are pertinent and well phrased.

Other researchers seek to build the permanent questionnaire at once on the basis of the information they have procured and the thinking they have done in the preliminary stages of investigation. They decide basic elements that indicate questionnaire

[1] FRANK R. COUTANT and J. RUSSELL DOUBMAN, *Simplified Market Research*, p. 97.

data for a solution; they keep all questions pointed concisely toward that purpose; and they use as few questions, as possible. They know that, if they include a question which does not have a pertinent bearing, the reader will sense it and not answer. They know that the number of respondents who answer is determined partially by the number of questions.

This first process makes it necessary by tests to eliminate the ineffectual questions, to find out what questions are pertinent to the study and in what degree, on what points respondents are articulate, and on what they have information of real importance.

H. G. Weaver seems to follow the second procedure, if we can judge by his advice in regard to deciding upon questions, which is as follows:

> Before even setting out to design a questionnaire we should ask ourselves these questions:
>
> 1. What do we want to find out?
> 2. Why do we want to find it out?
> 3. What can we do about it after we find it out?
>
> —some questions are important, but it is well-nigh impossible to get answers.
>
> —others are interesting and may satisfy a healthy curiosity but are not suggestive of any direct course of action.
>
> —still others are significant as bearing on an individual transaction or limited group of transactions, but the answers are practically worthless in terms of broad general averages.
>
> It is important to weigh carefully the foregoing considerations incident to designing a questionnaire. Such a course would, I believe, eliminate a lot of superfluous questions, and this is important, not only out of consideration of the consumer's time and effort but from the standpoint of keeping down the expense.
>
> As a dramatic example of this, it is understood that it costs the United States Census close to $1,000,000 to add one additional question.[1]

A few general rules will help to guide the investigator in deciding what kind of questions to ask, once he has determined what he wants to find out, why he wants to find it out, and what is to be done with the information. The rules may be listed as "don'ts" and "do's" in framing questionnaires.

1. Don't ask anything too personal. A housewife is unlikely to tell her husband's salary or her own allowance, especially if

[1] H. G. Weaver, "Consumer Research Technique," *American Marketing Journal*, July, 1934, p. 116.

she is asked to give her name. She probably will resent being asked to give her age or to talk about the education of herself and family. Very little faith can be placed in the reliability of answers to such questions.

2. Don't ask a question calling for averages or percentages, if avoidable. The respondent will prefer to throw a questionnaire away rather than to take time to look up records and make computations in order to answer the question.

> Consumer and retailer questionnaires [says Aesop Glim] should include no "What percentage of the breakfast foods purchased is ready-cooked?" or "What percentage of your sales of breakfast foods is represented by *XY* brands?" Answers to such questions will have little value. Neither consumer nor the retailer thinks in terms of percentages. That is something for either the reporter or the tabulator to work out. Find out how often the consumer serves ready-cooked breakfast foods, and how often she serves the non-cooked product. With the information, the necessary percentages can be worked out.[1]

3. Don't rely heavily on the respondent's memory, for you will get guesses instead of facts if his memory fails him. Ask only for data which can be clearly remembered. A businessman may recall the names of the magazines he subscribes to, but he may have trouble remembering his favorite writer in each or what advertisements attracted his attention. What he remembers, psychologists tell us, depends more upon intensity of stimulus and associations that upon recency of happening. Because of the intensity of the stimulus, he may recall what he paid for his first meal in a diner and forget what he ate for dinner last night. Because of associations, he may tell you where he has spent the last ten New Year's eves and forget where he spent the evening just a week ago.

4. Don't ask the impossible. As a general rule, seek facts, not opinions. Too often questions as to attitudes are impossible to answer. The old favorite, "What influenced you to buy?" is usually a question that one cannot answer. "What do you think of the box in which *X* is sold?" is another type of question the average respondent is at a loss to answer. Almost all "attitude" questions and those calling for a long discussion are better left to the personal interview.

[1] AESOP GLIM, "The Swivel-chair Research Man," *Printers' Ink*, December 19, 1929, p. 150.

Two "do's" of importance in building a questionnaire are the following:

1. Ask only what has a direct bearing upon the problem to be solved. It is important that the questionnaire be as brief as possible. Busy housewives and businessmen usually will not take time to fill out a long mail questionnaire. If future policy is to be determined by the answers to a mail questionnaire, everything should be done to obtain as wide a response as possible. Limiting the questions to those which directly bear upon the problem tends both to keep the questionnaire brief and to secure a higher percentage of responses. An over-long mail questionnaire incurs needless expense for the organization sponsoring it. Every question above the number needed means unnecessary outlays for tabulation and interpretation.

2. Provide all questions with blanks for conditional answers. Often the respondent cannot answer unequivocally "yes" or "no" to a question and prefers to answer "maybe" or "don't know." Questionnaires which contain squares for the "yes's" and the "no's" should also contain squares for the "maybe's" and the "don't know's" and a blank line on which the respondent may write his own answer in place of a fifth question. *The Architectural Forum* questionnaire entitled "What's the Biggest Headache in the Building Business?" contains a blank line which the respondent may fill in as he likes.

And what do you do with your old copies?

1. File them?..... ———
2. Give them to friends?..... ———
3. Sell for old paper?..... ———
4. Start fires?..... ———
5. Or_____

The "don't care" answer, contained in a questionnaire in booklet form distributed by the Customer Research Staff of General Motors, is an example of the conditional answer.

Turret Top

Provides additional safety and durability with a more pleasing appearance by covering the entire top with a single sheet of steel, seamlessly welded to side panels and scientifically insulated.

Does your PRESENT CAR have this feature?

____YES ____NO

Would you want it on your NEXT car?

____YES ____NO ____DON'T CARE

Grouping and Arrangement of Questions

If the investigator, in preparing the questionnaire, adhered to the course most generally followed, he determined to some extent the arrangement of his questions at the time he chose them. He will then at this point test the questionnaire with the psychological aspect of the questions in mind. If the investigator has, however, built the preliminary questionnaire and by testing it found what questions are pertinent to the study, what are most important, and on what questions respondents have information and are willing to give it, he is ready to consider the grouping of the questions and the arrangement of the groups. He seeks to condense the questionnaire as much as possible, avoiding indefiniteness and ambiguity. He will not permit two questions to remain on the questionnaire if one will serve. He may find that two or three questions can be made to secure all the answers for which he has prepared five or six, because questions ungrouped are likely to be concerned with subordinate issues, answers to which may be unnecessary when the main issues are solved. By grouping subordinate questions under main questions and arranging main questions psychologically or logically, he will be able to construct a complete picture from answers to a few questions.

In arranging questions in the best order, the investigator observes such principles as

1. The first one or two questions should be easy to answer.
2. Important questions should be near the head of the list.
3. One question should stimulate interest in the next.
4. Questions should be arranged in an order to aid the respondent's memory.

Because many of the principles of arrangement of questions are concerned with the persuasiveness of the questionnaire, they are discussed under the heading Salesmanship in this same chapter.

If the investigator finds, upon analyzing a subject, that more information is essential than can very well be asked for in one mail questionnaire, he must sort out his questions according to their applicability to different audiences and send one questionnaire to one audience and another questionnaire to another audience. Questions on the packaging of a product, for example, he may refer to the consumer; on the effectiveness of the advertising, to the dealer; and on the technical aspects on the product, to the

engineer. If a great deal of information is required and the investigator finds that he cannot formulate one good questionnaire that will cover all points, he may find it advisable to send out a series of questionnaires to the same persons. Some authorities advise no more than ten questions in any one questionnaire. However, H. G. Weaver has made his questionnaires for General Motors so interesting that he can procure answers to a hundred questions. *Time* magazine's 1928 and 1938 questionnaires succeeded in spite of their forty-odd questions. The number of questions must then be determined by the interest they arouse, their degree of pertinence to the problem, and the ease with which they are answered.

Phrasing Questions

So important to the success of the mail questionnaire are the type, number, phrasing, and arrangement of its questions that the actual writing of commercial questionnaires is usually entrusted only to men experienced and well seasoned in this type of work. Even then, as has been pointed out, the final mail questionnaire may be the result of five or six revisions of trial questionnaires.[1] But since experts in mail-questionnaire building have gained their ability through applying certain tested principles and through practice, the student learning to build them can do no better than to apply these same tested principles in practice.

All of the following are fundamental principles in the phrasing of mail questionnaires:

1. The question must be clear. It should be so worded that it can be given only one meaning or interpretation. It should be phrased in the language of the individual questioned. If words or phrases must be used which may have more than one meaning, their correct meaning should be given in an explanatory note. The question, "How durable has your car been?" was asked in one mail questionnaire. In answering, some respondents gave the number of years and some the number of miles the car had been driven. Had the question read, "How many miles has your car been driven?" all respondents would have used the same unit in answering.

[1] See tentative drafts of a questionnaire in Figs. 2 and 3.

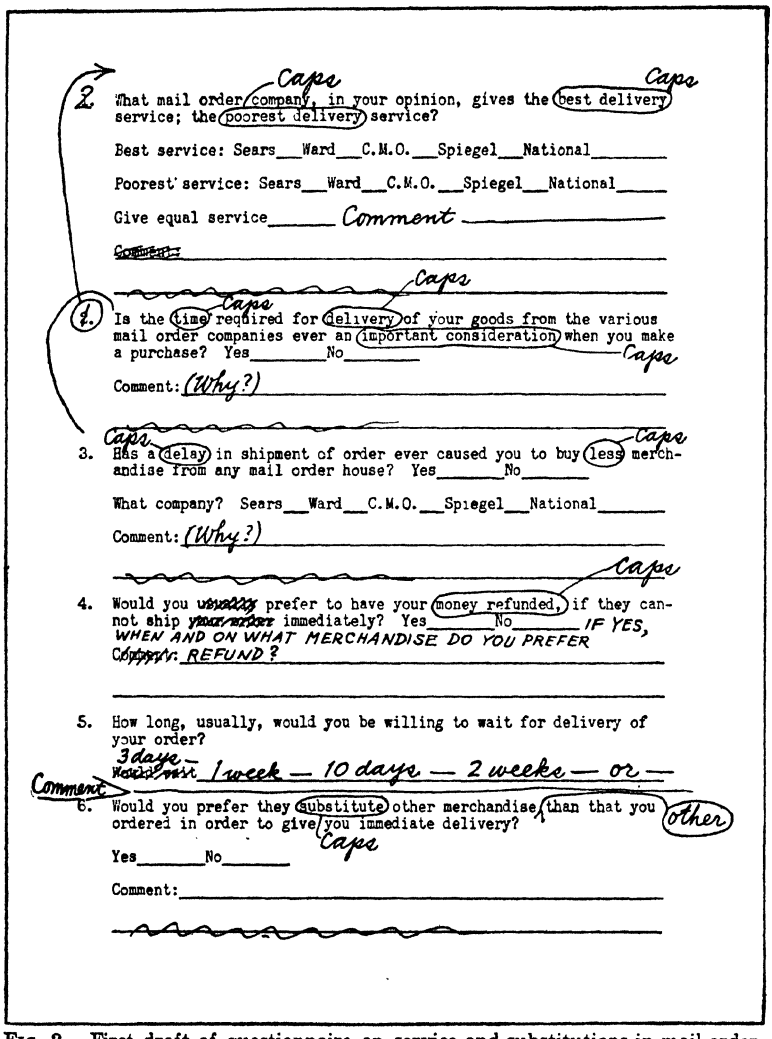


FIG. 2.—First draft of questionnaire on service and substitutions in mail-order business.

Questions asking "why" and "how" are susceptible of several interpretations.[1] For example, if an investigator wishes to know what attribute of a certain brand of cigarette causes its popularity, he might ask the question, "Why do you smoke *XX* cigarettes?"

[1] For a fuller discussion of "The Art of Asking 'Why?'" see American Marketing Association, *The Technique of Market Research*, pp. 82–87.

1. Is the TIME required for DELIVERY of your goods from the various mail order companies an IMPORTANT CONSIDERATION when you make a purchase?
Yes____No_X__In special cases____

Comment: (Why? What?) *Allow plenty time when we order*

2. What mail order company, in your opinion, gives the BEST DELIVERY service; the POOREST DELIVERY service?

Best service: Sears_X_Ward___C.M.O._X_Spiegel___National_____

Poorest service: Sears___Ward___C.M.O.___Spiegel___National_____

Give equal service___Comment:_____

Have received equally good service from both

3. Has a DELAY in shipment of order ever caused you to buy LESS merchandise from any mail order house? Yes_____No_X___

What company? Sears___Ward___C.M.O.___Spiegel___National_____

Comment: (Why?) *No comment*

4. Would you prefer to have your MONEY REFUNDED, if they cannot ship immediately? Yes_____No_X___If yes, when and on what merchandise do you prefer refund?_____

✓

5. How long, usually, would you be willing to wait for delivery of your order?
3 days_____1 week_X_10 days_____2 weeks_____or_____

Comment: *Generally get delivery in 3 days*

6. Would you prefer they SUBSTITUTE merchandise other than ordered to give you immediate delivery? Yes_X_No_____

Comment: *Usually satisfactory*

7. If merchandise substituted is of BETTER VALUE than what you ordered, would you be satisfied even if it is different from your original selection?
Yes_X_No_____

Comment: (Why?) *No comment*

8. Has an UNSATISFACTORY substitution ever caused you to BUY less merchandise from any mail order house? Yes_____No_X___

What company? Sears___Ward___C.M.O.___Spiegel___National_____

Comment: (Why?) *Have had unsatisfactory substitutions, but that did not cause me to buy less from that house. Generally substitutions have been fine.*

FIG. 3.—Second draft of questionnaire on service and substitutions in mail-order business.

To the inexperienced, this question seems clear. Hence, he would be surprised to receive such answers as: (1) "I was tired of smoking *ZZ* cigarettes." (2) "They were recommended to me by a friend." (3) "I like their aroma." Only the third answer would give him the kind of information he expected. The first respondent understood *why* to pertain to his own purposes or

attitudes, called *tendencies;* the second, to pertain to advice or the effect of advertisements, known as *influences;* and the third, to a feature of the thing bought, known as *attributes.*

Approved questionnaire technique to ascertain reasons is to ask the "why" in a way that indicates to the respondent which one of the three meanings of "why" the inquirer has in mind. If the questioner is interested in *influences,* he should ask: "What made you start to use *XX* cigarettes?" If he is interested in *attributes,* he should ask: "What are the qualities you like in *XX* cigarettes?"

"How" in the question, "How do you use a product?" may not mean the same thing to the questioner and the respondent. If the questioner asks: "How do you use rice?" the respondent may answer: "Hot," "cold," "for breakfast, luncheon, or dinner," "with game," and "as a substitute for potatoes."

Technical terms are frequently not clear to respondents. "Advertising medium," although meaningful to advertising men, may not be clear to housewives. It is better to ask: "In what magazines did you see the advertisement for *XX* products? In what newspapers?" If the technical term cannot be avoided in a question, it may be defined in an explanatory note, or its meaning may be made clear by an illustration. Reference has already been made to H. G. Weaver's use of pictures to clarify technical terms in consumer research on car design and on equipment for General Motors. The use of pictures is a comparatively recent technique in mail-questionnaire construction but one which has added greatly to the questionnaire's effectiveness. Mr. Weaver also says that, to make his questionnaires effective, he has to employ phraseology that is in common usage by the car owner, even though it may not represent the best scientific terminology.

2. The question should contain one idea only. An intricate or an involved question is likely to be misunderstood, and hence not answered, and such answers as are given are hard to tabulate. For example, the question: "Did you ever buy *XX* product, where, why?" is likely to be answered by a number of yes's which cannot be tabulated. The question should be broken down into three questions:

Did you ever buy *XX* products?
Where did you buy *XX* products?
What influence caused you to buy *XX* products?

Answers to these questions would be meaningful and could be tabulated easily.

3. No question should suggest its answer: Do you buy *XX* brand?

A misleading question, such as "Doesn't this face powder have a nice fragrance?" suggests its answer but differs from the leading question. The first is probably due to psychological ignorance, while the second may be due to bad faith.

4. A question should be presented in such form that its recipient will find it easy to answer, since experience has shown that busy people are most likely to answer. This principle causes many questions to be phrased so that they can be answered by a check mark, by "yes" or "no."

A respondent also likes to use a check list in answering a questionnaire. The check list is a series of answers to a question followed by blanks or squares which need only to be marked to indicate the respondent's answer. The check list has merit in that it increases the number of replies. On the other hand, it has a weakness in that it causes people to check more names than they would indicate if they had to supply the names from memory. Moreover, the names placed first will be checked oftenest. The following is an example of the check-list type of question:

What magazines do you read?

Time ..... ———
Reader's Digest ..... ———
Harper's ..... ———
Atlantic Monthly ..... ———
New Yorker ..... ———

The wording of questions so that they can be answered by checks, by "yes" or "no," or by figures makes it easy not only for a respondent to answer them but also for the tabulator to record the answers. Answers containing details and qualifying statements give the tabulator endless difficulty and increase the expense of research work. Special columns should be provided for the "don't know" and the conditional answer, since the extent to which they are given affects the results of a study.

To make answering easy the declarative method or form of questionnaire can be used. Its basic idea is that the information secured will be more reliable and the answers easier to tabulate if, instead of questions, a series of possible answers are set down

for each point which the respondent is asked to underline or check. The declarative method has procured satisfactory information on such a subject as the value of advertising. In this case, the schedule consisted of a series of declarative statements divided equally between favorable and unfavorable attitudes on such points as reliability, educational value, and social significance. The declarative method is often used in questionnaires from the Customer Research Staff of General Motors. For example, the following statements are listed under the question: "How do you like to be dealt with by the salesman?"

____I don't like a salesman who does all or almost all of the talking.
____I'd just as soon have the salesman do all the talking.
____I like to have a salesman who starts right in and tells me everything about the car.
____I prefer a salesman who, first of all, asks me some questions regarding my individual requirements, tastes, desires, etc.
____I prefer the type of salesman who confines his efforts primarily to answering my questions.

5. Questions regarding any series of items, the answers to which are to be compiled on a relative basis, should all be asked in the same way. The parallelism in phrasing helps the respondent to center his attention on what is being asked rather than upon the wording of the question. A break in co-ordination is a distracting element. The parallelism in phrasing also brings responses less difficult for the researcher to tabulate.

A questionnaire booklet of the Customer Research Staff, General Motors, gives a good example of parallel construction of questions (see Fig. 4).

No discussion of phrasing questions would be complete without mention of the technique used by the Customer Research Staff of General Motors in connection with the more complex aspects of engineering design. The following is a description of this technique:

1. Detailed Description.—It takes one specific feature or trend in design and describes it in considerable detail and with appropriate illustrations.
2. Pros and Cons.—It lists the arguments *pro and con*, the *favorable* arguments and the *unfavorable* arguments.
3. Referendum.—(This, we believe, is something entirely new.) *It invites the respondent to criticize the "pros and cons," rewrite them if he chooses, and add any new points which, in his judgment, are needed to balance the arguments.*

Then on the basis of the foregoing and taking into account any revisions that the respondent himself may have made, it calls for:

4. The vote.
   "What is your attitude on the proposition?"
   "Are you *for* it?"
   "Are you *against* it?"
   "Or are you *neutral?*"
5. Reasons back of vote.
   "Why did you vote the way you *did* vote?"
   "What are the *reasons* back of your vote?"
   "*Which* of the arguments exercised the greatest influence in determining your choice?"
   "*Which* ones influenced you the least?"[1]

Although this type of questionnaire technique is still in the experimental stage, those employing it believe that it has tremendous possibilities bearing on the problems of *forecasting future trends* because it concerns itself, *not* with *existing attitudes*, but with what the attitudes will most likely be *after* the motoring public—through experience or otherwise—has come into possession of the full and complete facts.[2]

The application of the principles just enumerated as standard practice for the subject matter and phrasing of the mail questionnaire as well as that used in the personal interview have raised their quality and their effectiveness. They are presented with the hope that the beginner in questionnaire writing will refer to them frequently. For his convenience in checking mail questionnaires to see if any vital principle has been ignored, the following list of questions is suggested. The questions may enable him to discover some weak spots in questionnaires and, hence, to increase their effectiveness.

Questionnaire Check List for Subject Matter and Phrasing

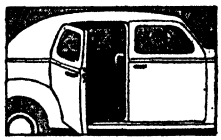
1. Are the questions obviously grouped under logical heads?
2. Is identification complete enough for easy and worth-while tabulation —name, address, age, sex, social status, financial status, occupation, location, competitors, etc.?
3. Should or could there be more identification?
4. How many classifications of prospects can data be broken into? Can data be better arranged in this regard?

[1] Henry Weaver, through whose courtesy this questionnaire employing the pro and con technique was secured, says it is somewhat of an improvement over that used previously.

[2] *Is It Scientific?* Customer Research Staff of General Motors Corporation, pp. 19–21.

[redacted] there is some division of opinion as regards the hinging of rear doors on sedan models. From a structural standpoint, the body engineers say they would just as soon build them one way as another. So the problem reduces itself to a question of customer preferences, and for that reason we are submitting the matter to a representative list of practical motorists.

In accordance with the Ben Franklin technique, and in order to aid you in "casting your vote", we have tried to summarize the arguments on each side as disclosed through a preliminary survey:



Owners expressing a preference for rear doors hinged at REAR EDGE advance these arguments in support of their position . . . .

"Seems less awkward - or at least more in line with what motorists are accustomed to."

"Majority of all four door cars built in the past have had rear doors hinged at rear edge."

"Provides better view of oncoming traffic when alighting from left side of car."

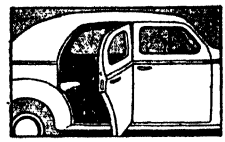
"Protects clothes from contact with dirty fenders."

"Makes it somewhat easier to help a person into the car."

"It would seem that fastening the door hinges against a solid part of the body would give a stronger construction than when they are fastened to a narrow pillar."

but body designers point out that

" - it's a relatively simple matter to strengthen the pillar and that by hinging them this way it's possible to place the hinges further apart which prevents sagging."



On the other side of the question, those advocating that the hinges be at the FRONT EDGE say that .

"There's less possibility of an accident if door is opened when car is moving."

"Wind pressure reduces danger of children opening door when car is in motion."

"Door serves as a screen thereby saving women from embarrassment when alighting."

"Easier for driver to reach back and close rear door."

"Front and rear seat passengers can more readily leave or enter at the same time."

[redacted] REFERENDUM [redacted]

Do you consider the above statements to be fair and comprehensive?

☐ Yes ☐ No ☐ Can't Say

If your answer is "NO" then you are invited to make any additions, reservations and criticisms that you may see fit to make from your viewpoint as a practical motorist:-

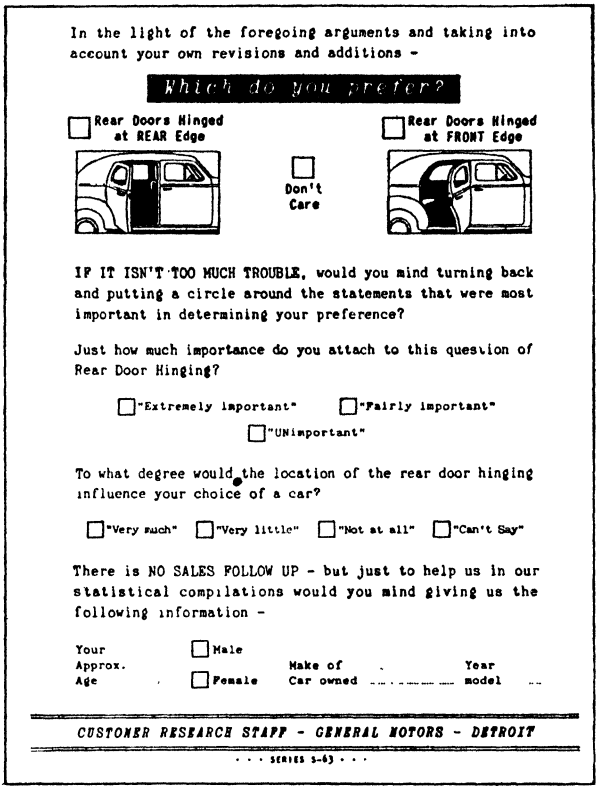
_____

_____

_____

CONTINUED

FIG. 4.—"Which do you prefer?" questionnaire.


In the light of the foregoing arguments and taking into account your own revisions and additions -

Which do you prefer?

☐ Rear Doors Hinged at REAR Edge

☐ Don't Care

☐ Rear Doors Hinged at FRONT Edge

IF IT ISN'T TOO MUCH TROUBLE, would you mind turning back and putting a circle around the statements that were most important in determining your preference?

Just how much importance do you attach to this question of Rear Door Hinging?

☐ "Extremely important" ☐ "Fairly important" ☐ "UNimportant"

To what degree would the location of the rear door hinging influence your choice of a car?

☐ "Very much" ☐ "Very little" ☐ "Not at all" ☐ "Can't Say"

There is NO SALES FOLLOW UP - but just to help us in our statistical compilations would you mind giving us the following information -

Your Approx. Age ☐ Male ☐ Female Make of Car owned Year model

CUSTOMER RESEARCH STAFF - GENERAL MOTORS - DETROIT

SERIES 5-63

FIG. 4.—(*Continued*).

5. How many geographical classifications can data be broken into? Can data be better arranged in this regard?

6. Is there any question that will get opinion rather than fact when fact is sought?

7. Does every question have a direct bearing on the immediate problem?

8. Is there any ambiguous question? Two parts or whys?

9. Is there any involved question?

10. Is there any question that requires unnecessary mathematical calculations?

11. Is there any question that suggests its answer? (Do you read *Blah* magazine?)

12. Is there any question that is too personal? (Salary, religion, education, etc.)

13. Is there any question that is impossible to answer? ("What do you think of the ad?")

14. Is there any check question necessary?

15. Are questions arranged for "yes," "no," check answers? Easy to answer?
16. Are questions tactfully phrased?
17. Is phraseology in common usage of the reader, even though not in best scientific terminology?
18. Does the first question arouse interest, and is it easy to answer?
19. Do the questions have parallel construction?
20. Are there more than ten questions? Should there be?
21. Is the questionnaire typographically inviting?
22. Does it have appropriate heading?
23. Is each question correctly numbered?
24. Is there enough space for answers?
25. Will the paper take ink?
26. Is there enough blank space to permit binding of pages?
27. When folded naturally, will the questionnaire fit the enclosed envelope?

Salesmanship

Salesmanship in the Covering Letter.—Salesmanship in the covering letter is chiefly a matter of requesting the co-operation of the reader in a persuasive manner. Five methods of securing the co-operation of the respondent were discussed in the section on Elements of the Questionnaire.

A few other aspects of salesmanship in the covering letter remain to be discussed. The letter should be sincere, original, courteous. It should be frank. Writers who try to disguise requests for favors as benefits to readers fool only themselves. Many questionnaires are types of sales promotion all too thinly disguised. The covering letter should reflect its sponsor's personality. It should be adapted in tone and language to the recipient. An expert or noted authority, for example, should not be addressed as if he were just one out of many.

The following covering letter from a research consultant to a mailing list composed of women makes a persuasive appeal to the recipient to fill out the questionnaire. It is noteworthy for its directness and frankness of appeal and for its courteous, friendly tone.

Covering Letter

DEAR MRS. SMITH:

A manufacturer has employed me to do something for him and I need your help.

He wants to advertise to you and other women through your favorite magazines, and I can't think of any way of finding out which magazines interest you most except by asking you.

On the enclosed post card (which needs no stamp, by the way) I would like you to name all the magazines you subscribe to or buy or read regularly. (I mean *all* kinds of magazines—list any magazines you subscribe to or buy or read regularly.)

If you list more than two publications, I would like to have you tell me under the second question which two of these magazines are your favorites. I mean by this, which two do you read or use more than any others and would hate most to be without.

I assure you that I have nothing to sell and you will not be annoyed in any way should you favor me with the information desired. You need not even sign your name unless you wish to do so.

Sincerely yours,

A covering letter of only one paragraph from the Market Research Department of the Eastman Kodak Company illustrates how concise and direct such a letter may be when it is addressed to people who are presumably interested.

We have received a suggestion from an advanced amateur photographer in reference to a negative record sheet. It is a record which he uses and believes would be useful to others. We are writing you as an advanced amateur to ask your opinion of it. A copy is enclosed. What do you think of it? Would you find it useful? We will be grateful to receive your criticism and suggestions.

MARKET RESEARCH DEPARTMENT

Good mechanics in the covering letter spell persuasiveness. The letter may be typewritten, multigraphed, or printed, according to the exigencies of the case, but it should be personally signed. If it is multigraphed, the name and address of its addressee may well be filled in on the typewriter. The letter should be written upon a good grade of paper which has a dignified letterhead; its layout should make it easy to read. A self-addressed and stamped envelope should be enclosed with the letter. Special delivery stamps should be used in cases where the time element justifies the expense.

The following check list of questions is suggested as a means of judging the merits of a covering letter:

1. Is the letter interesting?
2. Does it make clear the nature of the information desired?
3. Does it state clearly the reasons for wishing to get the information?
4. Does it state clearly why the particular person is approached?
5. Does it tell the reader why his opinion is important?
6. Is it courteous, not flippant?
7. Is it clearly written and without ornamentation?
8. Is it on one sheet of paper and no longer than absolutely necessary?
9. Does it set a time limit for returns?
10. Is there any inducement for action such as a promise to keep information confidential, assurance that no salesman will call, or a reward?
11. If possible, is it personal to the extent of having the recipient's name filled in on the letter?
12. Is it success-conscious?

Salesmanship in the Mechanics of the Questionnaire.—Much of the success of the mail questionnaire depends upon its physical appearance, the arrangement of the questions, the ease with which the answers may be filled in, and the amount of space left for comments. A mail questionnaire which is attractive in appearance gives its recipient the impression that it is important and hence worthy of being answered. Its usual forms are: the one-page sheet 8½ by 11 inches; the four-page folder of the same size, the front page of which is occupied by the covering letter and the inside and back pages of which are occupied by questions; the booklet, 3½ by 8, 3½ by 6¼, 5¼ by 8¼, etc., pages of which are bound on the side or at the top; and the double postal card.

Other things being equal, a mail questionnaire of one page procures more returns than one of two pages, and the postal card brings good results. If two or more pages are used, they must be securely fastened together by a small fastener or staple. Otherwise, Mrs. Brown's first page may be attached to Mrs. Green's second page.

Whatever the form of the mail questionnaire, it should have a good quality of paper, wide margins and spacing, and ample room for replies. Colored paper often causes the mail questionnaire to "pull" better than white paper. The Division of Crop and Live Stock Estimates of the Department of Agriculture, which mails inquiries every two weeks to more than 100,000 farmers, has found that light pink draws the greatest number of answers. Different colors in paper may also be used to distinguish dealers from consumers, men from women, professional men from businessmen, or one territory from another.

If the questions are typed, the letters should be clean cut and black; if colored paper is used, its texture and the print used upon it must be chosen for high legibility and a minimum of eyestrain;[1] if they are printed, the print should be large enough to be read easily. Questions should be numbered to facilitate answering and tabulating, and specifying questions which concern main points should be laid out so that they are clearly differentiated from those which concern subtopics.

The investigator cannot be too careful concerning the mechanical features of a mail questionnaire and the detail of its handling. Details might well be checked off against such points as follow:

1. Use paper of good quality for convenience in filing and binding in the finished report.
2. Use paper which will take ink.
3. Use printed questionnaires if at all possible.
4. See that the questionnaire is not bulky.
5. Distinguish different classes of people approached by different colors of paper.
6. Identify different territories by a system of numbering: 110*A*, 110*B*, etc.
7. Number each question.
8. Differentiate by correct layout between main and subordinate questions.
9. Leave enough space between the questions for answers.
10. Group related questions.
11. When totals for various items are needed, arrange items in a column so as to make easy the checking or adding for totals.
12. In multigraphed questionnaires, fill in on the typewriter the name and address of the recipient.

Number of Questionnaires

To answer the question of how many mail questionnaires an investigator should send out in order to get a predetermined number of replies is difficult. Experience of research men has demonstrated that, in general, 10 per cent of persons receiving mail questionnaires will answer them; that a higher percentage, perhaps 15, 20, or 25 per cent, will answer questionnaires if they are already interested in the subject matter with which specific questionnaires deal; and that the percentage of people replying will always be affected by the reward offered them to reply.

[1] For further information on ease in reading see Walter B. Pitkin, *The Art of Rapid Reading*, pp. 45 and 52.

To answer the question of how many mail questionnaires an investigator should send out to secure an adequate and a representative sample is difficult to answer if not impossible. In fact, many experts in the field of marketing research feel that the mail questionnaire should not be used for sampling. The reason for their advice becomes clear when one considers the meaning of the terms "adequate and representative sample in relation to the self-selection of respondents," the uncontrollable factor in the mail survey technique.

Let us review the meaning of the term "adequate and representative sample," and the term "self-selection of respondent." The director of research for Pedlar & Ryan explains the meaning of the first term thus: "A properly distributed sample comprising 1,000 people will show the various habits and opinions of an entire city or section. Within those 1,000 people will be found all the typically numerically important 100,000 and in about the same proportions."[1]

The Technique of Marketing Research[2] gives the following example, which suggests that a representative sample is not likely to be secured by mail:

> In another study, a check by direct interview was made of the brand of tooth paste used by every individual to whom the questionnaire had been mailed. It developed that almost all those who had returned the mailed questionnaires were actually users of the brand under consideration, and since users alone could by no means represent the whole market, the results of the mailed questionnaires were palpably unsound.

In other words, there had been self-selection of respondents.

The experience of the straw-vote takers—Elmo B. Roper, who directs the *Fortune* surveys, and George Horace Gallup, who directs the Institute of Public Opinion—is that they cannot get accurate results by asking people by mail what they think. Hence all their work is done through personal interviews, by trained investigators possessing a considerable amount of practical experience in dealing with people.

[1] FRANK R. COUTANT, "Mr. Dough, Your Neighbors Like Consumers' Surveys," *Printers' Ink*, December 28, 1933, p. 42.

[2] The American Marketing Association, *The Technique of Marketing Research*, p. 87.

The Mailing List

The success or failure of the mail questionnaire depends as much upon the mailing list used as upon the questions asked, their phrasing, and the honesty and efficiency with which returns are recorded. Good seed should be planted in fertile soil. The fertile soil for a questionnaire is a list selected on the basis of who can furnish desired information, who will furnish it, and who belong to the group from which information is desired.

The question of number to be included on the mailing list to get a representative sample was considered in the preceding section, and it was said that many authorities doubt if samples gained through mail questionnaires are representative. Equally good authorities believe in this method and use it.[1] Methods by which people representative of a group or typical people are chosen for a sample are suggested by the two following cases:

1. When the advertising department of *Time* magazine wished in 1938 to bring together a clear and understandable picture of the men and women who read *Time*, the names of 52,000 *Time* subscribers were taken alphabetically and in order, on the assumption that they represented a true geographical cross section of *Time* circulation. The results were as follows:

Total replies	13,276	25.5%
Replies tabulated from *Time* men subscribers	7,130	27.4%
Replies tabulated from *Time* women	5,196	20.0%
Total tabulation,* *Time* men and women	12,326	23.7%

"Do You Own a Horse Report," *Time*, September, 1938, p. 16.
* 950 replies, received after tabulation was under way, were not included.

2. When the Meredith Publishing Company wishes a representative list of subscribers, it uses the following plan:

For standard investigations of subscribers to Meredith publications, the number of subscribers will be divided by the number of questionnaires to be sent out in order to determine the "selective factor." If the "selective factor" is 10, it means that a questionnaire will be

[1] In the *Member's Bulletin*, Direct Mail Advertising Association, Inc., 19: 12: 9–10, November, 1939, Professor Theodore H. Brown, Harvard Graduate School of Business Administration, explains "A Mathematically Accurate Test for Estimating the Proper Size of Mailing List Samples."

sent to every tenth name on the subscription list. Since names are filed alphabetically by towns, and the towns filed according to post-office mail routes, the result will be a true cross section of area and population of town.[1]

Mailing lists are either purchased or built. There is a large enough list of reliable dealers in mailing lists to make the purchase of standardized lists of butchers, bakers, and candlestick makers a simple matter. There are besides many other sources of mailing lists, such as the following:

Sources of Purchased Mailing Lists

GENERAL AND SPECIAL LISTS

- Brokers
- Addressing companies
- Individuals
- Letters of inquiry
- Exchanges with other concerns
- Miscellaneous sources
  - Bankers
  - Justices of the peace
  - County editors
  - Bank cashiers
  - Rural free delivery carriers
  - Local retailers
- Directories
  - City
  - Telephone
  - Rating books
  - Trade
  - Bluebooks
- City-county records
  - City tax lists
  - County tax lists
  - Registration lists
  - Income-tax lists
  - License and permit lists
  - Building records
  - School lists
  - Automobile-license lists
- City-county records
  - Labor reports
  - Municipal employees' lists
  - Incorporation lists
  - Vital statistics and records, etc.
- Organization and membership lists
  - Commercial
  - Civic
  - Labor
  - Social
  - Technical
  - Professional
  - Fraternal
  - Religious, from churches, etc.
  - Educational: schools and colleges
- Press clippings
  - Business changes
  - Removals
  - Advertisers
  - New incorporations
  - Fires
  - Society notes
  - Births
  - Deaths
  - Marriages
  - Engagements
  - General and miscellaneous[2]

If the mailing list needed cannot be purchased, and the investigator builds one of his own, he needs to keep the following points in mind:

[1] Manual of Research of the Meredith Publishing Company.

[2] J. H. PICKEN, *Principles of Selling by Mail*, p. 209.

1. City directories. They give a cross section of people. Since the percentage of people changing addresses is very large, the usefulness of the city directory is proportionate to the frequency of its editions.
2. Telephone books. They give not only a classified list of dealers but also a selective list of people, since it is in general the upper-income group who have telephones. The frequency of issues of telephone books results in a high degree of accuracy in addresses. It does not, however, indicate whether people are married or single.
3. City and county records. They furnish the following lists: city and county tax, automobile registration, license and permit, school corporation, and vital statistics.
4. Trade directories. They give useful lists of business firms, particularly the industrials.
5. Rating books. Dun and Bradstreet's credit-rating books permit the making of mailing lists selected on the basis of financial status.
6. The company's own record. Credit accounts and sales records are the best source of lists where the investigation concerns only such groups.
7. Advertising. Newspapers, trade journals, and magazines.
8. Contests and rewards.
9. Canvassing or personal solicitation.

Pretesting Mail Questionnaires

It is advisable, when mail questionnaires have been formulated according to standard requirements, to test them out by distributing them over the same area and on the same basis as the final questionnaire will be distributed, or over a small area in a concentrated manner. In each case, the individual investigation will be the basis for deciding which method will be used. What percentage of the final list will be a good test depends upon the size of the investigation, the homogeneity of the data, and the territory to be covered.

Question 5 of Elsie M. Rushmore's 24 questions entitled "How to Get Results in Mail Questionnaires" suggests that 25 per cent is a sufficient sample. It reads: "Is the list a sufficient sample?"[1] Many a director of marketing research, however, maintains that a smaller percentage—10 per cent, for example—is a sufficient sample.

The business office is often used to test out questionnaires. The questionnaire is submitted to a group of employees in the company doing the research to determine whether all questions are clear and to learn whether a pertinent question has been over-

[1] ELSIE M. RUSHMORE, "How to Get Results in Mail Questionnaires," *Printers' Ink*, March 22, 1934, pp. 20–21.

looked. This method of testing has dangers, however. The people to whom the questionnaire is submitted may be too close to the study to be critical.

Trial questionnaires are not employed when such a small number of questionnaires is to be mailed out that one might as well make a complete new investigation; when questions asked are so simple that there can be no doubt as to the correctness of the answers; or when experience has already demonstrated that a certain type of question will bring a certain type of answer.

To gain full value from the trial questionnaire, the investigator must see that all answers are carefully tabulated and studied to determine any difficulties which may arise in tabulating the final questionnaire. He can also try out the trial recapitulation or assembly sheet.[1] If the returns are satisfactory, he uses them as a part of the returns from the final investigation and mails out as many of the questionnaires as his working plan specifies or the test indicates should be used. Comparisons will afterwards be made between the results of the trial and of the final questionnaire.

Following Up the Questionnaire

Follow-ups are sometimes sent out when replies from a questionnaire begin to fall off. In such cases a letter reiterating the importance of the questionnaire is sent to people on the mailing list and worded diplomatically to avoid any suggestion of fault-finding or peevishness.

Checking Results of the Questionnaire

Most investigators consider their task completed when they find, upon tabulating the data, that the percentage of questionnaires answered was high and the distribution of replies seems good. And as has been pointed out previously, 10 per cent of replies is considered satisfactory, 25 to 30 per cent highly satisfactory, and 50 per cent so high a return that almost never do general questionnaires reach this level. Some investigators make a very careful check through personal interviews on who answer the mail questionnaire.

In this regard, three important questions present themselves:

1. Who answers the mail questionnaire?

[1] Recapitulation sheet is illustrated in Fig. 14, p. 145.

2. Who does not answer the mail questionnaire?
3. How accurate is the information given?

Applying these questions to the data secured by a mail questionnaire sent to housewives answering an investigation on soap flakes, the researcher found that 92 per cent were users; 8 per cent non-users. A personal survey of women who did not answer the above questionnaire disclosed the fact that 40 per cent were users, and 60 per cent non-users. It was also found that those answering gave information that was exceptionally accurate. Only 15 per cent of those giving answers in mail questionnaires gave different answers in the personal interviews.

This particular example of testing the results of the mail questionnaire suggests how suitable tests for the questionnaire help to assure accuracy of data. Distortions can be detected by some such system of checking as the one outlined. If the investigator uses biased data in drawing conclusions, he will draw erroneous conclusions and he will then blame the method when he should blame his own misuse of the method.

If an investigator studies exactly what happens to his questionnaires after he mails them, he acquires information needed later. If in checking the data, he sees that the information comes from a group of people prejudiced in favor of the product perhaps because of use, he should see that questionnaires reach an equally large group of non-users. This check may make clear to what extent statements from the first group should be discounted. He may need to revise his mailing list in an attempt to get a true cross section; put greater emphasis on his appeal inviting suggestions and objections; or offer a more welcome reward for answers. If he finds the largest percentage of replies have come from the low-income class, he has to give his mail matter greater refinement or find an appeal that pulls replies from all classes.

These points on checking results of the mail questionnaire are given merely as suggestions. For each particular trouble, there is one specific remedy to be applied. As William J. Reilly advises: "The person in possession of the peculiar facts, incident to a particular situation, is in the best position to apply an appropriate corrective for making the results of the investigation authoritative."[1]

[1] W. J. Reilly, "Checking Up Data Secured by Mail Questionnaires." *Printers' Ink*, December 23, 1926, pp. 71–72.

Philip Salisbury, executive editor of *Sales Management*, has made a list entitled "Eighteen Elements of Danger in Mail Surveys," which is reprinted by permission to aid an investigator, first, in determining whether the mail questionnaire is suited to obtain the information he desires and, second, to aid him to check any question he has contemplated including in his questionnaire.

1. Mail questionnaires must necessarily be brief.
2. No mail survey can be any better than the list.
3. Mail investigations take a long time to complete.
4. Mail investigations are more costly than generally assumed.
5. Respondents cannot report certain facts accurately by mail.
6. The percentage of mail returns is almost invariably small.
7. There is no way of knowing that the people willing to reply are representative of the whole group.
8. Certain groups are missed completely in mail returns.
9. Certain occupational groups answer much more than others.
10. The respondent to a mail investigation may not be the person who was addressed.
11. The response from users will be greater than from non-users.
12. Responses are confined largely to those particularly interested.
13. Those who think "no" on controversial questions are more willing to answer than those who think "yes."
14. The reasons why people do not respond are vital.
15. Mail returns are dangerous where the respondent is asked to choose between competitive things.
16. Mail returns tell little about age or economic status.
17. Mail questions are impossible to phrase so that alternative or qualifying responses are followed up.
18. Mail investigations do not give a "general summary."

Figures 5 to 9 inclusive on the following pages are examples of successful questionnaires in different types of business.

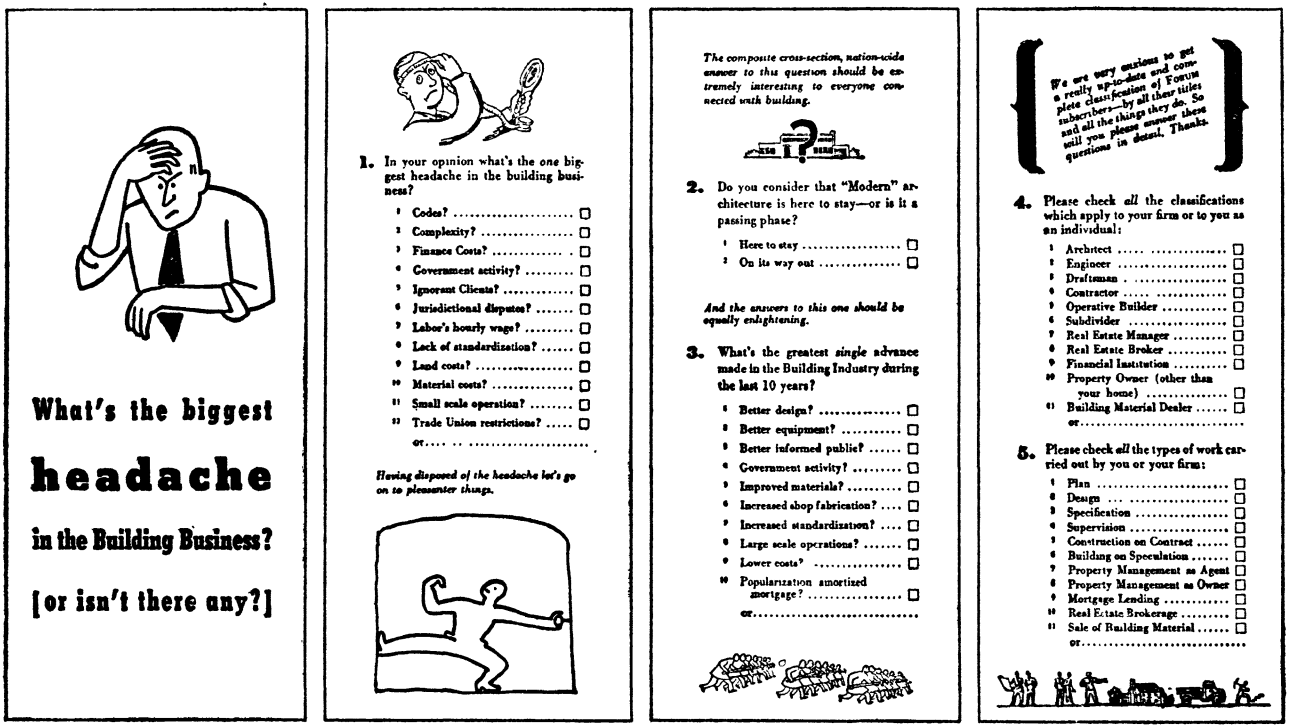


FIG. 5.—Questionnaire of *Architectural Forum*, in the success of which humor plays an important role.

Supervisor_____ Date _____

Interviewer_____ Weather: _____

City_____

Time of Call____ A.M. P.M. to____ A.M. P.M.

MARKET RESEARCH CORPORATION OF AMERICA
RADIO BUREAU
NEW YORK

Draw line across sheet at end of each 15 minute period.

	Name	Address	Telephone Number	Not at home	No answer no phone	Busy	Disconnected or changed	Refused Information	RADIO OWNED Yes	RADIO OWNED No	RADIO IN USE Yes	RADIO IN USE No	Program on (If program named first, ask station)	Station on (If station named first, ask program)	Don't Know Either	Product advertised by program being heard
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																

FIG. 6.—Questionnaire used in Coincidental Telephone Radio Survey.

Please Answer These Questions
If you OWN Your Home:

1. When was the outside of your house last painted?_____
(If your house hasn't been painted since you bought it, skip to question 5.)

2. Who did the painting? (Please check answer.)

a. A member of the family?_____
b. A regular painter?_____
c. Someone outside the family (not a regular painter)?_____

3. What brand and type of paint was used?_____

Mixed?_____ White lead?_____

a. Did you buy the paint yourself?_____, or
b. Tell the painter what brand you wanted?_____, or
c. Leave the selection of the paint up to the painter?_____

4. How many coats of paint were applied?_____

What did the complete job cost you?_____

5. What is the occupation of the head of the family?_____

6. What is the approximate value of your home?_____

7. What city and county do you live in?_____ City population?_____

8. Please write in below the magazines which are read regularly in your home.

	How do you RECEIVE each of these magazines? (Make check mark in proper column)		
	Subscribe to it (by mail)	Delivered by boy	Buy it at store or news dealer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

MANY THANKS! NOW FOLD AND ENCLOSE IN ATTACHED ENVELOPE

FIG. 7.—Mail questionnaire to subscribers of *Better Homes and Gardens*, Meredith Publishing Company.

Please write in column No. 1 the brand names of the various items listed below that you NOW have in your home. Do not list products sometimes used but not on hand NOW. List each product only once! BAKING PRODUCTS	1 See Instructions A, Page 2. WRITE BRAND NAMES HERE (BRAND Names—NOT Company Names)	2 See Ins. B, Page 2. NO. OF PKGS. (Now on Hand)	3 See Ins. C, Page 2. SIZE OF PKG. (See label)
All Purpose Flour			
Cake Flour			
Pancake Flour			
Prepared Biscuit Flour			
Baking Powder			
White Bread			
" "			
Other Breads (State Type and Brand)			
" "			
BEVERAGES	(BRAND Names—NOT Company Names)	No. of Pkgs.	Size Pkg.
Coffee			
Decaffeinated, Powdered and Coffee Substitutes			
Tea			
Ginger Ale			
" "			
Carbonated Beverages			
" "			
DAIRY PRODUCTS	(BRAND Names—NOT Company Names)	No. of Pkgs.	Size Pkg.
Fresh Milk			
Canned Milk			
Packaged Cheese			
" "			
Cheese in Jar or Glass			
" " " " "			
Cottage Cheese			
Butter			

FIG. 8.—Page from questionnaire of Seventh Cleveland Home Inventory, conducted by Parents Teachers Association. (*Reprinted by permission of Cleveland Press.*)

4 See Instruction D, Page 2. WHEN PURCHASED (State how long ago—NOT date)	5 WHERE PURCHASED See Instructions E, Page 2.										
	A & P STORES	A & P SUPER MARKETS	FISHER'S STORES	FISHER'S MASTER MARKETS	KROGER STORES	KROGER SELF SERVE STORES	OTHER SUPER MARKETS	EDWARDS FOOD STORES	UNITED FOOD STORES	IF OTHER STORE, WRITE-IN If your grocer is a member of the Edwards or United Groups, please check in proper space instead of writing store name.
When Purchased	1	2	3	4	5	6	7	8	9	0 If Other Store, Write-in
When Purchased	1	2	3	4	5	6	7	8	9	0 If Other Store, Write-in

FIG. 8.—(*Continued*).

STUDY OF MINIATURE INSTRUMENTS

Any information you give us below will be kept strictly confidential. If you cannot answer, or do not wish to answer, any question among the following, please omit it and pass on to the next one.

If you do not use miniature instruments, please note and return this questionnaire so that our records may be complete.

Question 1. Do you use miniature instruments?_____
(Yes or No)

Question 2. Did you know that Rutland makes miniature instruments?
_____
(Yes or No)

Question 3. Have you ever used Rutland miniature instruments?_____
(Yes or No)

Question 4.* Who makes the miniature instruments that you buy now?

(Manufacturer's Name)(Catalog No. or Type)

*This information is requested to help us in our statistical comparisons and to give an indication of size used.

Question 5. How long have you been buying the make of miniature instruments you now use?_____
(Years)

Question 6. If you use miniature instruments which are specially designed, what are the special features? (Please list.)

_____

_____

_____

Question 7. What design features of miniature instruments are of special importance to you? (Please check only those of special importance.)

Appearance		Sturdy construction	
Burden		Weight	
Damping		Zero adjuster	
Ease of reading (scale)		Responsiveness	
Accuracy		Sensitivity	

Other features (Please specify)_____

_____

_____

FIG. 9.—Study of miniature instruments, Market Research Division, General Electric Company.

STUDY OF MINIATURE INSTRUMENTS

Question 8. When you buy miniature instruments, what procedure do you follow?

Procedure	(Please check)
Order direct from a manufacturer using a catalog or other information that you have	
Buy on contract	
Request quotations from manufacturer from whom you have previously bought miniature instruments	
Request quotations from several manufacturers	
Call in representatives from several manufacturers for consultation	
Buy from a dealer or jobber the MAKE of instrument you specify	
Buy from a dealer or jobber the MAKE which he recommends	

Other method - (please specify)_____

Question 9. Is it necessary that your future purchases of instruments be exactly interchangeable, as far as size is concerned, with those you are now using?_____ (Yes or No)

Question 10. How many miniature instruments did you purchase in 1933?_____ (total no.)

Question 11. How many miniature instruments do you purchase in a good business year?_____ (total no.)

Question 12. What products manufactured by your company require the use of miniature instruments as an integral part?

Product	No. of min. inst. used on each unit	Approx. total no. of min. inst. used on each product	
		In 1933	In good business year

FIG. 9.—(*Continued*).

STUDY OF MINIATURE INSTRUMENTS

Question 13. What products manufactured by your company require the use of miniature instruments in the manufacturing process for testing, calibrating, etc.?

Product	Total no. of min. inst. used for testing, etc.	
	In 1933	In Good Business Year

Comments:

Thank you for your courtesy and cooperation.

Please return this sheet in the enclosed return envelope, no postage is required.

Signed

Company Name

Address

MARKET RESEARCH DIVISION

FIG. 9.—(*Continued*).

CHAPTER VI

ORGANIZATION OF DATA

I. Definition—II. Purpose—III. Importance—IV. When Data Should Be Classified: *A.* As data come in; *B.* After all data are in—V. Methods of Recording and Organizing: *A.* Card system for bibliographical material; *B.* Loose-leaf notebook for bibliographical material; *C.* The recapitulation sheet—VI. Procedure of Organizing Quantitative Data: *A.* Examining data; 1. Editing; 2. Sifting and weighing data; *B.* Testing the sample; 1. For reliability; 2. For proportionality; *C.* Tabulating quantitative data; 1. Procedure of counting; 2. Machine tabulation; 3. Principles for obtaining accuracy; 4. Function of cross classification; *D.* Drawing statistical conclusions; 1. The mean; 2. The median; 3. The mode—VII. Organizing Qualitative Data.

When the returns from bibliographical research, observation, telephone interview, personal interview, and/or mail questionnaires begin to come in, the investigator faces the problem of organizing, classifying, and recording this information in the form most useful to him. He needs to find out what he has found out. He must reduce answers, both quantitative and qualitative, to workable form.

DEFINITION

Classifying data is essentially a matter of grouping data on the basis of such likenesses or differences as time units, space units, money units, or other inherent qualities.[1] The railroads publish statistics on freight-car ownership, average car capacity, cars of revenue freight loaded. Marketing research data have such basic classifications as people, products, services, each of which is further divided into obvious subdivisions. Facts or observations having characteristics in common are put into one group. In other words, they are brought compactly together in a way that their identity can be seen.

[1] There are four important bases of classification: (1) qualitative, (2) quantitative, (3) chronological, (4) geographical. FREDERICK E. CROXTON, and DUDLEY J. COWDEN, *Practical Business Statistics*, pp. 4–6.

W. S. Jevons has given the following clear and complete definition of the process of classification of material which is the basis of organization applicable to research work:

> By the classification of any series of objects is meant the actual or ideal arrangement together of those which are like and the separation of those which are unlike, the purpose of this arrangement being, primarily, to disclose the correlations of laws or properties and circumstances; and, secondarily, to facilitate the operations of the mind in clearly conceiving and retaining in the memory the characters of the objects in question.[1]

Classification of material may be analytical or synthetic. The first process is from the general to the specific; *i.e.*, it begins with broad classes and subdivides them, until all significant facts have been given their logical place in relation to the broad classes. The second is from the specific to the general; *i.e.*, it begins with specific facts and builds them up into broader classes successively until they reach a class as broad as the limitations of the subject under discussion. The classifications are, moreover, of two kinds, actual and arbitrary. The first kind is based upon the qualities inherent in the facts, objects, or ideas considered; the second, upon external or accidental properties. Divisions of population on an actual basis are: men, women; old, young; English, German, French; town, country, etc. On an arbitrary basis, they are alphabetical groups, ABC's, LMN's, XYZ's; or numbered units, first ward, second ward, third ward, etc.

PURPOSE

The investigator classifies data in order to make them more comprehensible and more usable. The reason for classification seems obvious, but the following example may emphasize the point. Assume that a credit sales manager of a department store finds by consulting records that the store has 14,640 charge accounts. If he wants to, he may surround himself with these 14,640 separate accounts. He thus would have available all the charges of each individual on his books. Charge accounts in this form, however, are practically worthless to him so far as telling him anything he may want to know. On the other hand, properly organized and classified, these accounts may show him whether the store's unit of sale is increasing or decreasing; whether

[1] WILLIAM STANLEY JEVONS, *The Principles of Science*, p. 677.

customers are patronizing many departments or a few departments; whether customers are paying promptly or not.

Through bringing data together and classifying them sometimes on an actual basis and sometimes on an arbitrary basis, he is able to make a more thorough study of the properties and circumstances characterizing any one division. He enables himself to discover relationships between groups of data and the significance of such relationships to the solution of his problem.

He knows that facts, once isolated, add meanings as they become associated with other facts. The credit manager might, for example, be pleased that he has 14,640 charge accounts. If, however, he classifies these accounts on the basis of age and finds that no account is over three years' standing, he has reason to be displeased. He will conclude that something is wrong with the merchandise, prices, policies, services, etc., of a store which cannot keep its customers, on an average, seven years.

The purpose of organization and classification of data are, then, to find all data significant to the solution of the problem at hand, to give proper emphasis to any pertinent fact or opinion, and to discover relationships between groups of data which will indicate the desired solution or conclusion.

Classification of data is also a splendid check on the adequacy of the tentative outline of the report drawn up as a part of the working plan. If the data being filed overlap or will not fit into the divisions provided, a revision of the outline may be necessary. The data collected may be found not to have a direct bearing on the subject, or the main divisions may be insufficient.

IMPORTANCE

The importance of thorough classification of facts, observations, and opinions in the procedure of investigation cannot be overestimated. As the example of the charge accounts indicates, the significant facts of a mass of data are more readily seen when the data are in groups than when they are in their original form. Classification is, then, a fundamental step in the analysis of data. Classification is, moreover, the first step in the analysis of a mass of data. The first basis on which a classification is made determines, to a large extent, what further analyses of data can be made. There are many bases of organizing information, such as difference of kind, different degrees of a particular characteristic,

and differences of time, an understanding of which helps to assure that the first classification will lay the proper foundation for subsequent classifications.

WHEN DATA SHOULD BE CLASSIFIED

As Data Come In

One advantage of organizing data as they come in is that the process of organizing them is likely to uncover any defects in the plans made for obtaining them. This procedure shows whether the right people, and the right number of people, are being reached and hence permits any advisable change in the collecting of data before this step is completed. For example, the kind and amount of difficulty that may arise from organizing data, only after all of them have been gathered, is suggested by the following:

> Suppose, for example, that after shipping the questionnaires away, disbanding the field organization, and withdrawing from the surveyed area, it be found that some additional reflections from the field are required to form a true and sure conclusion. To go back to that market and reopen the work would be decidedly inconvenient and costly, besides. Such a situation might easily occur, however, where stabilization graphs[1] are being carried simultaneously on several income groups, to insure adequacy of sample on each class, and where they fail to stabilize on one or more of the groups.
>
> Again, suppose some fact or circumstance should be revealed which cannot by any possibility be reconciled with any previous common experience. Good research would seem to demand that such a situation should be examined and explained. But how could that be done without a further testing, a reopening of the work, in the field?[2]

Another advantage of organizing data as they come in is that tentative organization familiarizes the investigator with the data and lays the foundation for their most efficient classification later. A third advantage is that it opens up new leads. The biggest advantage is that the final scheme of organization is likely to suggest itself. These tentative classifications of data make the major groups of data prominent.

[1] For definition of stabilization graphs, see p. 136 of this chapter.

[2] American Marketing Association, *The Technique of Marketing Research*, pp. 234–235.

After All Data Are In

If the investigator permits data to be assembled higgledy-piggledy as they come in, he faces the task of bringing order out of chaos before he can use them. His task is similar to that of a man building a house from bricks, mortar, uprights, sills, beams, weather boards, lathes, and shingles all dumped in a heap by irresponsible truck drivers. His first step is a straight sorting of building materials. If the data gathered are of many kinds—printed material, longhand notes, letters, answers to questionnaires—his first problem is one of straight sorting. His second is one of appropriate filing for each type of material. Answers to questionnaires are first to be tabulated by hand or by machine. An explanation of the various methods follows.

METHODS OF RECORDING AND ORGANIZING

Data have probably been collected in such forms as cards, rough notes, letters, charts, printed material, and questionnaires. As soon as it is apparent what forms of data predominate, one should select a filing system which is best adapted to these forms of data, which will make these data most compact, and which will make them most accessible to the user. The nature of the survey will determine whether heads in the filing system should be arranged geographically or alphabetically. If data come from keyed questionnaires, they are filed according to the way they are keyed and subdivided by appropriate guides. Keyed data cannot be organized (such data are tabulated) until all questionnaires to be counted have been returned.

Card System for Bibliographical Material

Classifying data by means of a card catalogue system is perhaps the most usable plan and hence the most popular, especially when the data have been secured in small units. In library research or in reading, where many points come close together, one can use the card system to take notes.

Organizing the data recorded on cards is vastly easier if only one idea or fact has been put on a card. If two ideas have been entered on one card, but belong under different topics, they must be transferred to separate cards before they can be filed. Dividers or pointers should, of course, indicate all the main divisions of subject matter in a file; moreover, a wealth of sub-

dividers indicating subordinate units of material will increase the usefulness of the subordinate material to the writer of the final report.

The card system is a versatile method for organizing material since it readily lends itself to rearrangement and additions of material. The cards under any one head may be arranged and rearranged at will, or they may be placed under other heads successively until they are in an order that permits the writer to go straight through them with a minimum of overlooked material, rearrangement, and rewriting. Factors determining their arrangement are their relative importance to the purpose of the research, their logical relation to each other, and the experience and judgment of the researcher.

When data in the form of charts, graphs, or reprints are recorded on paper larger than cards, they may be accounted for by a card or cards referring to them inserted in the proper place in the file. By virtue of this card, the writer can know what is available under any particular head without constantly thumbing through bulky material to find particular items of information.

In the original preparation of the card, the head under which the data fall is written at the upper left-hand corner and the source of the data at the upper right-hand corner. The first head facilitates immediate filing, and the second provides the bibliography and specific data for footnotes. For example, if the source of information is a magazine article, the card should read:

> Mail Questionnaire—content. Houser, J. David, "Measurement of the Vital Products of Business," *Journal of Marketing*, 2: 3: 181–189, January, 1938.

If the investigator should question the accuracy of his notes or decide they are too meager, he can easily find the desired reference and reread it.

Loose-leaf Notebook for Bibliographical Material

The advantage of employing the loose-leaf notebook, or folder, in classifying data is that it renders them both compact and available. The size of the notebook, or folder, will depend upon such factors as the nature of data being collected and the suitability of

the notebook, or folder, for handling. If they are ill-adapted to the type of data collected, they cause the data to be crowded on the pages and hence to become incomprehensible, even to the investigator himself when he studies them later.

The loose-leaf feature of a notebook permits shifting of pages when reclassification of subject matter is necessary and when sheets covering main topics or ramifications should be added. It permits two or three carbons to be made of a specific note, a convenience which is important when the note should be filed in more than one place. It permits pointers to be attached to the dividing pages so that the user may turn easily to the proper section.

Loose-leaf notebooks invite the user to record many notes or data under each head. They permit him, however, to combine so many data on a page, or under a head, that he may have difficulty in remembering his scheme of arrangement. They cause him another difficulty; pages tear out after considerable handling, unless he protects the perforations with reinforcers. When the data become voluminous, they make a notebook unwieldy; hence, the user must take pages of data out of his notebook and file them at intervals in convenient filing boxes, drawers, or cabinets.

The Recapitulation Sheet

The recapitulation or assembly sheet is merely a ruled sheet with space for each question or basic idea intended to receive a number of answers, and with spaces for each answer. The recapitulation sheet is another means of assembling data, especially the quantitative data resulting from questions requiring a categorical or a numerical answer; this type is illustrated in Fig. 14. It can be, however, a means of assembling qualitative data —all information which indicates a fact or a course of action which cannot be reduced to figures—providing that data can be reduced to a common denominator; this type is shown in Fig. 10, page 130. This information is often in the nature of comment gathered by personal, mail, or telephone interviews or of excerpts of printed matter, digests, or clippings. The common denominator of all such information is identity of thought contained in separate items of information.

REASONS GIVEN BY THIRTY-THREE PEOPLE FOR PREFERENCE FOR MAIL-ORDER COMPANIES

Reasons for preference	*A*	*B*	*C*	*D*	Total
1. Prompt delivery service	5	1	0	1	7
2. Better merchandise	5	1	0	0	6
3. Better value (quality in relation of price)	2	2	0	1	5
4. Smarter styles (clothing, hats, shoes, dresses)	0	0	0	3	3
5. Scholarship	0	2	0	0	2
6. Satisfactory adjustments and business relations	2	0	0	0	2
7. Goods come as specified	2	0	0	0	2
8. No carrying charge	0	0	1	0	1
9. No other catalogue in home	1	0	0	0	1
10. Lowest prices	1	0	0	0	1
11. Relative works for company	0	1	0	0	1
12. "Personalized" service	1	0	0	0	1
13. Likes sales bulletins	1	0	0	0	1

The following table shows how many of 29 mail-order customers have bought anything on monthly payments as compared with those who have purchased for cash only.

	Farm	Village	Town	Total	
				Number	Per cent
Cash only	9	4	6	19	65
Monthly payments	1	2	7	10	35
Totals	10	6	13	29	100

Two out of every six families have bought something on a monthly payment plan. The farm families were nearly all "only cash" customers. In the villages, two-thirds of the families have never bought anything from a mail-order house except for cash. But in the larger town of Ladd (population 1,318) slightly more families were encountered who have bought on time.

FIG. 10.—Recapitulation sheet of qualitative data from Mail Order Customer Research Test and Final Questionnaire form from Arthur C. Weick.

The recapitulation sheet expresses itself in forms appropriate to the data it records. It is a sheet ruled vertically and horizontally to provide spaces for each answer to a question. It lists on one side the various items of information desired and at

the top the sources from which the information has been drawn. The size of the recapitulation sheet will necessarily vary with the amount of data to be assembled upon it. In compiling election returns, the recorder can enter the returns of the precinct on a small sheet but for those of the state or the nation he requires a master card as large as a table top.

The recapitulation sheet makes possible the presentation of data in tabular form of the type that appears on tally cards. By means of it, the investigator classifies, condenses, and sets before himself in a vivid form the data resulting from research work accomplished by any known method of gathering information. This arrangement enables the investigator to make comparisons of data or of percentages set alongside each other, an arrangement which spells a quicker and a more accurate grasp of facts. It permits the groupings and regroupings of data and the relation of each group to the object of the study. The recapitulation sheet is purely a work sheet, on which the results of the research begin to take their first organized form and from which many deductions may be made for later use in writing the report. It assumes the form of a collection of units as the answers to different questions and sections are placed upon it. It is a simple matter, when writing the report, to take a complete unit from the recapitulation sheet and incorporate it into the body of the report when such a chart is needed for reference or emphasis.

PROCEDURE OF ORGANIZING QUANTITATIVE DATA

The director of a research project employing many investigators and using many methods to gather data, or the person doing a one-man study, plans and works to secure only such information as will throw light upon, and hence help to solve, his particular problem. When his work of collecting data is completed, or seems completed, however, he faces a heterogeneous mass of features, facts, opinions, and preferences, which he must sift and organize to make them perform their intended function.

To effect this organization of data, he can follow clearly defined steps of procedure such as:

1. Examining data.
2. Testing the sample.
3. Tabulating quantitative data.
4. Drawing statistical conclusions.

This procedure is especially helpful to the investigator in all phases of distribution because it is a charted course in his own field of work. It can also aid other researchers in the varied fields of business investigation: production, administration, banking, and finance.

These steps have been segregated in order to indicate that each has its function to perform in solving the problem under consideration although they effect a continuous procedure in which one step overlaps another.

Examining Data

Editing.—Editing is the first phase of examining data. Its purpose is to get rid of errors in data and to prepare them for tabulation. Answers secured by personal interview, if the survey is extensive, are first edited in the field by the supervisor of the interviewers in co-operation with each interviewer and again in the office of the director of the survey. The answers from mail questionnaires are edited by the director of the survey in his office. If the editing is by a person trained especially for the task, he knows the type of error to anticipate: inconsistent answers, incomplete answers, inaccurate answers. He also knows the type of answer to edit in order to render it "tabulatable." For example, he must translate various expressions of units of time or space into the particular unit requested in the questionnaire. If hours are the unit of time in some answers and minutes in others, both are translated into hours or into minutes. He must name and define comprehensive class intervals to reduce the number of tables. He must find the underlying idea or intent of answers of a subjective nature, where variation in diction tends to obscure identity of meaning. He must revise the various expressions of the same ideas in the responses so that the responses can be made into tables few enough in number to be manageable.

If the number of responses is small, the person in charge of the investigation can do all the editing. If it is large, he draws up a set of instructions for the group of editors which varies considerably with the nature of the study but which always includes such items as:

1. Differentiate your editing from that of others and from the original answer by the color of pencil or ink you use.

2. Revise an answer inconsistent with another, on the basis of the respondent's intent shown in answers to other questions.
3. Reject an obviously incorrect answer.
4. When possible, correct and use returns.
5. Do not erase or destroy the original answer; cancel it in such a way that you can count it.
6. Standardize the units of measurements used in answers.
7. Find a common denominator for qualitative data.
8. Differentiate the work of investigators not already demarcated.
9. Differentiate the sources of responses by such means as colored tabs. (Sometimes questions are printed on different colors of paper for this purpose.)

When machine tabulation is to be used, answers are given code numbers which are indicated by holes punched in Hollerith cards. These cards the editor must prepare. A brief discussion of mechanical tabulation methods such as punching, coding, sorting, counting, etc., will be given in a later section of the chapter.

Sifting and Weighing Data.—Sifting and weighing data constitute the second phase of examining data. The purpose is an audit of the collected data for their pertinency, their practicability, and their trustworthiness. In theory, all the data procured as a result of the carefully planned and executed method of securing them have pertinency. In practice, data have relative degrees of this quality and some will be irrelevant. Some expressions of desires, preferences, and opinions supplied voluntarily by the respondent may have more significance for the investigator than data he has requested.

The investigator determines the practicability of data by deciding whether they help to accomplish the aims of the study. He asks himself, "Can this information be presented clearly and convincingly?" Too many data are cumbersome. He has to streamline them, simplify them, give them the dynamic quality which makes the findings of research get action. Just as Webster's reply to Hayne came from a mind so well stocked with material that there was much in reserve, so the best report is based upon a larger mass of material than is included in it. On the other hand, if an investigator's findings indicate that he must make a point in the report that will encounter opposition, he will have to mass not only pertinent evidence but a considerable

amount of it in order to make his point. By evaluating data in the light of what he thinks they can accomplish, he readily arrives at their importance to the study and hence their practicability.

The investigator has presumably stressed the scientific spirit, *i.e.*, trustworthiness, in every stage of his research procedure. To this end he has sought to frame questions for his telephone, personal, or mail interviews which do not suggest their answers; to employ only such interviews as are honest and competent; to obtain expert, unbiased, and complete information from printed sources; and to use only tried and true indexes. His check of trustworthiness in this, the examination phase of organizing data, consists of reviewing every factor of his research which will eventually affect the soundness of his conclusions and recommendations. If in his review he discovers dishonesty, carelessness, incompetency—even poor judgment—at any stage of the research, he must do the work again or see that it is done. Otherwise, he cannot hope to find the truth through his study or to present it in his report.

Testing the Sample

For Reliability.—In advance of collecting data, the investigator presumably decided how many cases he must study in order to attain the accuracy or reliability of the sample necessary in a given study—unless his investigation covers every case—because the reliability of statistical conclusions based on a sample depends in part upon the number of cases studied.[1] This number must be large enough to give a clear reflection of the information desired. Two principles, illustrated in Chap. III, should have guided him: (1) that the number required in a sample increases as the variation in the individual items increases; and (2) that the number required also increases as the required accuracy of the results increases.

With the data collected, the investigator has first the problem of testing the sample for reliability or stability; he is seeking to answer the question, Have I considered enough cases from the total universe to eliminate accidental error or bias which may have crept into my sample as a result of finding certain types of cases more or less frequent than they appear in the total universe?

[1] See Selecting the Sample, Chap. III, p. 44, and Predetermining the Size of the Sample, Appendix I, Fig. 19.

In other words, is the value of the measurement (5 per cent, 10 per cent, 15 per cent, etc.) attained from examining the sample reliable enough to permit generalization applicable to all the universe from which the sample has been drawn? If not, no weight could be attached to any study, unless that study covers the entire universe of things: wages of every laborer, living cost of every consumer, or rent paid by every home renter.[1]

The assumption that underlies the test of reliability of a sample is: if additional samples are taken from the same universe, the corresponding measurements (average or mean, a frequency ratio, or a coefficient of correlation) will have the same values; *i.e.*, the addition of more cases or interviews will not significantly change the size of the unit of measurement found to be the mean or average. If the investigator actually takes several successive samples such, for example, as questioning three or four units of 100 men concerning their favorite pie, and if he finds that 60 per cent of each unit of 100 men prefer apple pie, he concludes that more interviews would not change the average, or value of the measurement, and hence they would not increase the accuracy of generalizations based upon the average or mean.[2]

Various methods have been devised, in addition to the practical method just outlined, by those doing research work in economics, marketing, advertising, to check the reliability of the sample. Some use statistical methods, some "cumulative frequency." The statistical methods not only test the reliability of a sample but also indicate the degree of reliability. The basis of the

[1] If one could test the results of the mail questionnaire as one does those from personal interviews, the following statement of Dr. Gallup would be highly significant. He says that the size of the sample "is generally the least understood element in this field of research. Actually it is safe to say that no nation-wide poll in the history of this country ever went wrong because too few persons were reached. A survey which predicts an election within 5 per cent is generally regarded as amazingly accurate. Yet this degree of accuracy can be attained with from 600 to 900 ballots provided the ballots are properly selected." *The New Science of Public Opinion Measurement*, American Institute of Public Opinion, p. 6.

[2] In regard to the application of this practical rule used by market investigators in connection with sampling, Professor Theodore H. Brown observes: "It should be noted that this rule leaves open entirely the question of the degree of stabilization which is necessary for the problem under consideration." *The Use of Statistical Techniques in Certain Problems of Market Research*, p. 11.

statistical methods is the estimation of the standard error. The scope of the present work does not permit a detailed explanation of this method, but a brief résumé of it in non-technical language is given in Appendix I for the purpose of introducing readers not acquainted with statistical methods to the possibilities of this type of analysis. Some understanding and appreciation of the theory of probability are of great practical value in analyzing business, as the following quotation indicates:

> Even if he [the businessman] does not have or does not wish to acquire, the background necessary for making the more elaborate probability analyses, he should at least appreciate, in a general way, the possibilities of such an approach so that he will not overlook the distinctions between distribution due to controlled causes and that due to pure chance.[1]

Many research agencies in testing the reliability of a sample follow the practice of setting these divergences in values of measurement, attained from successive samples, upon what they term a "stabilization chart," which shows the gradual approach of a curve to a static position. In these cases, direct percentages are used instead of the standard deviation computed for each group of samples.[2] It is generally referred to as "the cumulative frequency method" of testing the reliability of a sample and it is explained here because it seems to be in use by many commercial research people. It moreover involves less calculation than the group rotation method or mathematical formulas.[3]

The use of the stabilization chart in testing a sample—a method of testing the reliability of a sample which can be broken down into the following steps—may be illustrated by a simple hypothetical example. A research man in a city of 200,000 or 300,000 population is asked to make a quick but thorough study of its newspapers in order to measure their relative values as an advertising medium in the home. The personal-interview-questionnaire method of securing data is used.

[1] JOHN R. RIGGLEMAN and I. N. FRISBEE, *Business Statistics*, p. 230.

[2] Standard deviation or the root-mean-square deviation—the square root of the mean of the squared deviation. FREDERICK C. MILLS, *Statistical Methods*, p. 146.

[3] The explanation of the test which follows is adapted from the American Marketing Association, *The Technique of Marketing Research*, pp. 54–55.

1. Each evening count off in blocks of 200 the completed questionnaires as they come in from the field in a random sequence.

2. Count number reading newspaper *A*, and then count number reading newspaper *B*, and express both results as a percentage of 200.

3. Add to the first block of 200 questionnaires a second block of 200 questionnaires.

4. Determine again the number reading newspaper *A* and the number reading newspaper *B*, and express each result as a percentage of 400 questionnaires.

5. Add to the block of 400 a third block of 200.

6. Continue the cumulative computation until you have taken into account all the returns that have come in.

7. On an ordinary sheet of cross-section paper, prepare the list of percentages in the left-hand margin. Across the top, indicate the number of interviews for each combined computation. As you obtain the percentages, place a dot opposite the correct figure and under the number of returns in the block computed.

8. By continuing the process, you find that the line connecting the dots perhaps will waver noticeably in the first few calculations but gradually narrow its oscillations until it approaches a static position on the graph. As the curve achieves virtual stability, you conclude statistically that, *all conditions remaining unchanged*, no number of additional interviews would materially alter the record of newspapers *A* and *B* as to percentage of readers.

The chart in Fig. 11 presents an illustration of this principle.

For Proportionality.—The collected sample—in a study of people as consumers, for example—has proportionality if it is divided geographically, occupationally, economically, sexually, racially, religiously, etc., in the same proportion, as population is actually divided or as a specific case requires. The various divisions of classifications of which a universe is composed—economic groups, geographic groups, city, small-town, or country groups; users and non-users of commodity or service; age groups; or income groups—are termed "breakdowns" or "controls."

The percentages of the voting population of Illinois, worked out according to Gallup's principle of analyzing America, are illustrated in Fig. 12.

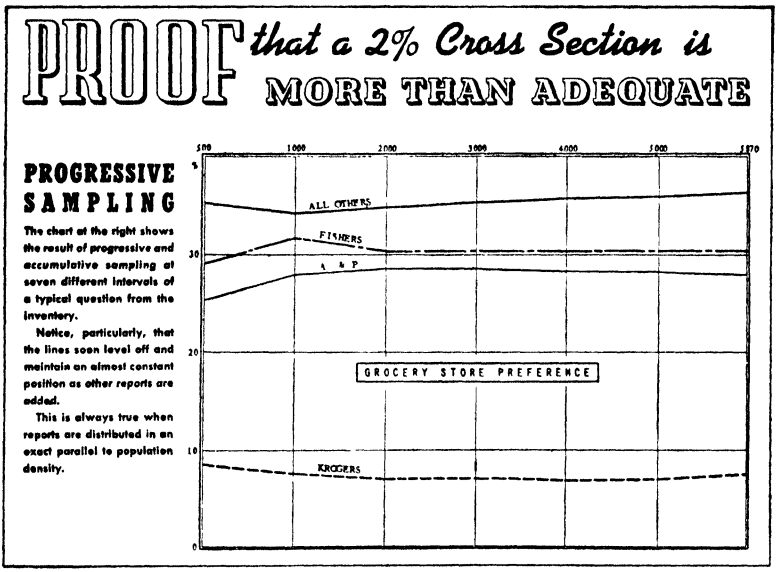


FIG. 11.—From the Seventh Cleveland Home Inventory. (*Reproduced by permission of the Cleveland Press.*)

Not all constituents of a universe, however, are significant to the conclusions of a particular study. If, for example, it is true that people in general consume less candy after they reach the age of twenty-five than they consumed formerly, age classification is then a significant "control" or "breakdown" of the entire population in any study being made to determine where confectionery stores could be located advantageously. One of the most important problems in obtaining proportionality for the sample would be getting the right proportion of people of various ages in the sample.

The test for proportionality of a sample is simple if the data are readily available for the total universe involved, if the kind and the number of breakdowns or controls of the total universe are known, and if the percentages which express the relation of breakdown or control to the total universe are known. If one wishes to test for proportionality a sample of the distribution of people in different income groups, one may proceed as follows:

Step 1. Obtain such a report as *Consumer Income in the United States*, 1935–1936, published by The National Resources Committee in 1938, turn to Table 2, and note what percentage expres-

I. *Geographical*

	Per Cent
Chicago and suburbs	51
Farmers	11
Small towns	10½
Cities 2,500 to 10,000	13
Cities 10,000 to 100,000 (includes Peoria)	14½
	100

(Means that 51 per cent of the ballots must come from Chicago and suburbs; 49 per cent from the rest of the state.)

II. *Economic*

	Per Cent
Voters on relief	17
Receiving old-age-assistance pensions	3
Poor ($600 to $1,100 yearly)	11
Middle class ($1,100 to $2,500)	55
Above average ($2,500 to $6,000) and wealthy	14
	100

III. *Age*

	Per Cent
21 to 29 years	23
30 to 49 years	48
50 and over	29
	100

IV. *Sex*

	Per Cent
Men	57
Women	43
	100

V. *Color*

	Per Cent
White	96
Negro	4
	100

VI. *Political*

	Republican	Democrat
Chicago and suburbs	36 %	64 %
Rest of state	45½	54½

(Returns in all six controls must include ballots from 13 to 20 per cent of the persons who did not vote in the 1936 presidential election because they were too young, were registered but did not vote, or were not registered then but are now.)

FIG. 12.—Tables illustrating percentages of voting population in Illinois. (*From Williston Rich, Human Yardstick, The Saturday Evening Post, January*, 21, 1939, p. 69.)

ses the relation of each of the 27 income levels to the total income. The investigator may decide that only incomes in the range of $2,500 to $5,000—comprising five class intervals—are significant in his particular study.

Step 2. Select from this table the income data arranged in class intervals $2,500 to $3,000, $3,000 to $3,500, $3,500 to $4,000, $4,000 to $4,500, $4,500 to $5,000, and their corresponding

percentages, 3.74, 2.16, 1.27, 0.72, 0.45, and of course ignore the 22 other class intervals.[1]

Step 3. Make a table of the selected data as follows, to be used as a standard to which to compare your sample:

PORTION OF TABLE 2.—DISTRIBUTION OF FAMILIES AND SINGLE INDIVIDUALS AND OF AGGREGATE INCOME RECEIVED, BY INCOME LEVEL, 1935–1936

Income Level	Per Cent at Each Level
$2,500–$3,000	3.74
3,000– 3,500	2.16
3,500– 4,000	1.27
4,000– 4,500	0.72
4,500– 5,000	0.45
	8.34

Step 4. Make a table of the data collected for the sample. Let us assume that a sample of 3,293 families interviewed at random shows the following results:

Income Level	Per Cent at Each Level
$2,500–$3,000	1.74
3,000– 3,500	2.16
3,500– 4,000	1.27
4,000– 4,500	0.74
4,500– 5,000	4.50
	10.41

The analyst must conclude that he has not interviewed enough families in the class interval $2,500 to $3,000 and too many unrepresentative families in that of $4,500 to $5,000. On the other hand, the difference of 0.02 per cent in the $4,000 to $4,500 income group is probably too small to be important except when the nature of a study makes a high degree of accuracy extremely important. Such accuracy is important in determining life-insurance rates or life subscriptions for magazines, for example.

If the sample lacks proportionality, it may be corrected in one of three ways. The investigator might gather more data, which of course involves time and expense. In Chap. III, page 47, is a statement showing to what extent the accuracy of a sample increases relative to size. If the sample is large enough, and if the analyst is competent, he may discard some of the questionnaires or schedules. The practice is, however, considered danger-

[1] Data from *Consumer Income in the United States*, 1935–1936, National Resources Committee, 1938.

ous in the hands of the inexperienced statistician, and when used questionnaires must be eliminated in random fashion in the particular control under consideration in order to avoid bias.

In most cases, inadequate samples are corrected by adjusting the sample for proportionality rather than by securing additional data or by excluding data.

Tabulating Quantitative Data

Editing and examining data and testing the sample have prepared the data for the next two separate operations of investigational procedure:

1. Tabulating the data
2. Drawing statistical conclusions

Tabulation is essentially a process of sorting the data to be classified into groups and either counting the items in the different groups or accumulating totals of the items.[1] It brings answers into perspective.

By means of tabulating data, an investigator may compare, for example, numbers reading magazine *A* with numbers reading magazine *B*, a process of organization valuable to him because it enables him to evaluate replies on a numerical basis. By means of tabulation, he may make possible, relevant, and/or necessary cross analyses of data. For example, if an editor of a magazine wants to know what features will interest its readers most, and if replies concerning occupation show that 68 per cent of them are businessmen, the investigator will gain further constructive suggestions by seeing, by means of tables, what percentage of them are distributed into the following groups: general industrial, manufacturing, and public utilities; banking, insurance, real estate, and finance. It is also helpful for him to know what percentages are executives or department heads, proprietors or partners, salesmen, technicians, clerical workers, directors' assistants, private secretaries, etc.

Tabulating is done by hand or by machine, depending upon the adaptability of each method to the particular study. In choosing the method, one considers such factors as speed, cost, flexibility, and accuracy.[2]

[1] JOHN R. STOCKTON, *Introduction to Business Statistics*, p. 355.

[2] A careless or untrained operator can, of course, make errors in tabulation.

Each method has certain advantages and certain disadvantages. Some of the conditions which make machine tabulation preferable are

1. A large quantity of data is involved; two thousand is considered a large number of questionnaires by some, and five thousand by others.
2. A large number of cross classifications is required.
3. Routine or repeated studies are to be made.
4. Many different table forms are to be prepared.

The basic considerations of hand and machine tabulation are the same; variations occur in the technical details of the operations. The succeeding explanation of hand tabulation will, therefore, suffice for both types.

In the tabulation of primary data, the types of forms most used are the counting or work sheet and the recapitulation, assembly, or summary sheet. The counting or work sheet is a table of one, two, or more dimensions on which the data are assembled for the purpose of study.

The form of the work sheet determines the classifications and cross classifications of data which are available for interpretation at a later time. To avoid confusion, its form should be kept simple, preferably the equivalent of a two-dimensional table, such as that shown in Fig. 13.

Tables on which the data have been counted or assembled are of three kinds. The first is the one-dimensional table, which shows, for example, only the number of persons using a particular brand. The second is the two-dimensional table, which shows, for example, both the number of persons using the brand and their income. This type is more illuminating than the preceding table. The third is the complex table, which shows, for example, the number using a brand and the distribution of brand in relation to income, age, sex, etc. This type of table displays a large amount of data compactly, but it may become so complex that the significance of the data displayed is lost.

If too many classifications are attempted in the original counting of the data, a large number of errors will probably result and the effort to save time and expense will be defeated.

Because most of the errors made in the tabulation process occur in the counting, one should entrust it only to competent persons. One should regard it as an important process and the counting

SECTION: *Service* (F) . V. . T. COUNTY: *Bureau*

QUESTION No. 5 *How long would you be willing to wait for delivery of your order?*

	ANSWERS TO QUESTION	ALL INTERVIEWS	SEARS CUSTOMERS	WARD CUSTOMERS	C.M.O. CUST.	SPGL. CUST.	OTHER CUST.	
WOULD BE WILLING TO WAIT	1 DAY							
	2 DAYS							
	3 "	/ ①	/ ①		/ ①			
	4 "	// ②	// ②	// ②	/ ①		/ ①	
	5 "							
	6 "	/ ①	/ ①	/ ①				
	ONE WEEK	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 (35)	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 / (31)	𝍸 𝍸 𝍸 𝍸 /// (28)	𝍸 𝍸 /// (13)	𝍸 (5)		
	8 DAYS							
	9 "							
	10 "	𝍸 𝍸 𝍸 𝍸 𝍸 // (27)	𝍸 𝍸 𝍸 𝍸 // (22)	𝍸 𝍸 𝍸 //// (19)	𝍸 𝍸 // (12)	// (2)	/ (1)	
	11 "							
	12 "							
	13 "							
	TWO WEEKS	𝍸 // (7)	𝍸 / (6)	//// (4)			/ (1)	
	OVER TWO WEEKS	// (2)	// (2)	// (2)	// (2)			

FIG. 13.—Sample form typical of several hundred work sheets used in the Chicago Mail Order Survey, Arthur C. Weick Company.

sheet as an important form. The clarity and order of this sheet will determine the accuracy, speed, and economy of the counting.

Procedure of Counting.—The first step in the procedure of hand tabulation, as well as in that of machine tabulation, is to classify the data according to their most important or their most obvious divisions, such as who, what, why, where, and when. The importance of a division is determined by its potentiality to answer the most important question of the problem being studied. As has already been said, the most important and the most obvious divisions for market data about people are income, age, sex, geographical locations, occupations, race, religion, etc. In the usual study, the most obvious and the most important divisions are indicated by the main questions of the questionnaire used to collect data; hence, the first counting is a straight sorting of the replies to each main question, after which the results are usually recorded on a tabulation sheet or form. *Time* magazine, for example, placed occupation first in its 1938 statistical picture of subscribers. This fact suggests that the first counting was of answers to Question 6 in the "Do You Own a Horse?" questionnaire. This question reads:

Are you in business?..... ____
If not, what is your profession?..... ____
Or are you retired?..... ____

First countings would also be made for answers to such questions as

Number 19. Do you (or your husband) personally own:
An annuity?..... ____
Government securities?..... ____
Listed stocks?..... ____
Listed bonds?..... ____
Building and loan shares?..... ____
Savings account?..... ____
Real estate (other than home)?..... ____

Number 20. What make of car do you own?

Name	Year	Bought New	Bought Used

The next step, after the straight sorting of answers to each main question of the questionnaires, is to tabulate answers to each

ANSWERS TO QUESTIONS			TOTALS BY COUNTIES BUYING HABITS (SERVICE)																		GRAND TOTALS					
			BUREAU COUNTY						HARDIN COUNTY						FAYETTE COUNTY											
			AI	S	W	C	SP	O	AI	S	W	C	SP	O	AI	S	W	C	SP	O	AI	S	W	C	SP	O
No.5 How long would you be willing to wait for delivery of your order?	3-4 Days	Farm No.	3	3	2	2	0	1	3	3	1	1	0	0	5	1	5	1	2	0	11	7	8	4	2	1
		%																			5					
		Village No.	5	5	5	1	1	0	2	1	2	1	0	0	4	2	4	2	1	0	11	8	11	4	2	0
		%																			4					
		Town No.	7	5	7	2	1	0	6	5	3	1	1	0	1	1	0	1	0	0	14	11	10	4	2	0
		%																			6					
		Total No.	15	13	14	5	2	1	11	9	6	3	1	0	10	4	9	4	3	0	36	26	29	12	6	1
		%	6						5						4						5			4		
	One Week	Farm No.	36	32	29	13	5	0	46	37	33	16	4	0	47	22	33	19	10	1	129	91	95	48	19	1
		%																			55					
		Village No.	63	45	54	29	5	0	67	57	54	25	8	3	42	24	36	15	4	6	172	126	144	69	17	9
		%																			67					
		Town No.	63	57	47	24	4	2	43	29	22	23	3	0	43	18	33	18	15	5	149	104	102	65	23	7
		%																			58					
		Total No.	162	134	130	66	14	2	156	123	109	64	15	3	132	64	102	52	30	12	450	321	341	182	59	17
		%	60						65						55						60			63		
	Ten Days	Farm No.	27	22	19	12	2	1	27	22	24	4	2	0	21	14	16	9	4	0	75	58	59	25	8	1
		%																			33					
		Village No.	27	22	23	10	2	0	8	3	3	2	0	0	36	27	33	18	1	3	67	52	59	30	3	3
		%																			26					
		Town No.	19	15	14	7	2	0	29	26	17	7	8	1	34	15	26	17	9	2	82	56	57	31	19	3
		%																			31					
		Total No.	73	59	56	29	6	1	64	51	44	13	10	1	91	56	75	44	14	5	224	166	175	86	30	7
		%	27						27						38						31			30		
	Two Weeks or More	Farm No.	9	8	6	2	0	1	4	2	1	1	0	0	3	1	2	1	0	0	16	11	9	4	0	1
		%																			17					
		Village No.	2	1	2	0	0	0	2	2	2	1	0	0	2	0	2	1	0	1	6	3	6	2	0	1
		%																			3					
		Town No	9	8	6	2	0	0	1	1	1	0	0	0	2	1	2	0	1	0	12	10	9	2	1	0
		%																			5					
		Total No.	20	17	14	4	0	1	7	5	4	2	0	0	7	2	6	2	1	1	34	24	24	8	1	2
		%	7						3						3						4			3		

FIG. 14.—Copy of total sheet covering this same question for the entire Chicago Mail Order Survey.

division separately. In hand tabulating, the two operations are, (1) the actual counting and the tabulation, and (2) the assembling of all the tabulated data for purposes of study on the summary or recapitulation sheets.

The counting may be done by the usual "cross-five" system (𝍸 = 5) on rough sheets, or on a work sheet exactly like the columned assembly sheet. In the latter case, the totals of various columns are transferred from work sheets to identical columns in summary sheets. Because of the difficulty of comparing or contrasting data on separate sheets, most research directors prefer the columned sheet, which provides a column for each question. A sample of such a sheet, recapitulation or assembly, is shown in Fig. 14.

It is necessary in hand tabulation, where either type of sheet is used, to balance the columns frequently to see if counting is accurate. In an assembly sheet of many columns, the data of some columns will be so related to those of other columns as to be precise checks. For example, one column of the assembly sheet for answers to the *Time* questionnaire referred to above shows that 3,141 subscribers own Ford cars. Columns also show the number of Ford cars which were purchased in 1913, 1914, 1915, and so on through 1938. The number of Ford cars which were purchased yearly from 1913 through 1938, arranged in columns, should equal 3,141 cars, the number of subscribers who own Fords.

When the columns are many, the tabulator should, after recording data from questionnaires, total the columns to determine whether they are in balance with the control or check column. This opportunity to check accuracy of the individual columns is one of the advantages of using the recapitulation or assembly sheet for counting and tabulating. If all the columns are in balance with the control column, there is a high probability of accuracy in both the individual columns and the control column.

Machine Tabulation.—Machine tabulation results from transferring the data, the answers to questions of a questionnaire, to cards by punching numbered holes in them—punching numbers to leave holes—each hole representing one piece of information. Since these holes in the cards affect, by the machine process, sorting and counting of answers, the answers to each question must be assigned a code number, and it is these numbers which

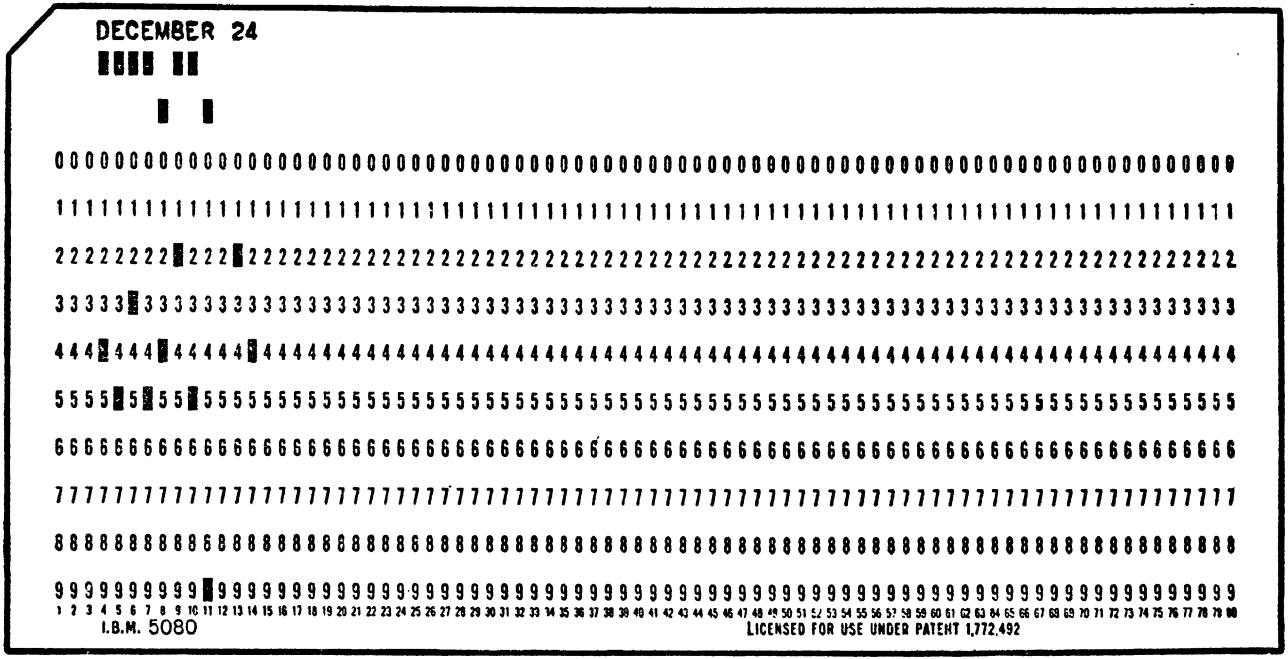


FIG. 15.—Sample of machine tabulation.

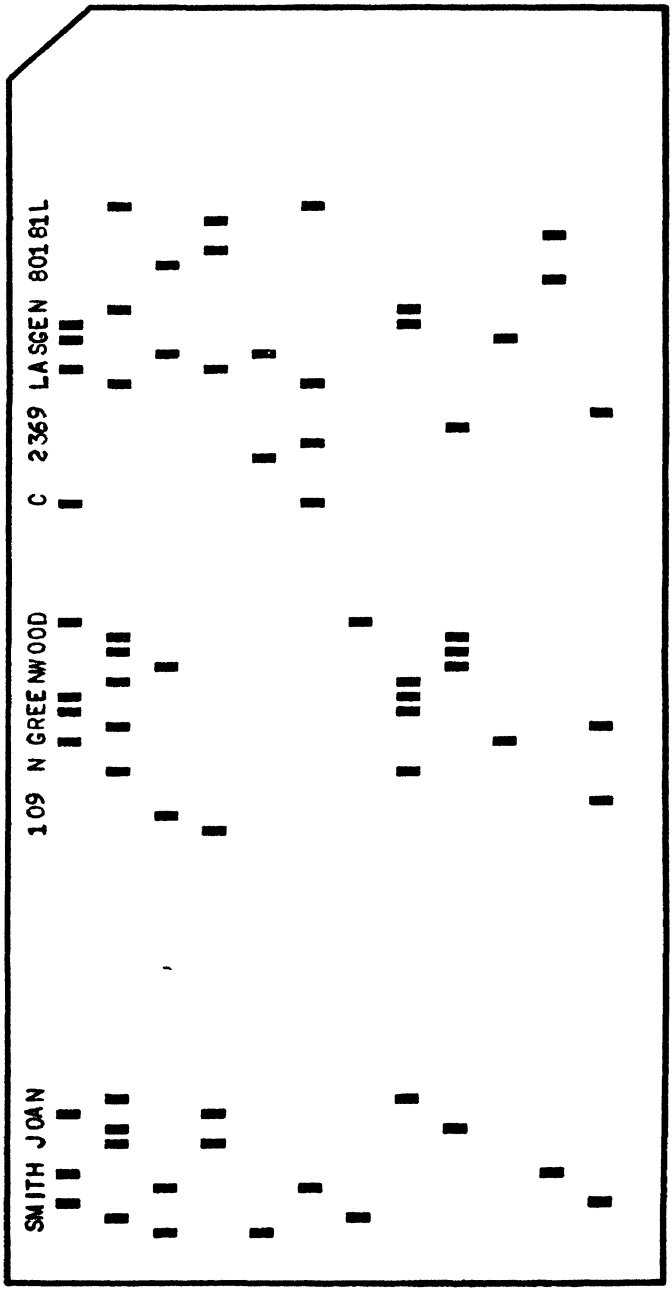


FIG. 16.—Sample of the Hollerith card.

are punched out in the proper sections of the card.[1] Often the code number for each potential answer to the various questions of a questionnaire is assigned before the questionnaire is used. "Yes," might be coded 1; "no," coded 2; "do not know," 3; and "no answer," 4. A simple example of how cards are prepared for use in the machines will make clear both the Hollerith and the Powers systems. The first step is to set off a certain group of columns as "fields," in each of which one particular item of information will invariably appear. Each field is assigned the largest number of digits which it will be expected to accommodate. A date, month and day, would require a field of four columns—two for the month, since months amount to 12 in number, and two for the day, since days amount to 31 in number. Figure 15 shows December 24.[2] This operation is the only one in which the human element occurs and hence the only one that must be safeguarded against possible error.

The Hollerith card has 80 columns across, and each column has 12 punching positions. The Powers may have 90 vertical columns of digits 0–9, with a possibility of two extra. On the Hollerith card, 10 are indicated in vertical sequence by printed numerals 0–9. The numbers 11 and 12, not indicated by printed numerals, appear at the top of the card for special uses. A code number is assigned, by a hand operation, to each piece of information to be recorded by punching corresponding digits on the card.

Figure 16 is a Hollerith card, showing hypothetical answers to questions in a survey of housing of university women such as is conducted by the office of the Dean of Women, University of Illinois.

1. Name: Smith, Joan
2. Address: 109 N. Greenwood Street
3. Home: Champaign
4. Telephone number: 2369
5. College: LAS
6. Course: General
7. Number of credits: 80

[1] A code may consist of letters, numbers, or both, the various combinations indicating the different items of information. Its function is to standardize items and facilitate classification.

[2] If the eleventh and twelfth punching positions—at the top of the card—are used to designate the months, only one column need be used, since there would then be twelve positions.

8. Year of birth: 1918
9. Married or single: Single
10. Local resident or out of town: Local

Hollerith card III is the one used for investment record by the University of Illinois Business Office.[1] Reproduced in Fig. 17, it shows data pertinent for recording and for analyzing various investments.

Punch marks can record by a similar procedure all the information gathered by a two-page questionnaire. A complete punched card would contain 960 holes—80 columns of 12 positions each. The cards are punched on a simple electrically operated keyboard machine, but they are sorted and counted by another machine too complex to permit description. The principle is that copper brushes run down whatever columns are being analyzed, and, whenever a hole occurs, the brushes make electrical contact through the hole. Desired combinations of columns can be counted simultaneously; hence, cross references are easily made. An understanding of the operation of the various machines is useful and interesting but not necessary. The two machines in general use are made and licensed by the International Business Machine Company and Remington Rand, Inc.[2] Since such machines are relatively expensive to rent, firms not doing a large volume of research have tabulations done by commercial organizations providing such service.

In the tabulation stage, one should keep two objectives in mind:

1. The necessary routines must be set up to insure accurate counting and recording of data from questionnaires.

2. The tabulation forms should be designed to spotlight the significance of certain classes of data.

Principles for Obtaining Accuracy.—To insure not only accuracy in tabulation but also the utmost speed and economy, the chief tabulator will observe the following twelve general rules:

1. Place one person in complete charge of the tabulation.
2. Number questionnaires and counting sheets serially.

[1] The cards were prepared by and reproduced through the courtesy of Gordon A. DaCosta, Business Office, University of Illinois.

[2] The companies maintain schools for teaching the operation of the various machines. One may see the operation of the machines at sales offices in many cities or in tabulation departments of many universities.

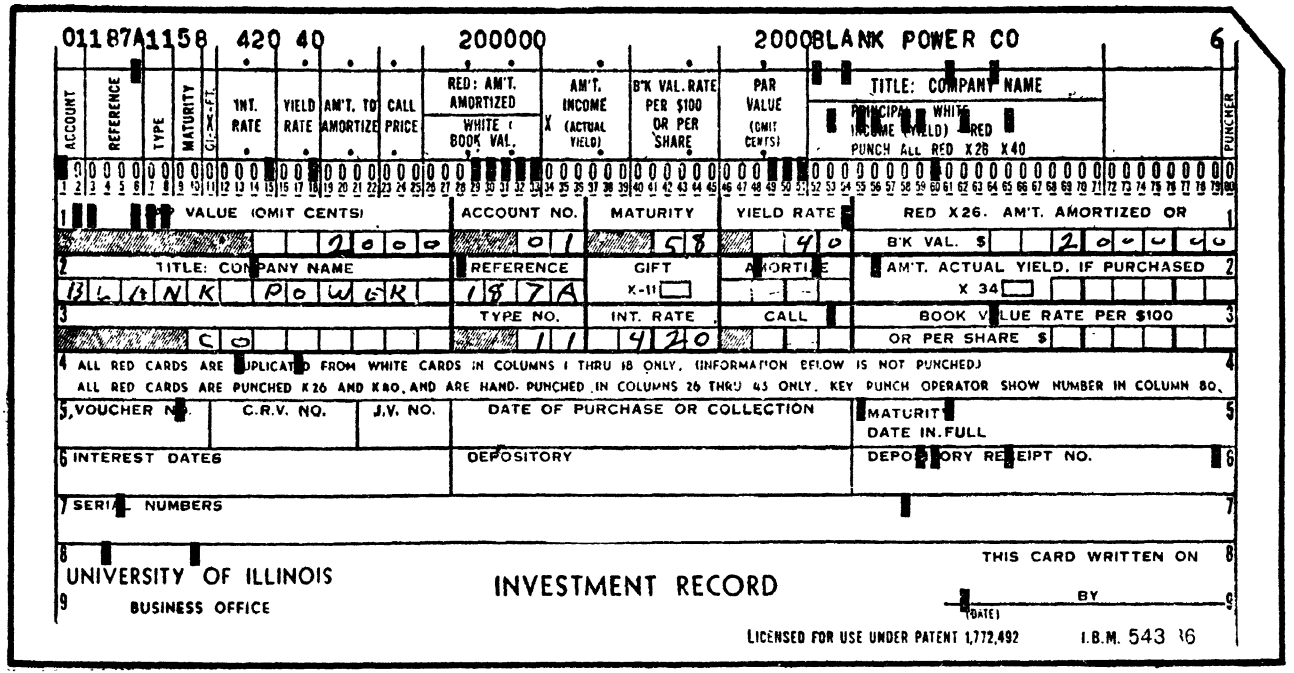


FIG. 17.—Punched card of investment record for Blank Power, a hypothetical security.

3. Establish base totals at the beginning of the tabulation.

4. Check each unit of tabulation against the base total.

5. Tabulate data by major groups separately and demark each tabulator's work.

6. Standardize work sheets or counting sheets.

7. Give to all work sheets or counting sheets clear, complete, and descriptive titles.

8. Set up work sheets or counting sheets which will provide for all significant classifications.

9. Make class intervals mutually exclusive, *i.e.*, 1–9; 10–19; 20–29.

10. Make all tables complete.

11. Use narrow tables on counting sheets.

12. Arrange data in a table in the order which best reveals their importance. (For example, it is now the policy of the U. S. Census Bureau to show the total of each column at the top of a table rather than at the bottom of the table.)

Function of Cross Classification.—The key to setting up data so that they will best reveal their meaning is cross classifications. To the analyst the tabulation is mainly a means of bringing out relationships. For example, the *Cosmopolitan* magazine advertises that its subscribers are in the age group when people spend most—"the age of accumulation." To arrive at this conclusion, the tabulator had to find to what age group *Cosmopolitan's* subscribers belong, and then find authoritative tables of consumer spending showing volume of dollars spent broken down according to age groups. Then he had to perceive that the age group spending the most coincided with that of *Cosmopolitan's* subscribers. The more narrow the classification, as specified in rule 11, the more sharply will the relationship be defined. The tabulator should use his ingenuity to make cross classification of data and to see significance in their relationships. For this reason, the chief tabulator will often go back to the original questionnaire and tabulate a small number of answers to questions personally to discover new possibilities of classification.

Drawing Statistical Conclusions

The analyst, in drawing statistical conclusions, should always keep two considerations in mind:

1. That in fact finding, establishing relationships is important.
2. That overgeneralization is dangerous.

Finding relationship is fundamental in building a fund of information. A fact by itself may be meaningless. It may not be significant that 471 women of the P.T.A. in 27 Chicago and suburban grade and high schools prefer a certain brand of coffee. But this fact becomes significant to the sales manager for the particular coffee when cross classification indicates to what income group these 471 women belong or whether their preference is for drip coffee. He will then know to whom to direct his advertising appeals. The value of a statistical conclusion is determined usually by the extent to which it establishes significant relationships. Hence, in order to draw a statistical conclusion which will help to solve a problem, the tabulator attempts by cross classifications to establish all important relationships within the data.

Making significant generalizations is the fundamental purpose of statistical analysis. The analyst may begin with a considerable amount of data; for example, his sample may include 10,000 or 20,000 questionnaires. Although the number may seem manageable, the human mind cannot make anything out of reading data from each of 10,000 or 20,000 questionnaires. The data may be reduced, however, to classifications narrow enough to admit of easy handling and of comprehension. By the use of the various averages (arithmetic mean, median, or mode) the analyst will arrive ultimately at one single concept. By finding the simple average, he reduces the facts true of numerous cases, to one case. For example, he is speaking about all people who enter college when he says, "The average person enters college at the age of 18," or "It takes the college graduate a year on the average to find a position."

There are many units in which the analyst may express statistical measurements, but if he wishes to be understood by the run-of-the-mill student and business executive or professional man, he will confine his statistical data to such terms as are generally understood. Percentages and averages are, to these people, familiar ground. If the analyst uses the term *median* or *mode*, he should explain each term in non-technical diction and tell why he uses that term instead of the simple *average* (arithmetic mean).

The Mean.—The arithmetic mean is an average determined by dividing the sum of the values of individual observations by the total number of observations. For example, if the total ages of 100 people are 1,900, then the mean (or average) age of people is 19. The term *average* (the arithmetic mean) is frequently used in market research, but it is vague and often misleading.[1] The average age, twenty-two, for college graduates, for example, is misleading, too, because it draws attention to itself, although some of the graduates making up the total may be the proverbial threescores and ten while others may be sixteen. A specific statement of the number of people in an age group is meaningful; so is the statement of the percentage of the whole which any part of a group constitutes.

The Median.—The median is the middle point of a list of statistical data arranged in ascending or descending order. In a list of 27 class intervals of family incomes in the United States, ranging from under $250 to $1,000,000 and over, the fourteenth interval, $4,500 to $5,000, would be the median income. Its function is to measure skewness[2] or evenness in the distribution.

The Mode.—The mode is the point of the greatest number of observations—the point of greatest concentration in a frequency distribution.[3] The mode becomes immediately apparent as soon as data are given a frequency distribution. Since the mode indicates the number of items with like characteristics, it is a meaningful piece of information in advertising, merchandising, and marketing. For example, knowledge of the average size of women's dresses—since average size is an abstraction—is of little significance to a buyer for a woman's apparel shop; but her mode size—because it shows the number or the percentage of women needing dresses of a certain size—is of much significance to all buyers of such shops. The mode size is of enough significance for a government-sponsored survey to be undertaken to determine it as well as the frequency distribution of sizes. The

[1] The arithmetic mean is constantly used synonymously with the dictionary meaning of average.

[2] Measures of skewness show the lack of symmetry in a distribution (the distribution does not follow a normal curve in which median, mode, and mean will coincide) and the direction in which it, the skewness, extends.

[3] A frequency series is a collection of data so arranged as to reveal the frequency with which a given value occurs in the body of data. American Marketing Association, *The Technique of Marketing Research*, p. 62.

survey has also been given the assistance of L. Bamberger & Company, one of the large department stores of the New York area, and its women patrons. Because frequency distribution of data shows the mode, as well as average and median, it is a valuable technique in research work.

The statistical conclusions which can be drawn from a given set of data depend upon a thorough knowledge of statistical methods. If any of the above measures is used in the process of drawing conclusions, its characteristics, and hence its function, should be kept clearly in mind. Since statistical method is a study in itself, however, it is beyond the scope of this book to do more than suggest its place in business research and indicate sources of information concerning it. Perhaps its importance to all types of business research can be suggested by the observation, "Statistics are as indispensable to the investigator as is the monkey wrench to the mechanic."

ORGANIZING QUALITATIVE DATA

Qualitative data are all information significant to a subject which are not directly responsive to statistical treatment. They have two major sources:

1. Reference books, government reports, clippings from the public press.
2. Responses from personal interviews and telephone and mail questionnaires—comments volunteered or invited.

The value of such data rests upon their relevancy to the problem at hand and upon the reliability of their source.

In order to make the best use of qualitative data, the investigator must find some way of classifying them, and classification depends upon his finding some common denominator in seemingly heterogeneous information in the form of comment, opinions, advice. He examines each item of information for its dominant-thought content and establishes a separate sheet, or a separate column, for each new idea or slant. For example, a case is cited of 71 merchants expressing objections in personal interviews to a new confection for the reason that it would interfere with the established products they sell. Their answers showed 17 objections, but an analysis of these objections revealed two main facts back of the objections. The first was that certain of these merchants always resisted the introduction of

any new product. The second was that they disliked exchanging local marketing customs for new customs.[1] Analysts soon find that there are many ways to say the same thing.

In organizing qualitative data, one sometimes finds it necessary to determine the relative value of comment, preferences for products, for example, by scoring them.

In a study of flat silver, for instance, the designer wished to know the order of preference among college graduates for three designs. The field work consisted of displaying the various patterns and of asking approximately 300 college women in each city in which the investigation was made to express their first, second, and third preferences. It is evident that pattern *A* was placed first by some; second, by some; and third, by some. The same is true of patterns *B* and *C*. The table shows the following result:

Patterns	First	Second	Third
A	150	75	75
B	200	75	25
C	250	25	25

To take the confusion out of these expressions of preferences, a first choice counted three points; a second, two points; and a third, one point. As a result, pattern *C* had a score of 825; *B*, 775; and *A*, 675. The scoring for the three patterns was so close as to suggest that a larger class should be interviewed if preferences were to be significant in manufacturing and marketing.

If the qualitative data are, moreover, to yield sound conclusions, the analyst must use imagination, ingenuity, and judgment in setting them up. They must be as well classified as are the quantitative data.

[1] The American Marketing Association, *The Technique of Marketing Research*, p. 238.

CHAPTER VII

INTERPRETING DATA AND DRAWING CONCLUSIONS

I. Scope of the Interpretation—II. Importance of the Interpretation—III. Qualifications of the Interpreter—IV. Processes of Interpretation: *A*. Surveying and appraising data; *B*. Originating suggestions; 1. Make a start; 2. Talk the problem over with someone; 3. Record ideas as they occur; 4. Take time to relax; 5. Persist in solving the problem; *C*. Setting up tentative conclusions; 1. Examining data directly; 2. Examining correlated quantitative data; 3. Examining the interaction of quantitative and qualitative data; *D*. Testing tentative conclusions; 1. Making final examination of evidence; 2. Applying common sense to conclusions; 3. Applying the negative test; 4. Testing for practicability; *E*. Using references in testing conclusions; *F*. Checking final conclusions against working plan—V. Making Recommendations.

Collecting or organizing data is difficult. Determining what all the data collected really mean in solving the problem is more difficult. The analyst has the problem of appraising both quantitative and qualitative data to perceive their direction when they stand alone and when they are studied in relation to each other and to draw and state conclusions concerning men, methods, products, and policies for the particular business for which the investigation is made. It is a process by which all the information, quantitative and qualitative, acquired by research is combined with what the investigator already knows to wring from the data their inherent meaning in solving the problem at hand.

SCOPE OF THE INTERPRETATION

How wide the scope of interpretation should be is not clearly defined. Extremely varied, in fact, is the extent to which those engaged in business research and market analysis, for example, assume responsibilities in attempting to put findings into practical use.

One analyst considers his work complete when his findings have been presented in easily read form. He merely gives summary paragraphs accompanied by classified data, such as are furnished in many government reports, which others use for

their own purposes. At the other extreme is the analyst who believes it is his responsibility not only to draw conclusions and to make recommendations, but also to supervise the carrying out of the recommendations which he makes. For example, Arthur C. Weick, a market analyst, says:

> Market analysts are called upon not only to direct research but also to plan the fundamental sales structure of new products. Nowadays, markets are not discovered or found to exist, but are built. The foremost market analysts of today and tomorrow, consequently, must be both architects and builders.[1]

Between these two extremes is the one who believes that the interpreter on the basis of his findings should make only general recommendations and the other who believes that he should make specific recommendations. The first of these two might recommend "that expenses be curtailed by cutting down pay rolls." The second would specify who should be dropped from the pay rolls; who should have salaries cut; by what percentage they should be cut; and when the cut should become effective. The type of recommendations made depends usually on instructions.

IMPORTANCE OF THE INTERPRETATION

The importance of the interpretive step in research procedure is inherent in its function. Facts, and even opinion, are fundamental to action. Facts newly discovered usually have a dynamic quality. If one finds out in the tabulation and analysis stage of a study of consumer-buying habits of hose that only 10 per cent place appearance uppermost, he probably translates this finding into the following specific recommendation to a department-store head: "Ninety per cent of hose you buy for your customers should be of heavy weight or service weight. Stress long-wearing qualities in your hosiery advertising."

The interpretive stage in research procedure is also important because of its strategic position. The recommendations resulting from it are the point of contact between the investigator and the person or persons (often executives) for whom the research is conducted. Unless a recommendation is practical for the par-

[1] ARTHUR C. WEICK, "The Technique of Building a Market," *Central Manufacturing District Magazine*, May, 1938.

ticular business for which it is made, all preceding study is wasted, at least for the time being. It is for this reason that interpretations can be made only with full consideration of those whom they affect or the particular company concerned.

The foregoing discussion of what interpretation does, what it is, and how important it is in the research procedure makes clear that interpretation is a subjective process and hence liable to errors in thinking, to limitations of knowledge, and to the bents from particular experiences. Frailities in thinking, ignorance, and bias may ruin the value of interpretation. Hence it is wise for the interpreter to be on his guard against faulty thought processes and unscientific mental tendencies. Following is a list of some of the most prevalent errors in thinking:

1. Reading into statistical findings interpretations which represent wishful thinking.
2. Believing, if one cannot prove a given proposition, that one has proved the opposite to be true.
3. Applying criteria of judgment valid in one field to another field in which they do not hold.
4. Studying a few cases and then proceeding to make general statements about all cases.
5. Assuming that objects or situations which are alike in some respects are alike in all.
6. Assuming that a case belongs to a class to which it does not belong and hence applying the rule of the class to it.
7. Assuming that conditions existing at a certain time exist at some other time.
8. Using for comparative purpose facts and evidences not comparable.

QUALIFICATIONS OF THE INTERPRETER

An interpreter who recognizes unscientific mental tendencies is more likely to surmount them in drawing conclusions. Such tendencies are (1) a desire to make a spectacular impression; (2) employing positive terms when one fears he has not a complete solution; (3) the desire to settle one thing before he begins something else, even though the solution depends upon both things or a number of sequential things; (4) the desire to prove something in spite of lack of evidence; and (5) the dislike of saying "I don't know."

Certain qualifications are necessary, therefore, for the interpreter who draws conclusions and presents recommendations. He must have commercial sense; knowledge of business practice in general; and knowledge of the industry or business under examination in particular. It is all the better if he has had experience in the field of business being studied. He must have the broad features of the research project in mind. He must have common sense, judgment, knowledge, and intellectual honesty. He must be a patient and a thorough worker. If he has these qualifications, his skill in interpreting data is a matter of training and experience. As he acquires these he will grow in ability to select data which are significant, to eliminate the rest, and to ascribe to each fact or opinion retained its proper degree of importance. Such ability will help him to draw logical and balanced conclusions from the evidence procured and to make practical recommendations.

PROCESSES OF INTERPRETATION

Since the process of interpretation is one of intelligence, of knowledge in dealing with the findings of research, and of judgment in determining their significance to the problem being solved, it is impossible to develop a mechanical formula by which any given type of statistical conclusion or non-statistical information can be translated into specific recommendations. The analyst may, however, divide the interpretive process to make it manageable. He can survey and appraise the data; he can originate suggestions; he can set up hypotheses or tentative conclusions; he can test the tentative conclusions and reach final conclusions; he can check final conclusions against elements of the working plan; and he can make recommendations.

Surveying and Appraising Data

The first step of the processes of interpretation is surveying and appraising data. The data which are surveyed are the classified statements made in interviews, replies to mail or telephone questionnaires, and things observed. They are the facts, opinions, and statements from trade journals, booklets, news items. They are the abstracts and tabulations from government reports which have been analyzed, boiled down, and assimilated. Sometimes they are the facts which have been personally

observed or experienced. The data, however, are no longer in their raw state. Often they are in the form of percentages, averages, or totals—whatever form has been given them in the organization stage.

This initial step in surveying and appraising data has been likened aptly to the first scanning one gives a hand at bridge.

> The cards are slipped quickly through the fingers to see how many there are of each suit and what potentialities they have. Then, the suits are brought together, and each card is placed in order of its power—all in the interval of *appraising*—apart from and in advance of any plans for bidding or playing the hand. Consonant with this illustration, the significance, utility, or power of each item of data must be examined and appraised.[1]

The second step is appraising the quantitative data. The whole object of accumulating and tabulating quantitative data is to provide a basis for seeing their significance, so that action will be indicated. Experience demonstrates that recommendations based upon statistical evidence carry much weight, because if data have been expertly collected and tabulated they produce unbiased facts. Statistical evidence, unlike the experience of an individual, is not limited to incomplete observation. It tells the interpreter what is typical rather than what is unusual. It does not permit him to conclude that a summer has been unusually hot if there have been only a few extremely hot days, with all the other days below average in temperature. The interpreter who is proficient in statistical methods knows the meaning and degree of accuracy of the data in their raw state; he is acquainted with their bases of classifications; he is aware of any limitations in using them to draw conclusions. Those that survive his appraisal must have significance to the original purpose of the study.

The third step is appraising qualitative data. The value of qualitative evidence depends upon pertinence of data, the integrity of sources, and the honesty with which they have been imparted. If an investigator collects secondary data uncritically, the interpreter may find that some literature, supposedly unbiased, has been published by individuals or organizations purely in their own interests. Such literature the interpreter must examine very carefully to see whether or not a gifted writer has

[1] The American Marketing Association, *The Technique of Marketing Research*, p. 287.

made statements, supported by figures, paint a glowing picture. A forecasting service, for example, advertised that stocks which it recommended in 1926 showed a 66.7 per cent rise in 1928. The record looked quite imposing until consultation of such a service as the *Standard Statistics Index* showed that the rise of the market in general was 66.7 per cent during the same period.

Simultaneously with appraising data, or following this step, the interpreter is working toward two other easily distinguishable objectives in solving a problem. The first objective is to get a hint or suggestion of what should be done, *i.e.*, to set up tentative conclusions. The second objective is to verify or test the conclusions functioning as working hypotheses and to formulate the final conclusions.

Originating Suggestions

Since setting up conclusions depends upon getting suggestions, we may well pause to consider, for the benefit of the beginner in research work, the origin of suggestions. Where do they come from? It is pretty well agreed that they depend on what is called "mother wit" or original powers of intelligence, past experience, and training of the individual. If a person has a fertile mind, he will think of a large and varied number of suggestions as he works with data. If he has a trained mind, he will bring forth suggestions of good quality. Past experience with a certain subject and experience in interpreting increase the ability of a thinker to respond readily to a situation with appropriate suggestions.

Many research workers are pessimistic about aiding suggestions or inferences to come. They say a suggestion "gets" the interpreter. He does not "get" a suggestion. Even if this idea is correct, there must be some things an interpreter can do to put himself in the way of getting suggestions. Something has already been said about how pondering over data, in the procedure of organizing them, puts him in a position to get ideas indirectly when there seems to be no way of getting them directly. Certain steps of practical importance can also be taken as aids to setting up tentative conclusions in the process of interpreting.

Make a Start.—This step may mean the writing down of whatever comes to one's mind which applies in any way to the solution of the problem. It may mean talking to an associate, a

client, or a friend, and trying to decide which way the evidence points. Either of these means may stimulate suggestions.

Talk the Problem Over with Someone.—The effort of expressing one's ideas to another, or of disproving suggestions made by the other person, stimulates the mind. It also helps one to avoid the usual depressed feeling that is likely to characterize the first stage of interpretation. The presence of another human being removes a feeling of helplessness and substitutes the extra persistence necessary for creative work.

Record Ideas as They Occur.—One finds, by reading articles on methods of interpreting data which successful analysts have used in attacking solutions to problems, or from talking with them, that many have a pad and pencil always handy. They jot down any clues that come to them while engaged in their daily tasks. Others have dictaphones and ediphones in their offices and bedrooms for the same purpose. Either method shows that investigators recognize the importance of catching the idea on the wing and of recording it before it escapes forever, knowing that it can be coaxed back only with much effort.

Take Time to Relax.—The phenomenon of finding a solution to a perplexing problem as soon as one ceases conscious effort to find it is well known. For example, most people have struggled to recall a name and have had it come to mind the very moment they turn their attention to something else. They have been inhibited while talking at committee meetings and then experienced a veritable flood of ideas as soon as they are at ease in their own offices. They have similar experiences when interpreting data.

Persist in Solving the Problem.—As important as relaxing is returning to the problem to wrestle with it. The often-quoted saying, "Knowledge comes, but wisdom lingers," shows the importance of persisting. Ideas richest in quality are likely to come the most slowly. Out of connections and associations formed in the brain, a tentative conclusion finally appears. By these methods, which are helpful in stimulating the flow of suggestions, tentative solutions may be reached which can be fitted together into a comprehensive conclusion that seems to fit the accumulated pertinent facts of the investigation. It becomes the working hypothesis which will be tested in the next step of interpretation.

Setting Up Tentative Conclusions

Examining Data Directly.—The interpreter who follows a regular procedure in the interpretive process to evolve tentative conclusions is likely to get off to a good start and to increase the thoroughness of his work. His first step is examining data directly to perceive whither they lead. The purpose of the investigation has been succinctly stated in the working plan. Perhaps housewives are being interviewed at their homes as to their hosiery-buying habits to aid an advertising agency (1) to plan the most effective type of copy for an advertising campaign for hosiery and the most effective media for the copy; (2) to improve the methods of merchandising. Non-purchasers are asked, "Do you know John Doe hosiery?" If 75 per cent of those interviewed have not heard of John Doe hose, the interpreter relates this fact to the problem of choosing media. The answers from the 25 per cent who know about the hose but who have not bought them are related to the question of the best methods of merchandising. They throw light on the price or quality of the hose. Some housewives prefer to buy at a store; others say that the salesman came at an inconvenient time; and still others declare that friends have been dissatisfied with the hose. While the interpreter is considering a fact or idea concerning either quantitative or qualitative data directly, he seeks at the same time to relate it to a particular factor of the problem being studied. He hopes to draw some conclusion from it as it stands alone; or even dares to hope that it will touch the crux of the problem.

Examining Correlated Quantitative Data.—Direct examination of data may be all the interpretive process needed to solve fairly simple problems. Complex problems, however, make necessary the second step in the interpretive process to set up tentative conclusions, the examination of correlated quantitative data. From this step springs the greatest number of practical conclusions. An illustration will show the value of examining correlated quantitative data in drawing conclusions.

The purpose of this particular survey was to discover what percentage of consumers of a product was persuaded to buy the product for the first time by an advertising campaign. By testing the sample used to collect data through a statistical method known as the "rotation method," the interpreter discovered wide

variation in the percentage of those whose first purchase had been caused by the advertising campaign.[1] To discover the cause of the variation, the interpreter first separated answers to interviews into those secured from *A*, *B*, *C*, and *D* housewives, for it was thought that the product might appeal to one class of housewife more than to another. The same variation was still present. The answers were then considered in reference to housewives of a different age group, but the variation continued. The next classification of answers was on the basis of the competing product which the housewife had used preceding her switch to the product being studied. This correlation of data and its examination showed that the percentage of housewives using *X* brand who made the change to the brand being advertised was consistently low; while the percentage of those using *Y* brand who made the change was consistently high.

This examination of correlated quantitative data, by indicating the cause of the variation in the data, led to the next advertising campaign's being directed into markets where *Y* brand sold best.[2]

When an interpreter thinks that a particular correlation of quantitative data suggests a conclusion, he needs to correlate the main group of data with every group that might in any way alter the accuracy of the conclusion.

Examining the Interaction of Quantitative and Qualitative Data. The third important step in the interpretive process, and one which rests upon the judgment of the interpreter because it has no formula by which to work, is the study of the interaction of qualitative and quantitative data relative to the problem of a study. As an experienced market analyst says:

> The quantitative aspects of the field are readily ascertainable—the population, the distribution of wealth or income, the number and accessibility of the outlets, the efficacy of the various advertising media in the area, the number of salesmen available for the work, some measurable reflections on existing and prospective competition; but what about the reactions of the people?[3]

When, therefore, a food company proposes to launch a new food product, it considers the reactions of housewives to its taste,

[1] Methods of testing the reliability of a sample are explained in Appendix I.

[2] W. J. Reilly, *Marketing Investigations*, pp. 161–162.

[3] American Marketing Association, *op. cit.*, p. 291.

appearance, convenience of preparing, cost, etc., which are qualitative in character, and then considers each separate item in relation to each item of quantitative data—population, income, age—pertinent to the objective of the study. Much attention, in the last few years, has been given to the study of the psychological aspects of market research. Perhaps it is to this field that interpreters may look for the greatest help in getting results from the study of actions of quantitative and qualitative data.[1] The use of the pictorial type of questionnaire employed by the research division of General Motors to ascertain preferences in car design and equipment seems to be an effort in that direction.

Testing Tentative Conclusions

After the reasoning leading to the tentative conclusion is examined for fallacies, these tentative conclusions can be made more certain of becoming final conclusions:

1. If the evidence on which they are based is given final examination.
2. If every conclusion is subjected to the searching examination of the practical instrument of the mind called common sense.
3. If they are given the so-called "negative test."

Making Final Examination of Evidence.—The final examination of evidence when testing conclusions is different from preceding checks only in that, coming at the end of the procedure, it gives the interpreter the advantage of seeing the entire picture. He can consider a fact or opinion alone; he can see fact in relation to opinion; he can see consistencies or inconsistencies between facts or between opinions. Lists of questions to ask in making this final check of evidence in reference to conclusions vary according to the nature of the research. These, mainly from the *Research Manual* of the Meredith Publishing Company, are suggestive of others:

1. Is the evidence free from prejudice and bias?
2. Is it representative?
3. Is it reliable?
4. Is it sufficient?
5. Is it inconsistent?
6. Is it up to date?
7. Are facts compared comparable?

[1] Some men writing in this field are Dr. Paul Felix Lazarsfeld, Donald A. Laird, and Henry Link.

Applying Common Sense to Conclusions.—Common sense is a practical instrument of the mind invaluable in testing a conclusion. It asks such questions as, "Is this conclusion possible?" "Is it consistent with other facts well known before this particular study was made?" For example, any conclusion from a study that hotel space would be more than 80 per cent occupied on a year's basis does not square with facts gleaned from past records of hotel business; sales quotas of radios, cars, refrigerators, assumed on the basis of answers to the question, "What do you anticipate buying during the year?" would have to be corrected on the basis of past records for sales of the product in question, the present condition of business, the feeling of confidence or lack of confidence in future business, facts relative to launching new models, the effectiveness of advertising and sales efforts, etc. Significance of estimates based on statistical data can only be interpreted well by one who knows more than his own task and his own time. Testing conclusions in the light of common sense is one of the surest ways the interpreter can give them greater authenticity than a horoscope reading.

Applying the Negative Test.—The "negative test" of a conclusion is to examine its opposite in the light of the assembled evidence and in the light of attendant circumstances. It is a tendency of the human mind to assume that, if evidence is not sufficient to prove a conclusion, an opposite conclusion is true. One of the surest ways of avoiding the danger of this insidious tendency is to give the opposite of the plausible conclusion as searching a test as is given the conclusion being tested. The negative test should be carried even further; it should be applied to alternative conclusions which are not opposite conclusions. For example, in the study of whether or not the new type of screen referred to on page 52 could be produced and marketed profitably, the first conclusion was that it was primarily a fly screen and hence if production could be solved it could be marketed as fly screens are usually marketed. When evidence was sufficient to conclude that it could not be marketed profitably by the usual channels for marketing fly screens, it seemed logical for the analyst to look for new channels of marketing fly screens, and for him to continue to think of the product in question as a fly screen. When the market analyst proposed the conclusion that the screen's marketing problem could be solved more easily if it were

regarded primarily as a sun screen instead of as a fly screen, he found that the evidence already assembled supported this alternative conclusion. Since most alternative conclusions will probably have been considered before the most plausible tentative conclusions are selected, the probability of having to examine many alternative conclusions, at this final stage of the interpretive process, is meager.

Testing for Practicability.—So much emphasis in the explanation of the interpretive process has been put upon logical reasoning in drawing conclusions that one inexperienced in drawing conclusions is likely to overlook the fact that many an executive has ignored recommendations because the interpreter failed to give sufficient weight to practical considerations of the condition of his company's personnel or finance or of the market or the financial condition of the country. Consultation with others is therefore recommended in order to avoid many of the pitfalls of setting up conclusions ideal only in the mind of the interpreter.

Using References in Testing Conclusions

After the investigator has verified and tested his conclusions to the best of his ability, after he has followed the solutions in imagination to see what will be the necessary consequences and compared the consequences with the actual facts of the company and the people concerned, he consults others to test the logic of his reasoning in drawing these conclusions. He may do this by

1. Seeing if a number of people reading the report come to the same conclusions.
2. Referring the results to authorities on the subject matter.
3. Referring the findings to people chiefly interested in results, so that they may help with conclusions and hence agree or disagree with those formulated.

The conclusions and recommendations are often presented orally first so that the investigator may see the reaction of the client or the executive to them. The investigator so presents them not that he may change his conclusions and recommendations, but that he may adapt his written presentation of them to the people who have the authority to act upon them. If he finds that conclusions are impractical, he may alter them to make them practical. He may recommend a series of progressive changes.

When there is copious evidence or when conclusions are clear-cut and obvious, his recommendations may be definite and with few details. When needed information is not complete or the significance of certain items is not wholly clear, he qualifies recommendations carefully or calls attention to the fact that the evidence supports two plans of action. In such cases, it is often necessary to introduce all supporting data in order to make clear their relative weight and their exact character.

The test of a report, after all is said and done, is whether or not it brings about the plan, program, or policy recommended.

Consulting others to test conclusions, before writing the report, is highly desirable inasmuch as it will not only furnish another check on the validity of the conclusions, but will also show weak spots, strong points, and other things that will need to be mentioned specifically in the written reports, such as the omission or inclusion of certain facts, specific examples, representative nature of the facts, etc. In short, testing the facts and conclusions is not only an important point in interpretation but also a help to the writer's memory. It will refresh his mind on the high lights of the investigation.

Checking Final Conclusions against Working Plan

The final conclusions are a residue of the tentative conclusions tested in the various ways outlined above and adapted in such ways as will enable them to be followed. As a summary preceding recommendations, they should be definite, concrete, concise, and clear. In addition, they should be adequate. To make certain that they are adequate, the interpreter must once more turn to the statement of the problem of the study in the working plan. Once again he must review what the working plan specifies is necessary to solve the problem, where and from whom these facts are to be procured, and how they are to be procured. The review should indicate whether or not the final conclusions are based squarely on the data procured according to these plans. If the final conclusions do not take into consideration all the information procured as planned, or if they are based on some information additional to that planned, they must be satisfactorily explained on the basis of supporting evidence.

Following the step of interpretation comes that of making recommendations. It consists in turning general conclusions

into something concrete and specific. In all these steps, reasoning is taking place.

MAKING RECOMMENDATIONS

The recommendations are a logical outcome of the final conclusions, the logical outcome translated into practical recommendations which are likely to be followed. Dependent upon what the interpreter conceives his responsibility to be, recommendations are a summary statement of a course of action. They indicate what to do, who should do it, where it should be done, and when it should be done. The following example will indicate the difference in the nature of the final conclusions and recommendations of a student engineer's report "On the Advisability and Cost of Building a Sea Wall at Lawler's Point, Minneo Lake, Maine."

There seems to be no adequate way at present by which the Carr Ringbolt Mills may be made to protect the banks of the lake. But the land adjoining Lawler's Point is being rapidly developed into summer estates by prosperous men. This prospective summer colony can co-operate later and recover damages and insure future protection from the Carr corporation. At present, however, the efforts of one landowner against such a corporation would entail too great an expense. My investigation shows that at present the best way out of the difficulty is for the landowner to build at his own expense a sea wall which will temporarily give adequate protection to the land.

RECOMMENDATIONS

I therefore recommend the construction of a sea wall such as I have described and that, in order to keep the banks from being any further eaten away by the high water of next spring, the wall be built at the end of October, 19—.

Respectfully submitted,

With conclusions that are adequate to the objectives set up in the working plan of the study presented in logical form and with these conclusions accompanied by specific recommendations, the investigator turns his attention from the function of interpreting data to that of preparation of his material for presentation in report form. The presentation of data in report form is a phase of research as important as interpretation and one which interpretation conditions as to content, sequence, and emphasis. If the interpretation of data is valid, the report is likely to be sound.

CHAPTER VIII

OUTLINING THE FINAL REPORT

I. Need for a Written Plan—II. Arrangement of Material: *A.* Logical arrangement; *B.* Psychological arrangement; *C.* Chronological arrangement—III. What to Include—IV. Form of the Outline—V. Outline Guides—VI. Typical Outlines—VII. Briefing.

NEED FOR A WRITTEN PLAN

After collecting data that are accurate and complete as to fact and sound as to conclusion, the investigator's task has just begun. For data that satisfy him have not yet undergone the cold criticism of the ultimate reader, who is usually the person to take final action. Hence, organizing and presenting the results of the investigation—determining what to say, and the order of saying it, so that the reader *can* and *will* follow the proper mental road —become of paramount importance.

Just as a plan is needed in building a house, an outlined plan is necessary in organizing data for final presentation, if the writer wishes to avoid poor results. The outline may be routine or individual, but in either the purpose is to design the most effective method possible in bringing order out of chaos, so that the final result will not be like a child trying to tell all at once.

Only a lazy or incompetent writer says, "I never make an outline. I just sit down and write." And one of two things is true of his results. Either he rewrites his complete report many times, which means wasted time and money, or his final effort is bad. True, outlines may vary from simple to elaborate, but the good writer has some planned goal—or else none is reached. It is easier, quicker, and more efficient to rewrite an outline than to reorganize a complete report.

An outline aids both in preparing and in presenting material because it compels thinking through the problem logically and completely. It makes for effective presentation through proper organization both as to reader and as to purpose, which implies

a psychological consideration of needs and reactions. In short, the outline plans the route best adapted to the immediate purpose, whether it be a non-stop flight or one planned for speed and for convenience.

An outline is the final step in the organization of material before writing the report. It is an orderly arrangement of subject matter in topical and sentence form, showing co-ordination of parts in some determined sequence designed to gain clearness, conciseness, and conviction.

The tentative outline prepared in the working-plan stage may or may not be utilized wholly or in part as a final outline. Because it is designed for the collection of material, the tentative outline may not offer the most effective means of presentation. Even if it is applicable in general, the exigencies of investigational procedure usually force so many changes and adaptations that the final result has little resemblance to the original tentative outline.

The principal object in preparing an outline is to keep clear the relationship of major and minor points; that is, the outline should show what material develops each point. Therefore, it may indicate the need for more material before writing—or for less. In view of certain readers, it may show clearly the inadvisability of presenting certain controversial points before a discussion of present evils, needs, reasons, etc. It may prove that the investigation has not struck at the core of the matter, that various objectives are irreconcilable, or that interpretation has led to an erroneous solution.

ARRANGEMENT OF MATERIAL

Since the purpose of the outline is to prepare the road for a convincing report, the material must be arranged so as best to achieve that result; that is, it should follow the predetermined reaction of the reader. Generally speaking, the three arrangements available are logical, psychological, and chronological. These three methods and some of their applications are shown in the following:

I. Logical
   A. Familiar followed by the less familiar
   B. Sequence of topics according to definition
   C. Sequence of topics according to a chain of reasoning

II. Psychological
   A. Conclusion followed by facts, exhibits, etc.
   B. Presentation of material in order of significance of points in accomplishing the objective of the report
III. Chronological
   A. Presentation of material in time sequence

Logical Arrangement

Logical arrangement builds the case step by step, presenting all data in ascending order of importance up to definite conclusions and possible recommendations. This arrangement will usually demand a rather thorough introduction, setting forth the origin of the commission, purpose, scope, methods, history of the case, etc., so that everything will fall in its logical order. This style is used particularly in submitting reports in which the reader is interested in every step in the development of the investigation, so that if he wishes he may draw his own conclusions after he knows the complete steps taken but before he arrives at the conclusions presented.

Psychological Arrangement

Opposed to the slower logical arrangement in presenting data we have the psychological arrangement, which has found considerable favor among executives who demand results quickly and among investigators in certain fields who must present their material in such a favorable light that they will induce a desired action.

When the psychological arrangement is used, the fact of most interest is assigned to the most strategic place in the report, its beginning. This arrangement has the merit of securing the reader's interest at once. In business research in which data are collected chiefly as a routine matter merely to support or to disprove a question, but not because of their own importance, the executive prefers the conclusions first so that he may grasp the major issues and may leave to another all study of supporting material.

The psychological arrangement follows no order of time nor of sequence in which data are collected. In the annual report for the general reader, for instance, the two or three outstanding events of the year will be selected for early emphasis, while the

minor facts will be more or less buried where they will be available but not deadly.

Chronological Arrangement

The chronological arrangement of material follows the actual order of time sequence. This is found frequently in informational reports, particularly of a more or less historical nature. The fact that chronological arrangement is used in reports made as a matter of record gives importance to this style. If the sequence of doing a thing is important, as in a technical experiment, naturally things will have to be presented as they occur; otherwise the reader will be unable to duplicate the work. As a matter of historical accuracy, the actual time sequence may sometimes be of vital importance.

The chronological arrangement, however, does not always lend itself to emphasis. For the average businessman who wants his facts quickly, the chronological arrangement is slow.

Just what type of arrangement to use will have to be determined by the investigator after considering his subject matter, the purpose and nature of his commission, and his readers. All three types mentioned are perfectly legitimate methods of arrangement, each best adapted to certain situations and kinds of data.

WHAT TO INCLUDE

The reader's information, character, temperament, desires, and instructions, as well as the subject matter and the purpose of the report, determine, to a great extent, what to include in the outline. Some want more detail than others. One prefers figures, another prefers charts. Some want the findings of fact and recommendations at the beginning; others want all evidence first so as to weigh the soundness of conclusions.

How much evidence to include depends upon how many statements may be questioned. The advantages of giving adequate evidence are that

1. It satisfies the reader's questions promptly.
2. It makes a substantial piece of research.
3. It gives a good idea of the amount of labor necessary to an investigation.

What to include suggests what to exclude. There are always interesting facts unearthed in an investigation which are not used

in the reasoning which leads to the solution. These may be mentioned and then dismissed, or they may be put in the foreword or the letter of transmittal. In any case, proper phrasing of the subject will automatically exclude much extraneous material. One has constantly to avoid imposing on the reader's time and attention by giving space to a section in proportion to the time spent on it during the investigation instead of in proportion to its real value.

Possible heads to consider (not necessarily in this order) in the complete analytical report are:

Object
Method
Scope
History
Need
Location
Apparatus
Material
Chief findings
Conclusions
Recommendations
Appendix

A slight variation is:

Introduction
  Method, scope, etc.
Conclusions and recommendations (short)
  Chief findings
Conclusions and recommendations (detailed)
Appendix
  Supporting tables when necessary
  Further details of methods used
  Bibliography

FORM OF THE OUTLINE

The first thing in the outline, after the title, is the *main idea* or the *objective*. This is a statement in one clear, concise, impartial sentence of the basic purpose of the investigation. It should not be argumentative or biased, because then the reader feels that the writer merely set out to prove one side of the question. Emphasis is placed on a single concise sentence to avoid the appearance of a foggy objective.

The outline proper usually is presented in either topical or sentence form. The topical, consisting of a word or phrase, is speedier and is satisfactory if the writer is thoroughly cognizant of the relationships between the many points. The sentence form is often better because it makes clearer the exact status of evidence.

To force logical outlining, the sentence form is taken a step further in briefing, which is discussed in detail on page 179.

OUTLINE GUIDES

A good outline should (1) make the line of thought stand out distinctly and coherently, (2) show what is to be stressed, and (3) serve as a test of preparation by indicating where the proposed material is too full or too scant.

The proper numerals, indentations, and connectives encourage precision of thought and relation.

The following mechanical qualities should be observed in outlining:

1. Use parallel construction for both thought and phrasing. Do not mix words, phrases, and sentences. Use noun forms when possible.
2. Give equal items equal rank; do not write the title as a topic head.
3. Use a definite system of signals, preferably

I.
A.
1.
a.

4. No roman numerals are needed for general divisions, as Introduction, Text. In fact, these heads, as such, do not need to appear.
5. Use only one symbol for a point, as II, not II*A*.
6. Do not write below a symbol. Use hanging idention, as:

A. Coal production in Pennsylvania has increased 18 per cent. . . .

7. Use a wider margin for each subhead. However, the subheads of the same rank will have the same margin; that is, I. *A*. 2. and II. *B*. 3. will have the same indentation.
8. Make each item a single phrase or statement to avoid ambiguity.
9. Document evidence in the outline by (*a*) footnote reference, (*b*) side reference, or (*c*) parenthesis immediately following mention of it.
10. Make each set of subheads thoroughly support the head to which it is appended.
11. Use only specific phraseology; avoid broad general terms such as *undesirable, unnecessary.*
12. Cards containing major and minor heads can easily be shuffled and reshuffled, thus making more or less final the first written outline.

TYPICAL OUTLINES

Locating a Factory[1]

I. Object
II. Synopsis of results

[1] A. G. ANDERSON, "Solving a Factory Location Problem," *Industrial Management*, 70: 21, July, 1925.

III. Introduction
  A. Product—nature of it—quantity, present and future
  B. Limitation—financial aid of cities not considered
IV. Primary considerations
  A. Market
  B. Raw materials
  C. Labor
  D. Transportation
  E. Power and fuel
V. Secondary considerations
  A. Legislation
  B. Climate
  C. Advertising value
  D. Financial aids
  E. Banking facilities
  F. Water supply
VI. Distribution of product—local or national
VII. Competition
VIII. Population
IX. Conclusions
X. Recommendations

Outline of an Investigation of a Public Utility Holding Company

I. Title page
II. Letter of transmittal
III. Synopsis
IV. Introduction
  A. The rise of the public utility holding company
  B. The Eastern Central Utilities Company
V. General information
  A. Incorporation of the Eastern Central Utilities Company
  B. Acquisition of operating companies
  C. Operating statistics of subsidiary companies
  D. The management personnel
VI. Description of assets and liabilities
  A. The financial plan of the company
  B. Nature of financial control of subsidiaries
  C. Balance sheet of the E.C.U. Co.
  D. Balance-sheet items classified
    1. Classification of assets
      a. Investments
      b. Current receivables
      c. Cash
      d. Deferred charges
    2. Classification of liabilities
      a. Long-term liabilities
      b. Short-term liabilities
      c. Preferred stocks

d. Common stock
e. Surplus

E. Description of capital stock
1. Common stock
2. 6 % cumulative preferred stock ($100 par value)
3. 7 % cumulative preferred stock ($100 par value)
4. $6 cumulative non-par preferred stock
5. 7 % cumulative prior lien stock ($100 par value)
6. $6 cumulative non-par prior lien stock
7. Summary
   a. Division between par and non-par stock
   b. Subscription privileges
   c. Restriction on issues
   d. Voting power
   e. Controlling interest

F. Character of funded debt
1. Collateral loans
2. Three-year 6 % collateral notes
3. Ten-year 6 % collateral trust bonds
4. Three-year 6 % collateral gold notes
5. Five-year 7 % convertible gold notes
6. 8 % secured gold notes
   a. Series *A*
   b. Series *B*
   c. Series *C*
7. Summary
   a. Per cent of underlying security
   b. Limitations on issues
   c. Callable date
   d. Tax provision
   e. Rate of interest
   f. Length of life

VII. Income and disbursements

A. Income of subsidiary companies
1. Source of subsidiary companies' income
2. Disposition of subsidiary companies' income

B. Regulation of rates

C. Earnings of the E.C.U. Co.
1. Source of income
   a. Dividends and interest
   b. Income from engineering and other sources
   c. Underwriting subsidiary-company securities
2. Disbursement of gross income
   a. Administration expenses
   b. Interest
   c. Dividends
   d. Surplus
3. E.C.U. Co.'s share of subsidiary surplus

VIII. Recapitalization and related subjects
- *A.* Readjustment of capitalization
- *B.* Methods of financing
- *C.* Cost of capital
  1. Common stock
  2. Preferred stock
  3. Prior lien stock
  4. Cost of borrowed capital
- *D.* Dividend policy
  1. Common stock
  2. Preferred stock
  3. Prior lien stock
- *E.* Values of capital stock
  1. Common stock
  2. Preferred stock
  3. Prior lien stock

IX. Ratio analysis of the company
- *A.* Net worth versus funded debt
- *B.* Net worth
- *C.* Borrowed capital, or long-term debt
- *D.* Preferred stocks
- *E.* All stockholders' net worth
- *F.* Long-term debt to investments
- *G.* Net worth to investments
- *H.* "Common" net worth to investments
- *I.* "Common and preferred" net worth to investments
- *J.* "Common, preferred, and prior lien" net worth to investments
- *K.* Return on average investments
- *L.* Productivity of the company
- *M.* Ratio of net corporate profits to average capital employed
- *N.* Ratio of common stockholders' profits to "common" net worth
- *O.* Ratio of "all stockholders'" profits to all "all stockholders'" net worth
- *P.* Conclusion
- *Q.* Ratio of income available for interest to interest charges
- *R.* Current ratio

X. Conclusion

XI. Tables

XII. Charts

XIII. Maps

BRIEFING

Briefing is merely carrying the sentence outline a step further through the use of connectives to show the precise relationship between ideas. It is a happy solution to the problem of testing the outline for unity and coherence. When faced with a section of an outline difficult to perfect, one who has had experience in

making briefs will almost unconsciously apply the method as a test of his thinking, even though he is using a topical outline and does the briefing only in his mind.

The beginning report writer will do well to employ the briefing method. So highly is the practice regarded at Harvard University Graduate School of Business Administration that in the advanced courses reports are assigned to be submitted in brief form only. The reason is that the connectives guide the thinking and overcome many errors in logic.

The brief emphasizes relationships between divisions and subdivisions and, because of its completeness, it shows the basic structure in its stark reality minus the persuasion which may be added in the later outline. It may be rearranged for effect, interest, persuasion. Its usefulness is in testing thinking for gaps in logic and in clarifying results.

The form is easy if the data and reasoning are sound. Each major or minor head, and sometimes each subhead, is expanded into a single, complete sentence containing only one idea. Connectives such as *by, for, still, and, because, though,* definitely show how every subhead substantiates the preceding head.

I. The source of the water supply is adequate, for
  A. The present source of supply shows that
    1. The catchment areas are plentiful, and
    2. There are alternative sources.
  B. The area of land owned by the city available for waterworks is in excess of possible needs.
  C. Wells may be depended on to furnish a supply, for
    1. Water is easy to get, because
      a. Water veins are not deep, and
      b. Drilling is easy.
    2. The quality is excellent.

Heads of the same numerical value should, when read together connected by *and,* support the immediately preceding head of the next highest ranking. For example, *a* and *b* should support 1, while 1 and 2 should directly support *C.*

Since a good report presents both the pro's and con's as impartially as possible, it is advisable to set up a factor sheet showing precisely the status of each.

Factor Sheet

Problem—Should the Home Maid Bakery market sliced bread?
  I. Will the customers accept it?

For	*Against*
1. Sanitary	1. Increases cost
2. Convenient	2. Increases consumption
3. Assures even slicing	3. Increases staleness
4. Saves time	
5. Saves wastage	
6. Better appearance	

The brief made from this sheet will then, of necessity, present both sides logically. It may take two forms: *A*, *A'*, *B*, *B'*, or the first part may present one side and the last part the other.

Brief

Subject to additional investigation as to whether added expense could be absorbed without affecting profits, it is recommended that the Home Maid Bakery henceforth produce sliced bread only, for

I. The customers will accept it, for
  A. Although sliced bread increases consumer cost, for
    1. It increases consumption, and
    2. It increases staleness through greater exposure to the air;
  A'. Yet sliced bread is marketable, for
    1. Many housewives prefer to buy sliced bread, for
      a. It is sanitary,
      b. It is convenient,
      c. It assures even slicing,
      d. It saves time,
      e. It saves wastage, and
      f. It makes for better appearance.
    2. The additional cost appears insufficient to prevent the housewives' buying, for
      a. Small conveniences in the household are sought, and
      b. The demand increases.

Complete sentences help to clarify hazy thinking. For instance, let us consider this sketchy outline:

I. Credit unions help
  A. Members
  B. Financing vacations.

When briefed, the heads *A* and *B* immediately declare themselves of different families.

I. Credit unions are helpful, because
  A. They help members, and
  B. They help finance vacations.

Obviously *A* is a general head, to be used in contrast with schools, banks, communities, while *B* is probably part of a later, detailed section.

Illogical subordination is exposed through briefing.

I. Business wants leaders
   A. Colleges are training schools for leaders.

It is soon apparent that *A* does not belong under I when it is made to read

I. Business wants leaders, because
   A. Colleges are training schools for leaders.

In argumentation, the body of the brief is preceded by a statement of the question. In report writing, the question or proposition becomes a statement of the *main idea* or *objective* of the investigation. To avoid confusion and to aid concise thinking, this objective usually has only one assertion. To avoid any appearance of impartiality no details of the development and no reasons for the assertion are given. One states just *what* the objective is, not *why*, and one does not phrase it in the form of a question.

The major heads that follow are the main divisions, proof of which will establish the conclusions. The major heads, taken together, should be of equal value and should support the objective. In like manner, minor heads develop and support the major heads to which they are appended.

When completed with proper connectives, each main division of the brief should read in logical sequence from the beginning to the last subdivision. Each division should be subdivided far enough to insure the right order of material in the paragraphs. Parallel structure should be maintained. If the sentence style begins with a prepositional or a participial phrase, that type of structure will predominate; otherwise the brief will give the impression of indefiniteness.

Obviously it is not necessary to brief all reports. However, in reports that need especially careful, well-organized, irrefutable presentation, briefing is recommended as an almost foolproof method of securing logical organization.

CHAPTER IX

WRITING THE ELEMENTS OF THE REPORT

(Cover through Letter of Approval)

I. Outline of Elements—II. Cover—III. Title Page—IV. Back of Title Page—V. Letter of Authorization: *A.* What is the problem; *B.* What is wanted; *C.* How results will be used; *D.* What limitations are set—VI. Letter of Acceptance—VII. Letter of Transmittal: *A.* When written; *B.* Possible contents; 1. Refer to the origin of the commission; 2. Review the case; 3. Indicate the purpose; 4. Indicate scope; 5. Show limitations; 6. Give references and sources; 7. Reasons for choosing material; 8. Summary of message; 9. Specific reference to certain sections; 10. Contain conclusions and recommendations; 11. Comment aside from the report; 12. Character of the staff; 13. Acknowledgment and appreciation; 14. Call attention to other things—*C.* Qualities of the letter of transmittal; *D.* Tone; *E.* Form—VIII. Letter of approval.

Writing the different units of a report for presentation involves three things: organization, writing, and mechanics.

Under organization will be discussed the handling of all the different elements of a complete, formal report. Short, informal reports are merely adaptations of sections of the formal type, designed to fit special purposes. It is assumed that the writer is qualified to make that adaptation, once he sees the complete picture. To try to discuss in detail every known type of report is not only impossible but undesirable.

OUTLINE OF ELEMENTS

An outline of a rather complete formal report contains these elements:

I. Cover
II. Title page
III. Copyright notice
IV. Letter of authorization
V. Letter of acceptance
VI. Letter of transmittal
VII. Letter of approval
VIII. Table of contents

IX. Table of charts and illustrations
X. Foreword } Usually combined. Sometimes included in the letter
XI. Preface } of transmittal
XII. Acknowledgment (Frequently combined with the Foreword and Preface and sometimes in the letter of transmittal)
XIII. Synopsis
XIV. Body
A. Introduction
B. Text
C. Conclusions and recommendations
XV. Appendix
XVI. Index

COVER

The cover serves the twofold purpose of protecting the report and conveying the title as briefly and in as usable a style as possible, so as to make it easy for the reader to grasp and to facilitate the work of the librarian. It also contains the name of the author and frequently the place and date of publication. When a report is part of a series, the volume and number appear and the mailing privilege notice. The title on the cover is usually a duplication of that on the title page, although sometimes it does not contain so much detail.

In the ordinary, typed report, the material is simply and conservatively spaced. In printed reports, typography permits no end of modernistic effects, which often add to readability. A design or trademark is not out of place on the cover.

Intraorganization reports usually have blank spaces provided on the cover to indicate certain contents and to aid in proper filing. Covers vary all the way from light-paper backs, for small reports or for those infrequently handled and soon to be filed, to expensive cloth bindings.

A Simple Type of Cover

SOIL CONSERVATION PRACTICES

IN

SOUTHERN ILLINOIS

John H. Bryan

19__

A More Detailed Cover

MARKETING POLICIES OF THE CALIFORNIA
WALNUT GROWERS ASSOCIATION

A Study Appraising the Methods Used to Increase the Demand for Walnuts, With Emphasis Placed on the Value and Effectiveness of the Advertising, Sales Promotion, Price Policies, and Distribution Channels Employed by the California Walnut Growers Association.

By

Harry C. Hensley

Senior Agricultural Economist
Comparative Division, Farm Credit Administration

and

Neil H. Borden

Associate Professor of Advertising
Graduate School of Business Administration
Harvard University

FARM CREDIT ADMINISTRATION

Co-operative Division

Washington, D. C.

Bulletin No. 10 March, 1937

TITLE PAGE

•It is from the title that the reader makes his first, quick decision concerning the report—whether it promises to interest him, whether it is too broad or too narrow in scope.

Preparing a title requires imagination, salesmanship, and concise writing. Many titles are incomplete, inaccurate, and unimaginative, as well as too long. There are few good titles more than six to ten words in length. The actual phrasing should be as brief as possible to indicate accurately the content of the report. There should be no air of mystery, as in some fiction, such as, "How John Jones Won a Prize." The title should attract attention but should not be misleading.

Some reports have titles several lines in length. But let us notice that no books are sold with such cumbersome signposts, for a long title kills quick interest. It also makes for filing errors. When a short title is inadequate, as in some technical reports, a longer, explanatory title, in smaller type, perhaps in parentheses, may follow the selling title.

A title should contain a complete idea, preferably using a subject and a verb. Word or phrase titles, while short, are usually too general. Obviously the label style, "Agricultural Activities," is inadequate because there is no limitation, but also to be avoided is duplication of ideas or overlapping words in titles, *e.g.*, "Constructive Criticism of_____and Recommendations for Improvement."

A good title should present or suggest findings rather than procedure. "The Selection and Ranking of Illinois Hybrids" implies procedure, while the reader is more interested in results. Let the title answer the who, what, why, when, where, and how of the problem, or as many of these questions as are pertinent.

Usually avoid negative phraseology and superfluous words such as "A Report on_____." Also be careful about using "and" to tie the title together. It tends to give a stringy effect with no unity of purpose. As a rule one part of such a sentence can be subordinated to good advantage.

Following the subject of the report should be the name of the writer and his position. Sometimes the rank explains why the report was prepared; sometimes it identifies the authority of the writer to make the report; and sometimes it determines the

Title Page

MAKING THE MUNICIPAL REPORT READABLE

A Study of Content, Arrangement, and Presentation Techniques

Prepared for

THE ILLINOIS STATE CHAMBER OF COMMERCE

Town Report Competition Committee

by

Robert A. Meyer

MUNICIPAL ADMINISTRATION SERVICE
Division of Research

Chicago, Illinois

May 25, 1939

COLOR IN TECHNICAL ADVERTISING

(Especially Adapted to the Small-tool Industry)

Report Prepared By

J. R. HUMPHREY

Advertising Department

Comments and Criticism by
E. A. Bivens, Department Head

Submitted to

H. K. BURNSIDES

General Manager, Acme Tool Company

WILLIAMS ADVERTISING AGENCY

28 Broad Street, Chicago

1940

amount of authority to attribute to the report. To sign the report "by John Smith" with no explanation as to his rank or his reason for writing is to invite lack of consideration for what might be a report well worth reading. Even for reports within one's own organization it is still well to add some means of identification, because not every executive who reads the report knows each person in the organization or why this particular person should prepare the report. Oftentimes merely adding the department may be a sufficient identification. In case of a report made by a board of directors to stockholders, the writer's name is sometimes omitted, but even then it seems best to sign the name either of the chairman of the board or of the president.

Following the name of the author should be the name of the person or company for whom the report is made. Sometimes this is so important that it precedes the name of the writer. If the report is made for "G. H. Cady, President, Universal Service Company," his position and affiliation should follow his name. The very fact that such a man asked for the report may give it added value.

A report which has been supplemented, revised, or criticized by another man should carry that fact in a note on the title page, because oftentimes the appended comments or criticisms of some known authority will make a report more valuable. If the report is the result of an experiment carried on with the assistance of some other agency, a record of this fact should be made on the title page.

The address of the writer or company preparing the report should be on the title page, usually at the bottom. This should be the complete mailing address, so that any inquiries regarding the report will not go astray.

When a report is written by a company with no personal responsibility attached to any one man, the "prepared by John Smith, etc." line may be omitted from the title page, and the name and address of the company will suffice.

On the title page, usually the last thing, should appear the date on which the report was prepared. This protects a reader from wasting even the few minutes necessary to discover for himself that he is reading a 1920 report when he wants 1940 information. The date also aids in the matters of filing and of records. The importance of the date will determine how complete it should be;

the year is sufficient on an annual report, but a special report may need the month, day, and year.

On the whole, the arrangement of the elements of the title page should be in the order discussed.

Subject
Elaboration of subject, if necessary
Collaboration with other agencies, if any
Name of writer
Position or rank
Name of man collaborating or giving comments, if any
Position or rank
Name of man or company for whom report is made
Position
Address
Address of writer or his company
Date

The arrangement of this material on the page in regard to display, type size, etc., should be studied so as to make the pertinent facts stand out most prominently. The parts of the subject emphasized should give the librarian or reader the correct hint as to the important words.

Short, intracompany reports often combine the cover and title page in variations of the Army style.

SUBJECT: _____
FROM: _____
TO: _____
DATE: _____
COPIES TO: _____

BACK OF TITLE PAGE

If a copyright notice is used, it appears on the back of the title page. Other possible uses of this space are:

1. Leave it blank.
2. List officers, directors, company addresses, etc.
3. Print trade-mark, or even a picture.
4. Use it for *In Memoriam* notices.
5. Write a paragraph of special notice to the reader.
6. Reprint legislative acts, etc.

LETTER OF AUTHORIZATION

Although the next two sections—Letter of Authorization and Letter of Acceptance—really precede the entire investigation,

they are discussed here because of their position in the written report.

The authority to make an investigation usually is given in a letter. A copy of this letter of authorization or reprint of legislative action is frequently incorporated into the final report for the purpose of establishing authority and of reviewing the terms under which the investigation was made. When the authorization is comparatively simple, a brief reference to it in the letter of transmittal will suffice.

There are two types of letters of authorization, general and specific. The first merely says, "We want you to investigate such and such," leaving all plans of procedure to the investigator. Naturally this type is of little actual assistance.

The specific type of authorization goes into considerable detail concerning the following divisions:

What Is the Problem

The letter explains in some detail the problem or predicament to be remedied. This includes a history of the problem, indicating what has been done up to the present. If certain data are known to be available, the investigator should be told so as to save his time and the company's money. Suggestions for finding information are always welcome.

What Is Wanted

The more specifically the authorization states what is wanted, the better and quicker can the investigator present relevant facts.

How Results Will Be Used

When not contrary to business policy, it is well to tell the investigator the use to be made of the results. For instance, if he knows that his report is to go to the stockholders, he can adapt it more specifically than if he thinks it is going to the board of directors.

What Limitations Are Set

If the executive authorizing the report has any definite limitations in mind, he should make them clear in his letter. If in an advertising survey he is interested only in magazine advertising,

he should expressly eliminate newspaper advertising from consideration. Financial limits should be set, if necessary.

If the report must be prepared within certain time limits, this should be mentioned. For if an investigator is to be rushed for time, it is necessary for him to know it throughout each stage of the investigation.

Letter of Authorization

Mr. E. R. Parker, Jr.,
Foreign Correspondent.
DEAR MR. PARKER:

Referring to the correspondence on the attached DO-73951:

We have just been informed that this order, amounting to nearly $5,000, has been lost to the Brown Company, although our German agent, Mr. Walther Filbig, had been working on it for nearly a year. Three weeks ago he advised us that it was only a matter of a month or so before we would receive the formal order and that we should hold ourselves ready to ship immediately, as prompt delivery was important. The order was finally placed with Brown because they were able to ship from their foreign warehouse branch, even though the potentiometers manufactured by Brown are more expensive and do not have the sensitivity of our instrument equipped with the Micromax balancing mechanism. The sensitivity feature is an absolute essential because of the fine type of work on which these instruments will be used.

Because of the inability of our foreign agents and commission houses to supply information of a technical nature except after correspondence with this office, plus their refusal to stock our instruments, we are losing approximately $50,000 worth of business a year. The Executive Committee has therefore suggested the possibility of establishing a foreign branch in Paris, France, and possibly another in Düsseldorf, Germany.

It has been suggested that preliminary investigations be started immediately on this proposition. This will include an investigation of

1. The conditions under which foreign branches may be established in France and Germany.
2. How the average foreign branch is operated.
3. The legal requirements governing the establishment of branches in foreign countries, particularly France and Germany.

A suggestion for a starting point is to visit the library of the Philadelphia Commercial Museum at Thirty-ninth and Spruce

streets. This library is used by the students enrolled in the Foreign Trade course at the Wharton School and undoubtedly has a number of reference books on the subject of establishing branches in foreign countries. You might at the same time obtain the names of magazines on this subject and write to one or two of them for information. The Foreign Trade Bureau at the museum will be able to suggest the names of foreign trade associations with whom you may wish to correspond. The bureau of Foreign and Domestic Trade, Washington, will probably have pamphlets for distribution on this subject. Other possible local sources of information are the foreign department of the Germantown Trust Company, as well as the First National Bank and Germantown National Bank, shipping companies, express companies, and oil companies.

It is proposed to present the results of this investigation in a formal preliminary report at the stockholders' meeting on January 2, 1939. As it must first be presented to and approved by the Executive Committee, it will be appreciated if you will submit what data you have been able to assemble not later than December 20.

Very truly yours,

Letter of Authorization from the President of the United States to the Chairman of the Central Statistical Board[1]

I am concerned over the large number of statistical reports which Federal agencies are requiring from business and industry. In view of comments that come into this office, I desire to know the extent of such reports and how far there is duplication among them. Accordingly, I am requesting the Central Statistical Board, under the authority of section 1 of the act creating the Board, to report to me on the statistical work of the Federal agencies, with recommendations looking toward consolidations and changes which are consistent with efficiency and economy, both to the Government and to private industry.

Specifically, I am interested in the approximate number of financial and other statistical reports and returns regularly required from business and industry and from private individuals by agencies of the Federal government under existing law, and the authority under which each is collected; specific indications of the extent and kinds of duplication existing among them, and the diversity of

[1] Report of the Central Statistical Board on Returns Made by the Public to the Federal Government, 1939, p. ix.

accounts and records which they necessitate. I assume that exhibits of the questionnaires and report forms are already available in large part in the Board's files, and I am sure that all of the Federal agencies will cooperate in providing any additional information that is relevant.

With a view to reducing the amount of duplication in statistical reports, will you indicate the principal points at which the enactment of legislation by the Congress appears to be necessary in order to effect consolidations or changes, with the recommendations of the Board regarding them?

I should like to have the complete report of the Board by January 1, 1939.

LETTER OF ACCEPTANCE

The commission, as offered in the letter of authorization, may be accepted wholly or in part. Often the letter of acceptance contains certain stipulations and changes regarding time, money, or data that protect the worker and are agreeable to the client. Sometimes it asks for more information. This letter is sometimes bound into the report as a matter of record or of publicity.

LETTER OF TRANSMITTAL

Practically all reports are transmitted either with a letter or with a more formal foreword or preface. Except for the degree of formality, the contents are rather uniform.

The purpose of the letter of transmittal is

1. To establish contact
2. To orient the reader
3. To transmit the report

Often a period of six months or a year will have elapsed between the authorization and the final report. Therefore, an executive may well be a bit hazy concerning details. The letter of transmittal is designed to refresh his memory and to prepare him for the results of the investigation.

If the reader did not authorize the work—knows nothing about it—the letter of transmittal tells him enough to arouse interest in the report. This implies that the writer must consider his possible readers and adapt the letter of transmittal accordingly, as to both personality and content.

The length and style of the letter depend to a large extent on the formality of the report and upon the authority of the investi-

gator. In the letter of transmittal accompanying a semiformal report, the personality of the writer is not entirely hidden behind a formal screen. If the investigator is a recognized authority, his letter of transmittal may properly assume longer proportions and he may branch out more than would be discreet for the unknown writer. The letter of transmittal of a recognized authority is often little short of a synopsis, in which case the executive, feeling that he can place confidence in the report, may read only this brief summary, leaving details to others.

When Written

The letter of transmittal is written after the report is completed—when all data have been analyzed and conclusions and recommendations made. At this time the writer is familiar not only with what is in the report, but with any other details that, although omitted for the sake of unity, may be desirable in the letter.

Possible Contents

Since letters of transmittal run from a sentence to several pages in length, it is obvious that no one pattern will fit all conditions. Hence the following list of *possible* contents is offered with the idea that each writer will use those that fit his particular need. With somewhat more formal handling, these contents may be used in a preface or foreword.

Refer to the Origin of the Commission.—The first paragraph of the letter usually refers to the origin of the commission, to the date when the writer was authorized to make the investigation, to certain specific instructions contained in the authorization, and as to whether the report submitted marks the completion of the investigation or is merely a progress report. An elaboration of these points will obviously absorb the letters of authorization and acceptance.

> In accordance with your request in your letter of April 25, we have completed the survey of the routines and office methods in effect in your Petersburg office and are submitting a report of our findings. We have given special emphasis to apportioning cost of service to the individuals or companies directly benefited, as you requested.

Review the Case.—Particularly in reports going to a wide group of readers, as, for example, the stockholders of a large corporation,

a brief general review of the history of the problem or business is frequently desirable so as to make the report proper more intelligible, to make certain points stand out more clearly, or to arouse interest.

We operated throughout last year under unusually favorable conditions, among which were a more uniform output from our mills than we have ever enjoyed before, a wheat crop of fine milling quality, and a fairly steady price for grain.

In a report covering work that has extended over several years, a brief review of the case may be to the point in the letter of transmittal, even though it is treated at length in the introduction of the report.

Indicate the Purpose.—The letter of transmittal may set forth the reason for the report in such a way as to attract the attention of the reader. By showing a predicament or other necessity for a change, the reason for the report may be made effective. Indicating the purpose shows the reader how far the report goes, what it means to accomplish, and what line of research was followed, any one of which may help to arouse interest.

The sense of the meeting which you called on April 25 to discuss the order situation in the construction department was: that it is desirable to design more uniform order routines and forms for the department and, if possible, to replace the numerous different kinds of departmental orders now used for construction and maintenance work by a universal construction department form.

Indicate Scope.—In long, formal reports, most of the points covered in the letter of transmittal have been given considerable space in the body of the report. Consequently they are mentioned in the letter only to show outstanding points. In the semiformal or personal report, in which the statement of scope requires little space, the letter of transmittal is often all that is necessary.

Reference to the scope of the report indicates the field covered, which prevents the reader from expecting too much and enables him to weigh facts with regard to their true value.

Nothing is said in our report with regard to methods of financing because it is our understanding that such questions were not to be included in this survey. . . .

Garages were not visited because their business has obviously grown as a direct result of the automobile. . . .

We present herewith reports showing the results and status of the extra-incentive wage plan on the Billing Division of Districts *X* and *Y* for the month of August, 1940.

Show Limitations.—A report is frequently prepared under certain definite limitations, such as amount of money available for the research, insufficient time, limitations imposed by legal franchise, etc. In fairness to the report, these limitations should be set forth, sometimes in the letter of transmittal, if the report is short. Knowing the limitations, the reader will not overvalue the data.

No interviews are included covering the business of grain elevators, and no interviews are reported with restaurant keepers.

The effect of the limitations upon the report usually accompanies the explanation. The probable length of time that facts in the report will remain apropos is also material for this section, as are statements of difficulties in securing data or in performing the work.

Give References and Sources.—References to other reports or correspondence may be made in detail or in acknowledgment in the letter of transmittal. Especially is this true when they are few in number and when they are without bibliography. References may be made to certain reports to show widely differing objectives.

Reference to correspondence may be necessary, as, for instance, when several letters were originally exchanged to clear up matters of authorization or details of investigation.

Sources of material that should be mentioned or that should serve as a matter of record may be placed in the letter of transmittal when the number is so small that no bibliography is to be prepared, or when they are of such outstanding importance as to be useful in attracting favorable attention.

Reasons for Choosing Material.—Reasons for certain selection or omission of material may be put in the letter of transmittal, thus either emphasizing excellent selection or adding force to the report by showing the discretion of certain omissions.

I have used the Fire Ordinances of the city of Chicago because some of the most modern theaters in the country are located in that city. . . .

I have omitted construction costs, because I am of the opinion that you have already made plans for this phase of the problem. I might say in this connection, however, that there are no factors that would cause costs to vary in this town from those of others of the same size.

Summary of Message.—When accompanying a report which does not warrant a synopsis, the letter of transmittal may contain a brief summary of its outstanding features. Coming from a recognized authority, this letter will often give the executive all he needs to know in order to make a decision. Details can be perused later or passed to a subordinate.

This report has been prepared in three parts as follows:

Part I—Stores Organization
Part II—Methods and Records
Part III—Conditions of Storerooms and Stores Stock

(This section of a letter of transmittal was followed by individual paragraphs telling briefly the contents of each section.)

This section may also include a summary of what has been done, giving a brief description of outstanding accomplishments or advantages made possible. Many annual reports summarize everything in the letter to stockholders.

This plan if adopted will have the following advantages:

1. It will improve the appearance of the office.
2. It will facilitate securing rate information and permit the handling of a greater volume of work without an increase in personnel.
3. It will eliminate handling a number of small claims.
4. It will relieve the assistant traffic manager of considerable detail work.

Specific Reference to Certain Sections.—For the purpose of emphasis or additional clarity, special sections of the report may be selected for specific mention in the letter of transmittal. Sometimes the writer will want to make reference to his classification of answers to a questionnaire, possibly with a detailed analysis of one certain class. Or a few outstanding points of the balance sheet may be cited for the purpose of comment and comparison, so that the stockholders may have the right perspective before reading the report.

When certain parts of a report look bad in cold figures, and yet may be readily explained, this feature may be mentioned in the letter of transmittal, particularly in financial reports, in which there is little discussion. From reports in a poor year, we read:

Failure to make a larger profit this year has been due principally to inability to merchandise our stocks or provisions at a profit. A slump in foreign demand, which continued throughout most of the year, made it necessary to sell unusually heavy stocks on the home market. This, combined with high grain prices and inventory costs, created a difficult situation, but one which is not likely to recur in the very near future. . . .

Percentage cost of sales for 1937 was 1.2% more on volume, and administration and sales expenses 1.1% more, resulting in a decrease in net profit percentage of 2.3% on gross revenue. . . .

Unusual expense was necessarily incurred on account of the moving of the Manitous, Ore., plant operations to the Grand Rapids, Calif., plant, also incident to rearranging of manufacturing operations at the latter plant in the occupancy of the newly completed buildings, all of which temporarily contributed to an increased cost of manufacture.

Contain Conclusions and Recommendations.—Important conclusions or recommendations may be briefly reviewed in the letter of transmittal unless the letter is replacing the synopsis. In that case they may be set forth in more detail. Many letters of transmittal are built around outstanding conclusions or recommendations, tending to show the advisability of the proposal, playing up certain angles as strong points or as criticism. Using conclusions or recommendations as the central point in a letter tends to give it force and unity and is a favorite method when the letter is not employed for material omitted from the body of the report.

If it is important for the reader to know that the conclusions are valuable only when governed by certain principles, the restrictions may be emphasized by putting them in the letter of transmittal in addition to their regular handling in the text. Sometimes the writer will employ the letter of transmittal to show the significance of results, what has been done, and what remains to be done.

Comment Aside from the Report.—By adhering closely to the strict phraseology of the commission, the report writer may submit work that technically covers the ground laid out but which falls gravely short of giving the greatest service to the reader. In such fields as accounting, the tendency is more and more to accompany the report with advice that will aid the client. In general business reports, in which the investigator is given considerable leeway, the outline of procedure is merely indicated, and

the client permits, in fact expects, the worker to use considerable latitude to show him cause and effect.

Sometimes this "going afield" requires a special section in the report, while at other times it may be covered in the letter of transmittal.

While the purpose of our survey relates particularly to the routines and methods used, we believe that it is desirable to express our opinion as to the "general atmosphere" of the organization as well as to the advisability of continuing the present service activities.

Character of the Staff.—In the letter of transmittal one may refer to certain members of the staff, usually those of outstanding note, thus giving them recognition, showing the reader the position of each, and perhaps adding prestige to the report. Likewise it may be important to show there how widely distributed geographically the investigators have been or to point out their position as authorities.

Acknowledgment and Appreciation.—Frequently an investigator has received so much or such unusual assistance from some person or persons that he desires to acknowledge it in his report in a semiformal manner, either as a matter of courtesy or because the nature of the acknowledgment will not quite fit into the body of the report. Or he may wish to include a note of appreciation for the work of certain assistants.

Acknowledgments should be made in a quiet, dignified, noneffusive manner. Even though a writer feels enthusiastic in his attitude toward someone while in the heat of the work, he must curb effusiveness upon paper, or the disinterested, strange reader will not appreciate it and will probably doubt its sincerity. Then, too, within a short time even the writer may consider that it looks out of proportion to its real value.

The following are cordial, dignified acknowledgments:

We suggested this line of thought to Mr. E. W. Smith, chairman and president, and he very kindly consented to write us an open letter, with permission to incorporate it in this report, and we are sure that our readers will find this important letter, on p. 86 of Part II, of particular interest.

To Mr. E. W. Smith and his able and efficient staff we are under many obligations for their great help and most courteous co-operation in connection with the preparation of this study. . . .

Full acknowledgment is hereby made to Mr. G. S. Bates, Associate Professor of Marketing, for the manuscript, and through him, to the various

dealers, to the other members of the marketing staff, and to students who have been contributors of information.

Acknowledgment and thanks should be made with no favoritism but with full credit where due. Sometimes this acknowledgment is of such importance that a special page is given over to it. Fairness in giving credit will often influence the tone of the entire report.

Call Attention to Other Things.—The letter of transmittal may call attention to another report to follow, or to implications of the present report not directly concerned with it. The advantages to accrue to a town through the construction of a certain bridge may point the way to another report on an allied subject, or certain economic implications may be suggested even though they have no direct bearing on the construction of the bridge.

This report will be followed immediately under separate cover by suggested procedures for the purchasing and accounting departments, which we believe are needed to give effect to the improvements that are proposed.

We shall be glad to discuss with you at your convenience any of our findings and recommendations.

The suggested possibilities for the contents of the letter of transmittal, just discussed, all show something of the personality of the writer. Incidentally, a good letter is not lacking in salesmanship.

In some types of laboratory or intraorganization reports, the transmittal is accomplished by a set form, which usually constitutes the first page of the report.

Title

REPORT FOR: _____ POSITION: _____
REPORT FROM: _____ POSITION: _____
COUNTERSIGNED OR REVISED BY: _____ DATE: _____ DATE: _____
CONCLUSIONS (BRIEF): _____
RECOMMENDATIONS (BRIEF): _____ FILE: _____
DEPARTMENT NUMBER: _____

Qualities of the Letter of Transmittal

The important qualities of the letter of transmittal are conciseness and straightforwardness. Salesmanship, persuasiveness, and originality are characteristic of many letters, especially when the investigator knows that the client respects his judgment and

expects him to draw his conclusions carefully and then to present them in convincing fashion.

As is true in any good business letter, the impression made by the letter of transmittal depends to a large extent on the general tone. A natural, dignified, conversational tone is best in all but the most formal or technical reports, for such a tone impresses the reader with its quiet dignity.

May I call particular attention to those sections that deal with the transportation facilities and the labor supply? The proposition made by the B & X railroad seems to be a good one.

Although it has taken slightly longer than was estimated to prepare this report, it was necessary to wait for an offer from the railroad.

The exaggerated tone of the following causes the reader overzealously to scrutinize every point in the report because he recognizes the prejudiced and partial position of the writer:

Come to Lima and enjoy the highest success in manufacturing shoes. The high quality of the people will be reflected in the work that they turn out. The people of Lima are energetic and industrious, ready and willing to give their best for their employer.

The Lima Chamber of Commerce is extremely happy to present this report for your consideration.

Another tone to avoid is the defensive. Assuring the reader that the data are "unbiased" or "unprejudiced" seems to defend the report, open it to question, and weaken the writer's judgment.

One characteristic of the letter of transmittal is that, with the exception of the identification element, it does not have a definite introduction, as does a business letter. With the possible exception of a brief statement of recommendations, which are not strongly urged, neither does it have an ending that attempts to secure action.

A letter of transmittal, like a good business letter, may be said to have a central selling point. This central point is what the reader wants to know, what is of most absorbing interest to him in the body of the report, or what he wants to know that does not appear in the report, although it has a direct bearing upon it. Persuasiveness is largely achieved by building the letter around one or two significant facts, the better to gain acceptance for those facts.

Letters that are dictated, unless handled by a master, are frequently lacking in organization and consequently in those quali-

ties of salesmanship that are needed to enable the transmittal to make the proper impression. Routinism causes such letters to lack adaptation.

Tone

The tone of the letter of transmittal depends upon the formality and extent of the report. However, it is not unusual, even in rather formal reports, to find the first person used. While the transmittal may have personality and occasionally some warmth, it is basically a dignified, businesslike document.

Form

The form of the letter of transmittal is usually like that of any business letter, unless it is being used as a synopsis. In that case, side or center headings are employed to break up the solid reading matter and to make the main heads stand out more clearly.

Letter of Transmittal[1]

DEAR MR. EARLY:

As you requested, we made a brief study of the educational and training activities of the Blank National Bank for the purpose of appraising their adequacy and effectiveness and of outlining any further steps in a training program which are desirable.

We have outlined briefly a long range and rather comprehensive employee-training program which we think should be adopted. It is not our thought that all of these training activities would be carried on during any one year. They would be so scheduled from year to year as to provide a well-balanced training program and provide also for the amount of training work each year which it was felt would not be burdensome to the bank or to the employees.

We have also pointed out the principles and methods which we think should be followed in carrying on training work within the bank. It is important in this connection that training groups shall have their meetings carefully scheduled in advance, that the materials prepared shall be adequate, and that the training courses shall provide for continuity of thought and progress in the consideration of subjects applying to the various fields of training.

We shall be pleased to participate as may be required in consideration of the proposed training program, in the preparation of materials, or in the actual training work.

Yours very truly,

[1] Business Research Corporation, 79 W. Monroe St., Chicago.

Letter of Transmittal[1]

The President,
The White House.

MY DEAR MR. PRESIDENT:

We have the honor to transmit herewith a Report on the Distribution of Consumer Income in 1935–1936, prepared under the direction of our Industrial Committee by Dr. Hildegarde Kneeland and her staff. This report provides the first estimates in this field based on a nation-wide canvass of family incomes. These estimates have been developed from data on over 300,000 families obtained through a Federal Works Project on the study of consumer purchases conducted by the Bureau of Home Economics and the Bureau of Labor Statistics with the co-operation of the National Resources Committee.

The report provides for the first time an authoritative, broad, national picture of division of income among the American people. The facts disclosed are significant not only to businessmen concerned with the market for consumers' goods, but also to all citizens concerned with problems of economic opportunity in a democracy.

Sincerely yours,

Harry H. Woodring, Secretary of War	C. V. McLaughlin, Acting Secretary of Labor
Henry A. Wallace, Secretary of Agriculture	Harry L. Hopkins, Works Progress Administrator
E. K. Burlew, Acting Secretary of the Interior	Frederic A. Delano Charles E. Merriam
R. E. Patterson, Jr. Acting Secretary of Commerce	Beardsley Ruml Henry S. Dennison

Replacing the letter of transmittal sometimes is found the official certification of the company making the investigation. This may be formal—almost legal in tone and phraseology when introduced in a perfunctory manner—or it may be enlarged to cover many of the points of the regular letter of transmittal.

The following survey represents the findings of the J. R. Smith Company, a neutral engineering firm, which made an impartial investigation and compiled its report in collaboration with the owners.

[1] *Consumer Incomes in the United States*, National Resources Committee, August, 1938.

This survey provides definite, reliable, and unbiased performance data on which the selection of materials and equipment may be safely based. It has been approved in writing by a responsible executive in the owner's firm.

The J. R. Smith Company hereby certifies that the facts and figures are correct to the best of its knowledge and belief.

Illustrations of Tone and Style in Letters of Transmittal

To the POLICYHOLDERS:

I present to you today the record of the accomplishment of your company during the year 1939. That record is a satisfactory one, and the close of the year finds the institution in sound condition. Our earning power, in spite of the limited investment opportunity of these times, is more than adequate to fulfill all contracts falling due and to make the necessary provision for the future.

To BLANK EMPLOYEES:

Once a year it is the custom of most corporations to issue annual reports. These reports show the results of the year's business; that is, the sales, expenses, and profits and summaries of the company's properties.

Until comparatively recent years such annual reports were prepared only for the stockholders of corporations. Even though many employees are stockholders of the corporation for which they work—thousands of our employees are Blank stockholders—it has come to be appreciated by corporation managements that employees should have the fullest opportunity, along with stockholders and others, to examine the summaries of corporation business.

Last year, therefore, I addressed a special report to all employees containing a summary of the 1938 business. The reaction to that report was so favorable that another has been prepared for employees covering the company's 1939 fiscal year.

To the STOCKHOLDERS:

The Company's trade during 1939 increased substantially. This was due to increased farm income, the need for replacement of farm implements, the introduction of improved machines, and the increased demand for the new line of motor trucks and for the other products designed for industrial uses. A comparison of 1938 and 1939 sales is as follows:

To the STOCKHOLDERS:

The check enclosed represents a dividend of 10 cents per share as declared by the Board of Directors on February 6, 1939, payable to stockholders of record at the close of business February 28, 1939.

Our volume of sales for 1938 was about 15 per cent less than in 1937, but we feel that even this is a very good showing when the two years are compared for comparable lines and for general business conditions. Earnings dropped from a net of 92 cents per share in 1937 to 72 cents per share in 1938. The greater part of the drop in volume and earnings was occasioned by the poor business experienced in the months of May, June, and July.

Prospects for 1939 right now seem excellent. Some of our most important products and "best sellers" have been quite radically improved and are being received by the trade generally, at least, up to our expectations. Our advertising department has prepared a very comprehensive new catalogue that is bringing excellent results and many compliments from our customers.

For several months we have been fortunate enough to sell quite a substantial amount more than we have been able to manufacture and it is our hope to increase manufacturing facilities so that these spurts in business may be handled to better advantage. Several new products are in process that we hope will enable us to show a substantial added volume combined with added profits. All Brown Equipment is modern in design and easily in line with competition.

We shall be very glad indeed to have any suggestions from you or to answer any questions you may care to ask. Should you care to have our new catalogue, write us and it will be mailed immediately.

In this, my first report to shareholders, I have a mixed feeling of disappointment and satisfaction. We have gone through a difficult year. The prices of our products suffered serious declines. As is explained in previous annual reports, a company like ours must keep on hand millions of pounds of products in order to take care of its nation-wide distribution. As a result of having to carry these large stocks of goods, we necessarily make inventory profits in years of rising prices and suffer inventory losses during years of falling prices.

For this reason our earnings for the year were disappointing. In spite of inventory losses, however, Blank Company is in a strong financial position; progress has been made in reducing the cost of doing business; operating methods have been improved. This is largely the result of the loyal co-operation of a splendid staff of employees, from the plant workers to the officers of the company. And it has been a source of great satisfaction to be associated with a group having such a large measure of ability and such fine morale.

The following is an example of a letter of transmittal accompanying a private report made to the president of a company. This is a synopsis type of letter. Names have been changed in this letter.

GENTLEMEN:

In comparison with bonds of similar security, we believe that the above issue presents exceptional value at the present market to yield over 6 per cent. A study of the facts leads us to believe that this bond is materially out of line, and on account of the very strong security, is unquestionably worth intrinsically its callable price of 105. The principal points are as follows.

1. A well-seasoned security, listed on the New York Stock Exchange, well regarded and already possessing broad marketability.
2. Each $5,000 par value of these bonds is secured by not less than $6,000 in mortgage bonds of the New Jersey Rapid Transit Corporation and/or Petersburg Power Plant Corporation.
3. A cumulative sinking fund is sufficient to retire before maturity the entire present issue of bonds by purchase in the market up to 105 or by call for redemption at that price.
4. Earnings applicable to pledged collateral are over twice interest and 1.85 times combined interest and sinking fund requirements on S-L-T 6s, which earnings are being accomplished on a 5-cent fare.
5. The City of ..... has over $170,000,000 invested in the rapid transit lines operated by the New Jersey Rapid Transit Corporation, the service on which is junior to an amount substantially in excess of the service on the New Jersey Rapid Transit bonds.

In view of the strong mortgage security and the adequate protective provisions for future issues (in case of additional construction), and the already established and steadily increasing earning power on a 5-cent fare, we believe these bonds are a very attractive purchase at the present market under par, from the standpoint of income as well as possibilities of appreciation.

Very truly yours,
SMITH, BROOKS & CO.
Investment Department

This letter of transmittal from a department head to the general manager is typical.

DEAR SIR:

We have made a study of the wiring-inspection methods as a part of an assignment received from Mr. Smith to suggest ways and means of reducing utilization expense.

Our study of the inspection methods shows that the number of inspection calls could be considerably reduced without delaying service or easing up on requirements.

We are submitting suggestions for reducing the number of inspection calls, and while it is difficult to estimate the saving that might be effected, we believe that the calls could be reduced to a point where the saving would reach $3,500 a year in districts *C* and *D*.

We shall be glad to discuss the report with you and render any assistance you may desire in the introduction of the suggested changes.

Yours respectfully,

LETTER OF APPROVAL

In a strictly formal report of a public nature or in a report for which an executive holds the responsibility while a subordinate actually performs the work, either the report is given official sanction in the form of being countersigned, or it is accompanied by a letter of approval. In the second case, which is common in routine work, a space is left on the title page or at the lower left-hand corner of the letter of transmittal, where the executive in charge signs with the subordinate. If any revision is made, it may be indicated before signing.

If the executive wishes to add some general comments in his transmittal, he may do so in a complete letter of approval. This letter is usually formal.

Routine approval takes approximately this form:

Abating the Mosquito Nuisance

REPORT FOR:	A. R. Sims, President	
REPORT BY:	Alfred E. Richey, Engineering Division	March 24, 1939
REVISED BY or APPROVED BY	J. R. Long, Gen. Mgr.	March 30, 1939

Or it may be incorporated in a brief synopsis.

Investigation Case No. 274
SUBJECT: Leather Goods in the United States.
OBJECT: 1. To make a brief general survey of conditions affecting the leather industry in the United States, and

2. To determine the truth or falsity of a rumor that the English and German manufacturers of leather goods are trying to form a combination to control the price of the products imported into the United States.

REQUESTED BY: A. M. Jackson
Compiled by: C. W. Smith
Approved: _____
Purchase Engineer
Noted by: _____
Asst. General Purchasing Agent

_____
Division Buyer

Routed to:

L. L. Bodach	W. H. Stout
G. R. Cook	G. Gore

Copies to:

H. W. Leonard	T. J. Schlitt
R. W. Mayer (2 copies)	R. W. McMichael.

A note of approval from a superior officer will often help a report to get proper attention.

MR. J. M. JONES, PRESIDENT:

This report is the result of an investigation assigned to Mr. J. R. Smith by the Board of Directors in December, 1939.

It was recognized at that time that progress in our field was limited until we could establish certain facts. This meant a long and arduous task, but the results, it seems to me, are well worth the time, effort, and expense.

I have worked closely with Mr. Smith throughout this investigation, and I believe that he has presented a clear, impartial picture of the situation. I recommend the report for your consideration.

(Signed)_____

CHAPTER X

WRITING THE ELEMENTS OF THE REPORT (*Continued*)

(Table of Contents through Synopsis)

I. Table of Contents—II. Table of Charts and Illustrations—III. Foreword or Preface—IV. Acknowledgment—V. Synopsis: *A*. Terminology; *B*. Purpose; *C*. Use; *D*. Content; *E*. Length; *F*. Arrangement.

TABLE OF CONTENTS

Reports that are more than three or four pages in length, or that are divided into more than three or four parts, should include in a table of contents a list of the main heads covered. In short reports that present only a brief discussion the few heads should be set out on a page, often without numerals or page numbers.

Investigation of the Marketing of Honey

Summary of Preliminary Investigation
How Honey Is Marketed in Louisville
  Manufacturers
  Retail Markets
  Retail Prices
  Quantity

In the long report, however, the table of contents should be detailed, so that the reader can get an idea of its entirety and development and can turn to any one section with the least possible inconvenience. This last is particularly important after the report is filed and is to be used for reference.

The table of contents is prepared after the report has been completed so that the page numbers are available. It follows the general form of the last outline prepared before writing, but it takes into account any changes that are made in the actual writing. Different subheads should be arranged according to their value in relation to main heads, the latter being subdivided three or four times in elaborate reports. A uniform system of numbering should be used so that the reader will know the relative importance of each head by the designation. The use of different

CONTENTS

	Page
Letter of Transmittal	ii
Synopsis	iii
I. Introduction	1
A. Authorization	1
B. Purpose	1
C. Scope	1
D. History	2
E. Method	3
II. Total Advertisements in Two Papers	4
A. Column Inches per Week	4
B. Column Inches per Day	5
III. National and Local Display Advertisements	6
A. Local Column Inches	6
B. National Column Inches	8
IV. Chief Lines of Trade	9
A. Local	9
1. Department Stores	10
2. Furniture and Home-appliance Stores	10
3. Clothing Stores	11
4. Grocery Stores	12
B. National	14
1. Beverages	15
2. Home Products	16
3. Utilities, Gas and Oil	17
V. National and Local Compared	18
VI. Conclusions	20
VII. Recommendations	21
Bibliography	22

TABLE OF CONTENTS

(A Study of Municipal Reports)

	Page
Letter of Authorization	ii
Letter of Transmittal	ii
Synopsis	iii
I. INTRODUCTION	1
II. ARRANGEMENT OF THE CONTENTS	
A. Covers and Title Pages That Sell Civic Pride	4
B. Locating the Contents of the Report	5
C. Setting the Stage for the Municipal Panorama	6
D. Formally Presenting the Actors	7
E. Continuing the Good Work	8
F. Viewing City Jobs and Job Holders	9
G. Finding the Heart of the Town Report	9
H. Keeping of the Till	11
III. TECHNIQUES OF PRESENTATION	
A. Simple Language for Weighty Subjects	14
B. Putting the Artist to Work	16
C. Bars, Lines, and Pies	17
IV. CONCLUSIONS	19
APPENDIX	22
A. List of Reports Analyzed	23
B. Bibliography	25

kinds of heads will follow this enumeration. For instance, all Roman numeral (I, II) main heads may be set in capitals and centered, while the next value head (*A*, *B*) may be set in capitals and lower case, underlined, and centered.

Many reports carry a table of contents with no designations for the different heads. The more readable ones, however, carry designations; the most commonly accepted form is Roman numerals for the main heads, capital letters for the first subhead, Arabic numerals for the next subhead, and small letters for the next.

Perhaps the most satisfactory style for the prefatory material that appears before the body of the report is to use no numbers or letters on the left and to use small Roman numerals for the page numbers, as illustrated on pages 211–212.

A fault often found in the table of contents is scanty phraseology. One-word, or label, heads are usually too inclusive and general. "Direct Mail" could be the subject of several books, but "Compiling Smith's Mailing List" is comparatively specific and clear.

All headings should show clearly and quickly the relation of topics. A little mental briefing, to see whether each head and subhead is in the proper relationship, is doubly profitable in that it will also eliminate minor points from major positions.

The main heads should be the basic criteria of criticism or investigation. If a study of local advertising is based on who does it, when it is done, and how much is done, these significant points are the main heads. The breakdowns of amount done, types of stores, etc., must fall into their proper subordinate positions.

When possible, it is desirable that a caption be specific. For example, not

I. Corn Growing in Illinois
  A. Central
  B. Northern
  C. Southern

but

I. Extent of Corn Growing in Illinois
  A. Increasing Importance of Central Illinois
  B. Decreased Corn Acreage in the Northern part
  C. Negligible Production in Southern Illinois

Frequently the table of contents indicates an illogical mixture of elements, which frightens away the careful reader. For example, an analysis of the correspondence of a company should treat the elements—opening, body, clincher—before introducing the qualities—you-attitude, tone, specificness, etc.

The table of contents should carefully follow parallel construction. A mixture of constructions is confusing, even to the reader who cannot tell technically what is wrong.

See the chapter on Mechanics for Spacing, Alignment, etc.

An abbreviated style is often used in short reports.[1]

CONTENTS

	Page
Purpose of This Study. . . . .Inside Front Cover	
Foreword	1
General Summary and Conclusions	2
Practical Uses of These Figures	4
Facts from Survey	5
Types of Pay-roll Payments	5
Pay Rolls by Days of Month	7
Ratio of Wages to Salaries	10
Typical Pay-roll Week	11
Payments by Check and Cash	13
Cash Pay-roll Deliveries	15
Appendix	19
Reporting Establishments . . . . . .Back Cover	

TABLE OF CHARTS AND ILLUSTRATIONS

When a report contains a large number of charts and illustrations, they are all listed in a special table following the table of contents. This table gives the number, the title for each chart or figure, and the page number, thereby enabling a reader who is particularly interested in this feature, or who has read the report and remembered one special chart, to turn to the proper place with a minimum of effort. These tables may have appropriate heads such as Table of Charts, Table of Illustrations, or Table of Computations.

The contents should usually be arranged consecutively as they appear in the report, but occasionally there is reason to group different charts and illustrations under various heads, regardless of how they may be distributed (see Chap. XVII).

[1] HOWARD T. HOVDE, *Payroll Policies in Philadelphia*, University of Pennsylvania.

FOREWORD OR PREFACE

There is really very little difference observed in the use of the terms *foreword* and *preface* as applied to the material used in place of a letter of transmittal in many general reports. When the writer knows who his readers will be, he transmits his report with a letter, as discussed in Chap. XIII. In a public report, however, which will be read by anyone and everyone, the transmitting usually takes the more formal, "book" style of foreword or preface.

For a detailed discussion of possible contents, reread the section on the Letter of Transmittal.

Like the letter of transmittal, the foreword is the author's opportunity to say in semiconfidence a few words to the reader. In it, the writer should state briefly the subject matter, possibly the need or reason for the report, the outstanding features of the investigation, and the methods of organization. He may include acknowledgment for aid received or any of the other features of a letter of transmittal that are not too personal in nature or tone. The foreword or preface may or may not be signed.

Occasionally a report uses both a foreword and a preface, written by different people. For example, the organization responsible for the investigations introduces the whole idea in a foreword, while the investigator introduces the report proper in a preface.

The following is an example of a foreword, containing an acknowledgment:

Foreword

Certain important holders of Big X stock, clients of this house, came to the conclusion, after a trip through the country sometime ago, that competition between this road and the Western Central was a serious and increasing menace to the future prosperity of the Big X. They were so confirmed in this belief that they had planned to liquidate their holdings of its securities, but withheld final judgment pending our study of the situation.

For the benefit of these clients and for others who undoubtedly shared their opinion, an extensive review of all available statistical data was undertaken. The sources of information used were principally the elaborate records of the Bureau of Railroad Statistics. In order to be sure of the accuracy of our statistical data, arrangements were made to have all our figures checked by the accounting department of the Big X. The statistical survey was supplemented by an inspection trip which was arranged through the courtesy of Mr. Garvin.

While we hope that our clients will value the conclusions that we have drawn from this careful study of the Big X, we knew that they would particularly value a brief survey of the present situation and an estimate of the future outlook by the chief spokesman of the Big X, himself. We suggested this line of thought to Mr. A. E. Garvin, Chairman and President, and he very kindly consented to write us an open letter, with permission to incorporate it in this report. Readers will find this letter on page 98.

To Mr. Garvin and his efficient staff we are under many obligations for help and courteous co-operation.

CARR, HUMPHREY & CO.

ACKNOWLEDGMENT

Although a paragraph at the end of the foreword or letter of transmittal is usually sufficient for acknowledgments, occasionally they are so voluminous that a special section is used. The acknowledgment lists people and companies that have been especially helpful and states the type of assistance each has given.

Foreword[1]

Among marketing people there has been a great deal of discussion of the amount of marketing research being conducted, what subjects are being investigated, the number of persons involved, and the total cost of such projects; however, there has been little factual material available on the entire subject. Some persons, from their own contacts, had a good idea of the marketing research carried on by certain organizations and of its cost; but no general survey of the field had been made.

Some months ago, Frank R. Coutant, who was at that time president of the American Marketing Association, suggested that the Bureau of Foreign and Domestic Commerce make a study of marketing research conducted by non-governmental organizations, and offered to appoint an advisory committee of the association to assist in the project. When the officials of the Bureau approved this study, Mr. Coutant appointed a committee which carried over during the administration of Dr. Fred E. Clark as president of the association.

The real initiation of this product was delayed until the spring of 1938, when it was decided to confine this study to the marketing-research activities of manufacturers, leaving the consideration of such other organizations as market-research agencies, publishers, advertising agencies, retailers, wholesalers, and university bureaus of business research until some later date, if then desired.

The Bureau acknowledges the assistance rendered by the many manufacturers who filled out the schedule for this study. Appreciation

[1] *Marketing Research Activities of Manufacturers*, Series 21, U. S. Department of Commerce.

is expressed also for the advice and suggestions given by the advisory committee, composed of the following members: Frank R. Coutant and Fred E. Clark, chairmen ex officio; Pauline Arnold; R. A. Balzari; H. M. Beville, Jr.; Neil H. Borden; C. C. Chapelle; Paul D. Converse; Donald R. G. Cowan; Carl W. Dipman; Frederick B. Heitkamp; Arthur Hirose; F. T. Hypps; Stanley Newberry, Jr.; F. W. Nichol; Philip Salisbury; Lee Schoenfeldt; Alexis Sommaripa; Malcolm D. Taylor; Q. Forrest Walker; and Ferdinand C. Wheeler. Thanks are expressed also for the assistance of Marian A. Manley, Branch Librarian of the Business Branch of the Newark, New Jersey, Public Library, and of Percival White of the Market Research Corporation of America in obtaining names of manufacturers to be contacted.

This report was prepared under the general direction of Wilford L. White, Chief of the Marketing Research Division, and Edward L. Lloyd, formerly Chief of the Market Data Section, of the Bureau of Foreign and Domestic Commerce. Nyal C. Dokken of the Market Data Section assisted in the preparation of the statistical material.

N. H. ENGLE, Acting Director,
Bureau of Foreign and Domestic Commerce

March, 19—

Foreword and Acknowledgments[1]

How much money University students spend and *for what* they spend it are questions of substantial interest. Studies dealing with this question have been confined, generally, to a narrow range of items such as board, room rent, textbooks, clothing, etc. To the writer's knowledge no study has attempted to measure the influence of such factors as residence, sex, fraternal affiliation, and class rank on students' expenditures.

Had it not been for the generous co-operation of the *Dakota Student* (the campus newspaper), my advanced students in Marketing Problems, and my colleagues at the University, this survey would not, and probably could not, have been completed.

SPENCER A. LARSEN

Acknowledgments[2]

This report on the distribution of consumer incomes in 1935–1936 was prepared by the Consumption Research staff of the Industrial Section of the National Resources Committee, under the immediate direction of

[1] SPENCER A. LARSEN, *Student Expenditures at the University of North Dakota.* Mr. Larsen is now Associate Professor of Business Administration, Wayne University, Detroit.

[2] *Consumer Incomes in the United States,* 1935–1936, National Resources Committee.

Hildegarde Kneeland. In addition to the staff members listed above, acknowledgment is due to Janet H. Murray, Jacob J. Kaufman, William C. Shelton, Willard Friedman, and Lawrence Neiman for assistance in various phases of the work, and to Sopha Lunsford, who served as secretary to the staff. Acknowledgment is also due to Milton Friedman, Erika H. Wulff, and W. Allen Wallis, who collaborated with Dr. Kneeland in preparing the preliminary plans for the study.

The report is based primarily on data from the *Study of Consumer Purchases*, a Works Progress Administration project conducted by the Bureau of Home Economics of the United States Department of Agriculture and the Bureau of Labor Statistics of the United States Department of Labor. The plans for the project were formulated by the National Resources Committee and the two operating bureaus, with the co-operation and advice of the Central Statistical Board and the Works Progress Administration, and the study was administered under the guidance of a committee representing the five co-operating agencies. Grateful acknowledgment is made of the generous co-operation given by the two bureaus in making the data from the project available for use in this report. Appreciation is especially due to Dr. Day Monroe, director of the study in the Bureau of Home Economics, and to Dr. A. D. H. Kaplan, director of the study, and Dr. Faith M. Williams, chief of the Cost of Living Division in the Bureau of Labor Statistics.

Acknowledgment is also made of the co-operation rendered by the Income Tax Unit of the Bureau of Internal Revenue, the United States Public Health Service, and various other government agencies in providing access to unpublished statistical data.

SYNOPSIS

Terminology

The synopsis section of a report is known under other titles; some of the most common are "summary," "epitome," and "abstract," all of which are synonymous as far as practical usage is concerned, although an abstract is usually more condensed than the others.

Purpose

The synopsis of a report, which immediately precedes the body, is a concise and condensed presentation of the outstanding features of the report, to make the reading easier and more intelligible and to save the executive's time. Upon considering a report, the executive is primarily interested in "What's it about?" and "What point does it make?"

In business research, interest centers on the answer to the question of what to do. A synopsis gives the executive a quick glance at the answer as a whole and shows him certain conditions and factors of importance with their influence on results, the course of action suggested, and the most outstanding reasons for the suggestion.

On the other hand, if the executive desires to read the detailed report carefully, the synopsis gives him a definite idea of what the course and method of development have been and thus enables him to read and to comprehend more quickly.

Recognized authorities may collect voluminous data but submit only brief findings to a client who trusts them to give the right conclusions. In such situations there is a tendency to elaborate the synopsis into what becomes an entire short report and to relegate the detailed presentation into appendix proportions for reference purposes.

Many companies believe that executives will read a one- or two-page report immediately but will take a long report home to be read in the indefinite future when there is more time. Another purpose of the synopsis is to widen men's range of reading, thus enabling them to get the gist of much research which they do not want to read entirely.

Whether the reader continues into the body of the report and finds that he is not interested, or whether he has secured enough from the synopsis either to act or to "keep him up to date" on the subject, the synopsis has served its purpose well. A careful synopsis, competently prepared, will save the time of each reader and will be of great aid to the librarian and to the bibliographer in properly filing and organizing material, especially when the title is not clear. For the student, the practice in condensation is valuable in bringing out high lights and in revealing weak spots in the body of the report.

Jse

Some form of synopsis is used in practically every type of report. In the case of a short report—two or three pages in length—the synopsis may be a paragraph at the beginning. This is really an abstract.

In a slightly longer report, the substance of the synopsis may be placed in the letter of transmittal, which serves as a brief synopsis

of the report as a whole. This placement is possible only when it does not make the letter of transmittal too long.

Sometimes sections such as preface, foreword, etc., really absorb the function of the synopsis. A synopsis incorporated in a preface is naturally more or less perfunctory and limited.

Even though a long report has brief summaries throughout, either preceding or following each section, the reader usually prefers that these be collected and presented together, if for no other reason than quick reference later.

Scientific reports are usually preceded by a synopsis or abstract following a set style familiar to scientific readers.

Content

The synopsis is written after the report has been completed.

In the synopsis, emphasis should be placed on results. Usually the last two-thirds to three-fourths of the synopsis is devoted to the findings or result of the investigation. The remaining fourth or third, usually at the beginning, contains a succinct statement of purpose, possibly scope and method, and perhaps need. This is a condensation of the high lights of the introductory section of the body of the report, as discussed on pages 231 to 244. Only when the procedure has been unusual, outstanding, or necessary to an understanding of conclusions is it emphasized in the synopsis. Special attention should be given to writing a live, interesting first paragraph.

Many synopses are faulty because of lack of proportion, caused by over-emphasis of minor points or too scanty treatment of important conclusions. The style of writing places a premium on directness, conciseness, and condensation.

The synopsis is too often a shell with no meat; it should tell the reader something definite and final. It should give significant facts, not just an index statement of where to find them in the report. Some synopses are merely a second table of contents in sentence form, which is a waste of time and space. The essence of each main division should be given in proportion to its importance.

Length

The length of the synopsis varies with the type of report, the type of data being handled, the volume of data, the conclusiveness of the data, and the purpose for which the report is to be used.

Many technical-report synopses, including reports on new methods and apparatus used, contain only a few sentences. Data of a technical or mathematical nature lend themselves to shorter length than does the average market survey. When the volume of data is large and the question is being approached from many angles, the synopsis of each development adds to the length. When the data are conclusive, so that they do not require much qualifying, the length is reduced.

When a report is prepared for publication or when it is to be submitted to a critical examination requiring detail and supporting evidence, its length will be reflected proportionately in the synopsis. An informational report submitted to readers who desire to peruse it completely and to draw their own conclusions will require a shorter synopsis.

The length of the synopsis may be anything from a paragraph to 20 or 30 pages. The only rule that can be given is that it should be as short and concise as the nature of the report will permit.

Arrangement

In a synopsis of some length, each section may carry a title, set uniformly as a sidehead, center head, or in italics.

These subtitles furnish a descriptive index of what is in the report and what is in the synopsis. In a short report they may even serve as an index, without page numbers. These subtitles may tell a reader whether or not he wants to continue. They also may call attention to results not suspected from the title, a particularly useful function in a short report without a table of contents.

For example, the following subtitles were found in the synopsis of a report on a chemical experiment. The main heads were in different-size type from the subheads.

ATOMIC WEIGHT OF IODINE
  Pentoxide method
  Determination
IODINE PENTOXIDE
  Preparation
  Purification
  Decomposition with heat
PREPARATION OF PURE IODINE
  etc., etc., etc.

This synopsis is entirely concerned with the findings. The absence of any summation of the introduction gives an abrupt beginning.[1]

One-third of the manufacturers responding to this inquiry, or a total number of 188, report that they themselves conduct marketing research, for which they spend nearly $2,000,000 annually. Of this expenditure, about 70 per cent goes for pay roll, 15 per cent for travel, and 15 per cent for other cost. In addition, they spend over $350,000 for marketing research conducted by outside organizations.

To conduct this research, these manufacturers employ 393 full-time research workers and have 483 other employees giving part of their time to marketing research.

In terms of the average company, approximately $21,000 is spent for research conducted by their own organization and $8,000 for outside research. Three full-time employees devote all their time to research and four others give part of their time to this activity.

Among all the subjects of research the four following are the most popular: (1) the potential market for a product or line, (2) comparison with competitive products, (3) analysis of the consumer market by sales territories, and (4) the addition of other products.

The following is the synopsis of a rather comprehensive report:

MARKETING FRUITS AND VEGETABLES IN CONNECTICUT

With Special Reference to the New Haven Market

By George B. Clarke

Synopsis

In the summer of 1934, at the request of the New Haven Chamber of Commerce, which desired to see an improvement in conditions at the New Haven Farmers' Market, a study of the market was made by the Storrs Agricultural Experiment Station.

This study included a survey of retail stores in New Haven and its suburbs, of peddlers, wholesalers and jobbers, truckers, and farmers who make use of the market. Questions answered by these groups related to buying and selling practices, especially as related to the market, the volume of purchases and sales, farm organization, and other relevant data.

[1] *Marketing Research Activities of Manufacturers*, Series 21, U. S. Department of Commerce.

Besides a study of the market itself information was obtained about the marketing of fruit and vegetables by farmers in other parts of the state, in order to make clear the position occupied by the New Haven market in the general picture. This was made possible by co-operating with the Farm Credit Administration in a study of the truck movement of fruits and vegetables in Connecticut. The Federal study was one organized and supervised by Professor M. P. Rasmussen of Cornell University to include all states from which any considerable volume of perishables was trucked to New York City.

There are both morning and night markets in New Haven. The buyers on the night market are chiefly wholesalers and trucker dealers. Taking the two markets together, the 100 farmers supplying most of the produce sold there reported sales of 31.6 per cent of their vegetable acreage to truckers, dealers, 20.7 per cent to wholesalers, 23.6 per cent to peddlers and 24.1 per cent to retail stores. Sales to consumers were negligible.

The morning market is a typical city market intended to serve New Haven and its suburbs only. The night market is a surplus market. Most of the buying there is for resale outside New Haven. Much of the produce bought goes outside the state to New York, Boston, Providence, and other markets.

The New Haven night market is an important outlet for surplus fruit and vegetable production. The only other market in the state serving a similar purpose is the Manchester Producers' Market Association, which so far has been principally an auction market for the sale of strawberries and cauliflower.

In 1933 Connecticut shipped approximately 600 carlots of fruit and vegetables to New York City alone. Other important out-of-state markets were Springfield, Providence, Boston, and Worcester. Part of this produce moved out through the New Haven market. The larger part was either sold at the farm or trucked out by farmers themselves or by hired trucks.

The New Haven market is privately owned by several concerns, is located on three or more lots, is not subject to any municipal regulation, has no stated opening and closing hours, and possesses no convenience beyond the space occupied by the trucks that use it. Advantages of the market are that it is located in the wholesale district, that it is open at night as well as in the morning, and that it offers an outlet for a large volume of produce. Disadvantages are that it is in private hands outside municipal or farmer control, that it is located on several lots, that it is over-crowded during the height of the season, that access to the market is through heavy traffic in almost every direction of approach, and that charges for parking space are high.

The wholesale section in which the market is located is a congested area near the railroad station. Opportunities for expansion are limited. Trackage is scanty. Only two or three of the wholesalers have trackage of their own.

New Haven lies on the edge of a large fruit- and vegetable-producing section. Under modern conditions all of Connecticut is within trucking distance of this market. It seems probable that a great expansion of the night market will come if proper facilities are provided for the meeting of buyers and sellers.

Expansion of vegetable acreage in Connecticut is forcing farmers to seek out-of-state markets and to increase their sales to chain stores. Sales in interstate marketing will be prompted by the right kind of market place for that purpose, by standardized packages, and by farmers' conformity to United States grades.

Retail Stores as Users of the Farmers' Market

The survey included 294 independent stores in New Haven and the suburbs of East Haven, Branford, Hamden, and West Haven. Three chain-store organizations also filled out questionnaires.

The total value of fruits and vegetables purchased was estimated from the average weekly purchases as reported by the independent stores. On this basis the purchases amounted to $1,397,234, of which $722,660 was for vegetables and $674,574 for fruits. The chain stores accounted for $985,800 of total purchases, of which $472,289 was for vegetables and $513,511 for fruits. Altogether, then, the stores in New Haven and its suburbs reported purchases in 1933 of more than $2,000,000 worth of fruits and vegetables, divided nearly equally between the two.

Just what proportion of this total was native and what proportion was shipped in is not easy to determine. Nearly all the independent stores reported that they bought native vegetables exclusively between May 1 and October 31. The weighted average percentage of native vegetables bought by the independent stores between these dates according to their reports was 97.7 per cent. The chain stores reported 81.8 per cent. The latter seems to be the more accurate estimate.[1]

For those who may have neither the time nor the inclination to study the details of this report, the following summary of eight years of unemployment in Lincoln is given:[2]

[1] Storrs Agricultural Experiment Station, Connecticut State College, *Bulletin* 205.

[2] CLEON OLIPHANT SWAYZEE, *Eight Years of Unemployment in Lincoln, Nebraska*, 1932–1939, University of Nebraska Studies in Business 45.

Synopsis

1. Of the 4,173 persons enumerated during the first week of November, 1939, 595, or 14.3 per cent, were wholly unemployed on November 1. This figure is to be compared with 26.5 per cent on the same date in 1932, 25.2 per cent in 1933, and 14.1 per cent in 1937.

2. Only 6 per cent of all persons enumerated in 1939, somewhat less than half of the total unemployed, were idle and able and willing to work. Marked improvement in this respect is shown by comparison with the 1932, 1933, and 1937 figures, which were 17.9 per cent, 19.8 per cent, and 6.3 per cent respectively. The remaining unemployed, amounting to 8.3 per cent of all persons enumerated, were either unable or unwilling to work. The unable or unwilling unemployed accounted for 8.6 per cent of all persons enumerated in 1932, 5.2 per cent in 1933, and 7.6 per cent in 1937.

3. In addition to those wholly unemployed, there were 7.2 per cent of all persons enumerated in 1939 employed part time only. This figure is to be compared with 12.2 per cent in 1932, 10.8 per cent in 1933, and 10 per cent in 1937.

4. Full-time employment has increased steadily since 1932, when only 61.3 per cent of all persons enumerated were employed full time. This figure had increased to 64.1 per cent in 1933, 75.9 per cent in 1937, and 78.5 per cent in 1939.

5. Of the able and willing unemployed in November, 1939, 26.2 per cent had been idle continuously for one year or longer, a much improved record over former years. In 1932 this figure was 42.9 per cent; in 1933 it was 65.1 per cent; while in 1937 it was 39.3 per cent.

6. The cause of unemployment has changed greatly during the eight years under study, slack work diminishing in importance as a cause. Only 30.8 per cent of those idle in November, 1939, gave slack work as a cause for unemployment. This figure may be compared with 67.4 per cent in 1932, 76.5 per cent in 1933, and 40.5 per cent in 1937. On the other hand, sickness and injury have increased sharply as a cause for unemployment, having accounted for 8.4 per cent of the unemployed in 1932, 8.3 per cent in 1933, 17.3 per cent in 1937, and 22 per cent in 1939.

7. Of the able and willing unemployed in 1939, 46 per cent were under 35 years of age, as compared with 55 per cent in 1937.

8. Of the 4,173 persons enumerated in November, 1939, 1,619, or 38.8 per cent, had been unemployed at one time or another, and for all causes, between 1929 and 1939. Of these, 64 per cent had total unemployment of one year or longer. Three years or more of total unemployment has been the lot of 36.8 per cent of those unemployed at one time or another since 1929.

9. Of all persons enumerated in November, 1939, 1,176, or 28.2 per cent, had shifted from one industry to another since 1929, a figure which does not include occupational or plant shifts within an industry. Of the 1,176, 29.2 per cent had shifted because of the depression or irregular work. Almost 16 per cent of the shifting was to better jobs.

10. Of all persons enumerated, 10.6 per cent had been employed at one time or another on government work relief projects.

CHAPTER XI

WRITING THE ELEMENTS OF THE REPORT (*Continued*)

(Introduction)

I. Body of the Report—II. Main Division of the Body—III. Introduction: *A.* Suggestive list of contents; *B.* Title; *C.* Abstract; *D.* Authorization; *E.* Purpose and object; *F.* Method and scope; *G.* Limitations; *H.* History; *I.* Definition of terms; *J.* Materials and apparatus; *K.* Location; *L.* Administration; *M.* Copy of questionnaire—IV. Examples of Typical Introductions.

BODY OF THE REPORT

Although the order in the finished report is title page, letter of transmittal, table of contents, synopsis, etc., the body of the report is the first thing prepared after the formulation and interpretation of data.

Tables, charts, and graphs are frequently prepared first of all. Then the material is summarized, the report is studied as a whole, and the material is arranged in the manner best adapted to bring the facts clearly and easily to the reader. This may mean the logical, chronological, or psychological order, depending on the subject matter and on its importance or familiarity to the reader.

At this stage and before the results are written, some executives request an oral report of conclusions and of the proposed method of presentation. This is a wise procedure because it makes for better final adaptation.

MAIN DIVISIONS OF THE BODY

Because of the wide variance in subject matter, nothing but general divisions of the body can arbitrarily be suggested. In the rather long, detailed analytical reports, which include all data from history to recommendations for the future and which are present in the logical order, the material falls into three general classifications: *introduction, text, conclusions and recommendations,* presented in this order.

When the material is presented psychologically, the contents remain the same, but the order is somewhat changed. The first

paragraphs or sections are given over to the findings of facts or conclusions. These are followed by the briefly stated recommendations, when included. Then follows the text of the report, giving detailed data.

This second arrangement enables the executive to grasp the main ideas quickly, as has already been explained, but, since the actual content is basically the same in all cases, the logical arrangement will be followed in this discussion of writing the body of the report.

INTRODUCTION

The purpose of the introduction is to present the necessary background, rules, and limitations so that the reader may easily and thoroughly understand the later discussion. Briefly, it tells the object of the investigation, the reason for it, within what limits the facts are presented, and the definition of any unusual terms, so that the reader will grasp the writer's interpretation and his method of compiling data. It should give the complete program of what is to come, often including the conclusions and recommendations.

Some of this material may be digested in the letter of transmittal or the synopsis, but it is presented in detail in the introduction. (The use of the term *introduction* here should not be confused with preface or foreword.)

Effective arrangement in the introduction will add prestige to the report and often will hold the attention of even hostile readers. As the journalist selects the most important of the 5 w's for his beginning, so does the wise report writer choose the most outstanding of his introductory elements for early use. The report beginning with conclusion and recommendation is merely following this idea. It is frequently a strong point to state in the introduction what it is impossible to prove, for this admission lends greater credence to the rest.

The introduction should show clearly the criteria used in the selection and elimination of data.

The length of the introductory material varies in proportion to the reader's needs and to the amount of knowledge that he has of the subject matter. For instance, the history of the problem may require much or little space, depending on the reader's familiarity with it.

Suggestive List of Contents

The following list of contents for the introduction is given only as a possibility and is not intended either to be comprehensive or to imply that everything here listed must be included in each good report. The order of parts may be varied to suit the purpose. In fact, the brevity of some reports renders unnecessary the use of more than one or two of the following heads:

Title, abstract, authorization, purpose, object, history, need, location, method, scope, limitations, apparatus, materials, design, administration, estimates, acknowledgments, definitions, general remarks.

It is true that the introduction contains rather stereotyped heads, but it is often possible to avoid repetition of these words—purpose, scope, etc.—through the use of more vivid heads which will not only indicate the same things but will provide additional details which of themselves arouse interest. For example, "How We Earned Our Living in 1940," or "Every Income Group Sampled" implies purpose and scope, respectively.

Title

Phrasing the title, both when starting the investigation and when writing the final report, is one of the report writer's greatest problems, because of the necessity for definite limitation and for "salability" (see discussion of Title Page, page 186). Because most students are afraid that they will not be able to get enough material, they present a subject broad enough for a book. It takes persistence to persuade them to limit it to one phase only and to handle that phase thoroughly. But it is necessary, for readers promised the world in a title are not satisfied with an island. "A Faculty Credit Union" is not sufficient for a report designed to answer the question, "Should the University of Illinois Faculty Start a Credit Union?"

Unusual words in a title should be explained in the definition section.

Abstract

Except in the technical field, the abstract has largely given way to the more complete synopsis. While the synopsis gives the reader a brief, concise, but rather thorough idea of the entire investigation, the abstract is designed merely to give a bare idea

of the method and results presented in the report. This is an aid in filing and a help to the busy technical worker, who reads in entirety only those reports in which he is interested but who uses the abstract as a quick means to determine in which ones that interest lies.

An abstract is a concentrated, impersonal, unbiased, non-interpretative, and non-critical presentation of the essential elements of the report. It presents just what the author says with no evaluation by the abstractor. Following is a working plan for an abstract.

1. Complete bibliographical data when the abstract appears without the report. When it is part of the report, of course this is unnecessary.
2. Statement of purpose, objective, aim, or achievement. This should indicate the bearing of the report on the general question involved.
3. Description of procedure or method followed to attain the objective.
4. Conclusion or generalization attained.

Abstract

The characteristics which determine the value of the radiator in discharging the functions are considered in detail. Measurements of air flow through the core, of head resistance, of cooling power, and of geometrical characteristics are described and an exposition given of the relations between these and the conditions under which a radiator operates and its characteristics of form and construction. The work was based on special laboratory investigations, including laboratory test of over 100 types of radiator core. A detailed record of the performance of these cores is included in the paper.[1]

Authorization

When mention of the authorization for the report is not made in the letter of transmittal, in a special letter of authorization, or in the preface, brief reference to it may be made at the beginning of the introductory material. In short reports that do not contain a letter of transmittal, a sentence near the beginning of the report to the effect that "This report was authorized by J. K. Kenney, general manager, on May 3, 1939," may be sufficient.

[1] No. 211, "Radiators for Aircraft Engines," Bureau of Standards, Washington, D. C.

This origin of the commission is necessary as a matter of record for all reports that are to be filed; if the report is the result of a legislative act, the section pertaining to the authorization may be inserted here. Usually, however, if the reprint is very long, it is better to box it on one of the pages preceding the introduction.

Authorization

Through the effort of several of the engineering societies, the Bureau of Standards, and prominent manufacturers of screw-thread products, a petition was presented to Congress requesting the appointment of a commission to investigate and promulgate standards of screw threads to be adopted by manufacturing plants under control of the army and navy and for adoption and use by the public.

a. Commission authorized by Congress—As a result of this action the National Screw Thread Commission was authorized by the following act of Congress, approved July 18, 1918 (Public Act No. 201, H. R. 10852, 65th Cong.):

[Here follows the reprint.]

b. Life of commission extended by Congress—Prior to the expiration of the original term of six months for which the commission was appointed, it became apparent that it would be impossible to complete in a satisfactory manner the work outlined by the commission. Extension of time was therefore asked by the commission and granted by Congress, etc.[1]

Purpose and Object

In many elaborate reports, the writer will differentiate between the purpose and object. The *purpose* is the ultimate thing to be attained, and the *object* is the immediate means of attaining it. To make clear the purpose of the report, it may be necessary to explain whether it is a comparison, description of a new phenomenon, or development of a theory. What is its structure? When and where performed? Relation to previous work for proper orientation? Possible uses to be made of the report?

The purpose of a dentist's examination is to relieve all pain, but his immediate object is to find a tooth causing or contributing to the trouble. Knowing the ultimate purpose of an investigation, the writer may desire to embody in his report more than the

[1] "Report of the National Screw Thread Commission," Bureau of Standards, No. 61.

object seems to demand. For instance, he may include a broad economic interpretation of figures and principles.

"The purpose of this report is to provide data upon which to base proposed advertising and direct-mail work." Yet the direct object of the report may be a magazine survey.

The object of the report is stated as the problem for which an answer is sought. It is a statement of the specific things necessary to explain in order to accomplish the purpose of the report. It may include a statement of what was done and why, the *why* of the investigation.

"The object of this report is to show the relationship between homes that read———, ———, ———magazines and that have telephones."

The following statement of purpose tends to get away from the cut-and-dried variety, yet it is concise and clear:[1]

I. The Purpose of the Survey

What does the average purchaser, man or woman, think about the retail advertising of Toledo merchants? What advertising practices meet with approval or disapproval? Why? What kind of advertising tactics are undermining the confidence of Toledo consumers in their stores?

The purpose of this survey is to determine in a scientific and unbiased manner answers to the above and other related questions. It is hoped that the information can be used by merchants in making their advertising more efficient, especially from the standpoint of accuracy and sincerity.

The next extract not only introduces the report but illustrates both purpose and method.

Introduction[2]

Many manufacturers are coming to realize that distribution is probably the most fertile field in which they may improve their competitive position. With the increasing efficiency of the manufacturing process and the growth of mass production, an ever greater burden has been thrown on the distributive system. Some manufacturers have met this challenge by applying research to their marketing problems just as they have for years been applying engineering research to their production problems.

[1] HAROLD A. FREY, *A Study of Customer-opinion of the Advertising Practices of Toledo Retail Merchants*, University of Toledo, 1932.

[2] *Marketing Research Activities of Manufacturers*, Series 21, U. S. Department of Commerce.

The manufacturer who knows who his customers are, where they are, when they buy, the features they desire in his kind of product, the quantity of that product they will buy, and the portion of that total amount that his own product should represent, certainly is in a better competitive position than the manufacturer who knows only that he sold a certain quantity of goods last year and thinks he should increase that amount by x per cent this year, and expects his salesmen to sell his goods as best they can. The former manufacturer has been studying "all the problems relating to the transfer and sale of goods and services from producer to consumer . . . ,"[1] which is simply applying research methods to his marketing job.

[1] This definition of marketing research was drawn up some years ago by a committee for the use of this bureau in connection with the publication entitled *Market Research Agencies*. This publication was later revised and issued as *Market Research Sources*, Domestic Commerce Series 55; the latest edition is that of 1938.

Some manufacturers may hasten to say "But my product is different; I know my market." The answer to this statement is that there are very few industries indeed in which, because of the nature of the product and the very restricted location of the market, marketing research could not suggest opportunities for improving the distribution of their products. This is as true for manufacturers of goods which are sold to other industries or to business organizations as it is for manufacturers of such products as canned soup, or hats, which are sold ultimately to individual consumers.

Purpose

This study was undertaken in the spring of 1938 by this Bureau, in co-operation with the American Marketing Association, to learn something of the nature and extent of the marketing research conducted by manufacturers. It is designed to assist manufacturers who are already applying this tool of efficient distribution by outlining the various fields in which it may be used, describing the organizations set up for its administration, and giving information on the expenditures involved. These present users may then see opportunities for the profitable extension of their research activities or for the improvement of their organizations. This study is designed also to be of assistance to manufacturers who have not conducted marketing research but are interested in learning more about how such research may be handled and the subjects to which it may be applied. Lastly, this study will provide those engaged professionally in marketing research, and others interested, with definite information as to what manufacturers are doing in this field and how much it is costing—subjects about which little or nothing was known before.

The data in this report relate to the calendar year, 1937, or the latest fiscal year of the manufacturers replying to the Bureau's inquiry.

Methods of Conducting Survey

A description of the methods followed in conducting this survey, the list of manufacturers contacted, and the classification of the schedules returned is given in Appendix A.

It is sufficient here to state that the schedules were classified, according to the major products manufactured, in three major groups: (1) consumer goods, (2) industrial goods, and (3) consumer and industrial goods. It should be emphasized that great care was exercised to make the entire classification fit actual marketing practices as accurately as possible.

Method and Scope

To explain to the reader the method of collecting and interpreting data not only makes for easier understanding but also adds to credulity and permits checking by anyone who wants to test the findings. Careful presentation of method is really a judicial quality in that it enables the reader to follow through, and, if he finds the method well conceived, he convinces himself that the report is the result of an impartial and reliable investigation.

The scope, which is often combined with method, indicates the boundaries of the investigation. If 20,000 questionnaires and 500 interviews are used, the reader can decide whether he thinks that is an adequate sample on which to base conclusions. If he reads that two groups of class *A* people were selected from certain sections of the city, he can check the quality of the selections and he may realize the impartiality of the investigator in using one group as a check against the other.

Sometimes related questions are studied which may not be apparent from the title. Mention of this digression may be made under Scope.

Method Used in an Investigation of Consumer Preferences for Cheese[1]

A. Short Course Students

The number of diners in this test was 110 for each of the meals. They were served cafeteria style in a common dining hall. The cheese,

[1] *Consumer Preferences for Cheese*, University of Wisconsin, Agricultural Experiment Station, *Bulletin* 128.

cut in ½-ounce cubes, was placed on a tray near the end of the serving line. The mild, aged, and processed were in separate lots. Each kind occupied the same position on the tray at each meal during the first seven weeks. During the first two weeks there was no indication other than taste and appearance that the cheese in the separate lots was different. At the beginning of the third week the lots were labeled *x*, *y*, and *z* in order to indicate a difference. At the beginning of the eighth week the positions on the tray were shifted. Aged cheese was placed in the position customarily occupied by the processed and vice versa. During the last two weeks, the lots were designated as mild American, aged American, and processed American.

During the entire experiment each diner was permitted to take as much cheese as he desired from any lot. From the third day, the Short Course students showed a preference for the processed cheese. For the first three to four weeks mild American was a close second, but for the remainder of the period more of the processed than of the other two kinds combined was eaten. The aged American was third choice throughout practically the whole period. During the last two months there was no great difference between the amounts of the aged and natural mild cheese consumed. The consumption of both tended to decline. Table XIX gives the average daily per capita consumption of each kind of cheese by weeks.

It will be noted that the combined consumption of the three kinds of cheese did not vary greatly during the entire period. Cheese was consumed at the rate of 0.0495 pound per person per day. This is equivalent to an annual per capita consumption of 18.068 pounds, or four times the annual per capita consumption for the United States at the present time. While it is not to be expected that consumption can be increased to that level, the figure indicates the amount of cheese young men on the farm would eat were it before them one meal each day.

Figure 7 shows the comparative amounts eaten of each kind of cheese. The labeling of the different lots *x*, *y*, and *z*, shifting their positions on the tray, and finally revealing their identity, had little other than a temporary effect upon the choice.

B.. Supervising Nurses

The supervising nurses were served in a separate dining room. Their number per meal averaged 25. The three lots of cheese were placed on the same plate. A different-colored doily under each lot indicated a difference. The servings were in ¼-ounce cubes. The supply at all times was sufficient to furnish all the cheese desired by the diners.

At the beginning of the third week the lots were labeled *x*, *y*, and *z* to emphasize that there was a difference, but the doilies were shifted in order to see whether the preferences followed the cheese or doily.

The first reaction was in favor of the processed cheese. This was in keeping with the preference shown by the women in the other taste tests. After the first five days, the natural mild took the lead and held it for the next five weeks. During the remaining eight weeks the natural mild and the processed ran neck and neck, with the processed getting a little the better of the race toward the end. The consumption of natural aged showed a tendency to decline. Toward the end of the period the quantity of aged cheese eaten was almost nil.

The labeling *x*, *y*, and *z*, and the shifting of the doilies did not change the relative position of the cheese in the preference of the consumers (see Table XX and Fig. 8).

The total consumption of the three kinds of cheese declined from 0.051 pound per person daily at the beginning of the period to 0.028 pound at the end. This is a decline of 45 per cent.

Method of Collection of Data[1]

The data presented in this study were secured by questionnaire, mailed to over 5,000 Philadelphia employers in all types of business. Because it was necessary to secure as large a sample as possible, the original mailing was followed by a letter, by telephone, and by personal interviews. The collection of the data was made during July and August, and, although these months offered some vacation-time difficulties, results were gratifying.

The figures received were edited where necessary, and the reports divided into 11 major classifications and 48 minor groups. Insofar as possible, these groups were constructed along the lines of the Census of Business and the Census of Manufacturers. However, other classifications not included in either census were added, since the pay rolls of these other groups were of sufficient importance to be included in a survey of this type. Thus, railroads, street railways and bus lines, utilities, governments, banks, finance companies, insurance companies, and construction contractors were included within the survey.

This report does not pretend to cover all employees within the city or working in the city. Because of difficulties of collection, professional men and their employees, domestic employees, and certain relatively unimportant industries are not included. The report is concerned solely with income derived from salaries and wages. It does not cover other income such as rents, interest, professional fees, dividends, or business profits.

[1] HOWARD T. HOVDE, *Payroll Policies in Philadelphia*, University of Pennsylvania.

The Scope and Significance of the Study[1]

This report on consumer-income distribution in the United States is a much-needed addition to the scanty information previously at our disposal. Although the data cover only a single year, they give the most complete picture ever presented of the division of the national income among the American people.

The preparation of the estimates was undertaken by the Industrial Section of the National Resources Committee as part of a larger study of the nation's consumption demands in relation to its productive capacities. While primarily designed for use in building up national estimates of consumer expenditures, these figures on income distribution are considered of sufficient interest in themselves to justify separate presentation.

The study covers the 12-month period from July, 1935, through June, 1936. It shows estimates of the incomes received by all of the nation's income-spending units—by the 29 million families of 2 or more persons, by the 10 million "single" individuals living alone or as lodgers, and by the 2 million persons living in institutions and in quasi-institutional groups. For family incomes, this broad national picture is traced in more detail to show the flow of the income stream to farms, villages, and cities, to different geographic regions, to different occupational groups, to families of different size, and—in the South and in northern cities—to the white and Negro population.

Scope of Information Obtained[2]

Because a large proportion of the milk for the St. Louis market is produced on the Illinois side of the Mississippi River, and because economical transportation is a matter of high importance to the farmers in this area, the University of Illinois was asked to study the problem and suggest what could be done to bring about more efficient transportation in the area. The analysis made should be useful in other Illinois milk-producing areas, also, since many of the problems of these areas are similar.

Information for making this study was obtained from the office of the St. Louis Milk Market Administrator and through field contacts with truckers hauling milk in the St. Louis milkshed. The milk producers' association in Dayton, Ohio, was also very helpful in supplying

[1] *Consumer Incomes in the United States*, National Resources Committee.

[2] R. W. BARTLETT and W. F. CASKEY, *Milk Transportation Problems in the St. Louis Milkshed*, University of Illinois Agricultural Experiment Station, *Bulletin* 430.

information on conditions in that market. The principal items on which data were obtained were:

1. Volume of milk produced by each of more than 12,000 producers each month from June, 1933, to May, 1934, inclusive.
2. Hauling rate per 100 pounds of milk paid by each producer.
3. Name of each hauler and names of the producers for whom he hauled milk. (Records were obtained for a total of 491 routes.)
4. Location of each producer and information as to the route on which his milk was hauled.
5. Type and capacity of each truck.
6. Time each hauler usually arrived at the milk plant and time when he left the plant.

The work of mapping the locations of producers and hauling routes was done in July and August, 1934, by four field men. After the field investigation had been completed, the mileage of the different types of road in the 382 routes on which complete computations were made was ascertained by reference to published road maps.

Limitations

Certain definite limitations of time, data, or money are sometimes of such outstanding importance that they should be given separate heads, rather than be buried under method and scope. Such a statement often protects the writer, in that too much will not be expected, and it is also a convenience for the reader.

Although part of the method section, the following limitations should be made clear:

Size of Audience for Jack Hylton Broadcast

1. All calls were made in cities or suburbs.
2. Only those listening among telephone-subscribing families with radios are included.
3. A family who happens to be visiting at the home of a friend where the radio is tuned to Jack Hylton broadcast is classed as a "call-no answer" and in interpreting the size of the audience is usually considered as a family which did not hear the program.
4. The method takes no account of the audience to automobile radios or sets in public places, or to any radios except those in the homes called.
5. The method makes no attempt to measure the total proportion of people who heard any proportion of radios tuned to some part of a one-hour program like General Motors or Jack Hylton. Some might listen for fifteen minutes to Hylton, switch off to another program five minutes before the investigator called, and the investigator would have

no way of knowing that the individual had been listening to the Jack Hylton program but a few moments before.

6. The Clark-Hooper Service finds it impractical to make coincidental calls after ten o'clock at night. Telephone subscribers who have gone to bed are greatly annoyed if awakened from a sound sleep merely to tell an investigator whether their radio is turned on or not. This service therefore makes no attempt to check the audience for the second half of the Jack Hylton program.

History

Presenting the history of the question gives the background, which guards against extraneous matter, shows the reasons and need for the investigation, and helps in finding issues. Only those points in the history or origin that have a direct bearing should be included.

A *review of literature* on the subject (if any) may be desirable to bring the background quickly and concisely before the reader, but only enough of the past should be included to make understandable the present.

Because many reports are more or less a continuance of previous documents, they frequently need some historical material to orient the reader. On the theory that annual reports are merely running accounts of a business, many companies use as a transition an introductory reference to the last report.

Questions such as the following regarding the past will often arise in the reader's mind and hence should be anticipated and answered:

What has given rise to the present question?
What occasions have given rise to similar situations?
What importance has been attached to them in the past?
What conflicting views are held by people connected?

These questions will be recognized as some of those which demanded consideration in the preliminary analysis.

A review of *present conditions* may be as necessary as that of past conditions in order to get the stage properly set for the presentation of facts. The number of banks in a town or state, the population, water conditions, property cost, etc., often require careful elucidation before the reader is ready for the facts of the investigation.

That the situation of a special company may stand out clearly, it is sometimes desirable to present phases of the history of the

entire industry of which the company is a part. This may include past and present conditions of the industry as well as particular policies. A history of the company may cover the type of business, products sold, range of adaptability, capacity of plant, location, property owned, title, transportation facilities, seasonal aspects, incorporation, holdings of the company, patents, taxes, etc.

This logically leads to the need for the report as shown by past and present conditions. When the need or reason for the report is made clear, it may attract the attention even of disinterested people. In such a case, an early discussion of facts with which the reader will agree is good psychology.

This review of the past emphasizes the importance of the study:

Marketing Policies
of the
California Walnut Growers Association[1]

Since the organization of the California Walnut Growers Association in 1912 it has never handled less than half of the California walnut crop and has been the dominant factor in marketing the walnut crop of the United States. As the principal walnut-marketing agency, the association assumed leadership in solving problems incident to the preparation of the product for market and the successful marketing of the commodity.

Two major problems have recently presented themselves to those marketing walnuts, namely, (1) the marked increase in the production of domestic walnuts and competing domestic nuts and (2) the decrease in walnut consumption and total nut consumption. Walnut production has been increasing rapidly, as a consequence of new plantings and larger yields resulting from better cultural practices, greater maturity of bearing trees, and the use of improved varieties of walnuts. On the other hand, there has been a noticeable decrease in walnut and total nut consumption, which, however, may be temporary in nature due to influences arising from the depression.

Definition of Terms

Before conducting the investigation, the worker must carefully define his issues and terms. Before presenting his report to the reader, he should do the same thing. Some of the problems of definition are:

[1] HARRY C. HENSLEY and NEIL H. BORDEN, Farm Credit Administration, *Bulletin* 10.

What terms require definition?
How may a definition be found?
How is it tested for clearness and accuracy?

Any term capable of two meanings requires definition. Terms used that are new or uncommon to the reader must be explained.

In this discussion, consideration of the subject is to be limited to operating statistics as an aid to supervision and direction. Operating statistics, as here considered, include. . . .

Defining terms may extend from the mere dictionary definition to an elaborate discussion explaining what is meant in the current report. Terms may be defined by etymology, analysis, exclusions, example, analogy, context, dictionary, discussion—general and technical—testimony, relation to other things, authority, a negation, concrete terms, examples, and derivations. A definition should be in terms simpler than the original and in terms familiar to the reader.

Section 1. Definitions and Classifications Used[1]

The *family*, as defined in this study, consists of two or more persons living together as one economic unit, having a common or pooled income, and living under a common roof. Usually, of course, members of the "economic family" are related by blood, marriage, or adoption, but they may be unrelated persons maintaining a joint home, provided they share a joint income.

In accordance with this definition, sons and daughters living with their parents but paying for board and lodging and not pooling their incomes in the common family fund are classified as single individuals rather than as members of the family. On the same basis, sons and daughters away at school or for other reasons living away from home for all or part of the year, but dependent on the family income for at least three-quarters of their support, are classified as members of the family.

This definition of the economic family follows that adopted in the *Study of Consumer Purchases*. It should be noted that it differs somewhat from the definition of family used by the United States Bureau of the Census. In the first place, it defines the family as consisting of two or more persons, whereas the census classifies persons living alone—that is, maintaining independent housekeeping quarters—as one-person families. In the second place, it departs from the census practice in classifying as single individuals sons and daughters living as boarders and lodgers in the homes of their parents and not pooling their incomes in the common family fund.

[1] *Consumer Incomes in the United States*, National Resources Committee.

The number of such sons and daughters in 1935–1936 is estimated as approximately 400,000 on the basis of the family schedules obtained in the *Study of Consumer Purchases.* The elimination of these sons and daughters from the total number of family members reduces slightly the average size of the economic family as compared with the census family, but the effect on the estimated total number of families in the population is negligible.

According to the definition followed in this study the number of persons living as members of family groups in 1935–1936 is estimated at 115,966,000 out of the total population of 128,024,000 and the number of families is estimated at 29,400,300.

The *single individual,* as defined in this study, is an unattached person maintaining an independent economic status. Single individuals thus include all persons maintaining independent living quarters, or living as lodgers or servants in private homes or as roomers in lodging houses and hotels. Although most members of the group are "single," both with respect to marital status and economic status, the group also includes some married persons and persons widowed, divorced, or separated.

The number of single individuals so defined is estimated at 10,058,000 in 1935–1936, or 7.8 per cent of the total population. Approximately 6,538,000, or 65 per cent of the total, were men and 3,520,000 were women.

The *institutional group,* the third type of consumer unit distinguished in the study, consists of the residents of institutions "proper," including mental and physical defectives, dependent and delinquent children, dependent aged and poor, and inmates of prisons and reformatories, and persons living in various quasi-institutional groups—at army and navy posts, in Civilian Conservation Corps and labor camps, and in crews on vessels. These institutional residents cannot be considered as independent spending units comparable to single individuals, since their incomes are received, in whole or in part, as subsistence and care supplied by the institution. The institutional group itself thus constitutes the spending unit.

The number of institutional residents in 1935–1936 is estimated at approximately 2,000,000. Of these, 1,200,000 were residents of institutions proper and 800,000 were members of quasi-institutional groups.

Definition of Income

The definition of income used in this study follows that of the *Study of Consumer Purchases.* It includes the total net money income received during the year by all members of the economic family, plus the value of certain items of non-money income. Facsimiles of the income

schedules used in the *Study of Consumer Purchases*, presented in the next section, show the various items of income covered.

Money income comprises the net earnings of all family members, including work relief earnings and earnings from roomers and boarders and other paid work in the home; net profits from business enterprises operated or owned by the family and from property bought and sold within the year; net rents from property; interest and dividends from stocks, bonds, and other property; pensions, annuities, and benefits; gifts in cash insofar as these are used during the year for current living expenses; and income received as rewards, prizes, alimony, or gambling gains. In addition, money income includes money allotted to the family by a son in a Civilian Conservation Corps camp and money received as direct cash relief. This last item of income was not included on the income schedules, but the relief income distributions constructed for this report were corrected to add the estimated value of direct relief in both cash and kind.

Definition of a Super-market[1]

It is obviously impossible to present an exact study of super-markets without first defining the term.

For the purpose of this study a super-market is defined as *any food store with a self-service grocery department, whose business is primarily cash-and-carry and is of sufficient size to employ ten people*, including proprietors, in the operation of the business. That definition includes some stores with an annual sales volume of less than $150,000, which in view of the popularly accepted definition of the term may not be large enough to qualify as super-markets.

In some circles a super-market is defined as a self-service store with a sales volume of $250,000 or more. Still another definition is a self-service store with a sales floor of 6,000 square feet or more. In the light of these definitions only 12 of the 22 markets included in this study would be defined as super-markets.

Because the ten smaller markets included are for the present termed super-markets in the trade and the community, *The Progressive Grocer* accepted the more liberal definition. In addition ten still smaller markets call themselves super-markets for publicity purposes, but none of them has as many as ten employees, and all do less than $3,000 weekly.

Materials and Apparatus

Materials used, particularly of an unknown or unusual kind, should be described. There should be included drawings and a

[1] "A Case Study of Super-markets—Essex County, New Jersey," *The Progressive Grocer*, 1939.

discussion of apparatus, both adapted to the prospective type of reader. This will enable the reader to judge for himself whether the correct apparatus was used.

Location

If the location of the subject under discussion is of direct importance to the results, it should be explained; that is, a gift shop that would prosper in Chicago would fail in a Wyoming town.

In construction work, such as building a bridge, a specific description of the location is, of course, an essential. Leasing a building or buying a farm requires specific identification.

Administration

When a report is made by a committee which has been in office for some time, the personnel and administration of the committee may warrant separate space either as a matter of history or to add emphasis to the report. This space is sometimes taken in the introduction.

Copy of Questionnaire

It is sometimes desirable to include in the introduction a copy of the questionnaire used in collecting material, as well as a copy of the instructions that accompanied the questionnaire if it has explanatory value. If the questionnaire has little direct connection, however, it may be relegated to the appendix.

EXAMPLES OF TYPICAL INTRODUCTIONS

Note the various heads covered, such as object, method, scope, need, history, in the following examples. The use of specific heads for each section would have helped the organization in some of these illustrations; for example, instead of method being discussed in two places, it could have been consolidated in one.

Introduction[1]

This survey was undertaken to determine the attitude and habits of Provo consumers in relation to the advertising, prices, quality, variety, service, style, and other merchandising factors in Provo stores as com-

[1] *Survey of Consumer Buying Practices, Provo, Utah,* by A. Rex Johnson, Assistant Professor of Economics, Brigham Young University, 1934 (now Senior Technical Adviser, Social Security Board, and Lecturer at George Washington University).

pared with Salt Lake City stores. The field work was done by members of Alpha Kappa Psi fraternity and by the marketing and statistics students in the College of Commerce of Brigham Young University. Roughly on the basis of number of homes in each of the four quarters of the city, a house-to-house visit in all sections of Provo was made by individual students. In order to obtain a fair sample of consumer distribution, two representative contiguous blocks were selected on alternate streets, in all sections of Provo. The four corner houses in each block and the four center houses on each block were visited alternately. If for any reason the corner or the middle house could not be visited, the next house to it was chosen. A total of 319 questionnaires was completed in this manner during the week of November 23 to 30, 1933.

Unbiased answers to the questionnaires were assured by emphasizing in every case that neither name, address, nor any of the information given would be made known except in the composite report. Marked freedom of answer was secured by this procedure.

Provo City, Utah, located 44 miles south of Salt Lake City and connected by a paved highway and by steam- and electric-train service, had an almost 100 per cent white population of 14,766 in 1930. Provo, according to retail census figures, did a retail business of $7,877,908 in her 147 stores in 1929. The per capita sales for the same year were $533.52, exceeding the state average of $376.37 but was short of per capita sales of several other western cities of approximately the same population. The average sales per store of over $53,000, however, is an unusually high figure for a city of this population. Census reports show that 58.97 per cent of the business in Provo is transacted by single-store independents, while chain and branch stores do 13.45 per cent and sectional and national chains 14.81 per cent, the last two percentages being higher than the state or national averages, indicating that Provo is a successful chain-store city. The individual store sales in Provo are one-third larger than many other cities of comparable size, *e.g.*, Missoula, Mont. (with 14,657 inhabitants and 306 stores), had an individual store sale of $36,200, while Provo had $53,000.

In common with many other small cities in close proximity to a larger center, there is much current discussion by Provo merchants and the local newspaper concerning the supposed prevalent practice by Provo consumers of purchasing large percentages of their total merchandise in Salt Lake City. It was considered worth while, therefore, to determine just how prevalent this practice is and, *if* prevalent, to discover the reasons why. In this connection it might be noted that per capita sales of $529.63 in Provo are below those of Ogden and Salt Lake City, which are $657.77 and $662.87 respectively. On its face this might indicate that Provo consumers are buying a considerable

portion of their merchandise in Salt Lake City. When we look into the facts further, however, we find that the average per capita purchase in the state of Utah is $393.90. It is well known that a particular city has no circumscribed corporate trading area. This is true in Provo, and Provo merchants are selling not only to residents of Provo but also to shoppers outside of the city. The same cry, perhaps intensified, is heard from other merchants outside of Provo in regard to their consumers purchasing in Provo rather than in their own towns. An interesting study for the future might be the percentage of sales made by Provo merchants to consumers who live outside of Provo City.

A complete list of the questions asked Provo consumers, with the number of answers from the northeast, southeast, northwest, southwest, and University Avenue sections of Provo, together with the percentages of the total, are included as an appendix to this study. Actual contact was made with representatives of 1,377 people; that is, the number of families contacted, multiplied by the number in each family, equaled 1,377. This is almost exactly one-eleventh of the total population of Provo. The 1930 census lists Provo's population as 14,766. By the above-named method a total population of 15,147 was arrived at, which is an increase of 381, in 1933, over the 1930 census. The number of responses has in every case been multiplied by 11, which result is a number directly comparable with the present total population. It is felt that this procedure makes more nearly obvious the actual number of people represented in each case.

RUTLAND METER COMPANY

A Study of the Market

for

Miniature Electric Instruments

Introduction

I. Scope and Objectives

This investigation deals primarily with the market for conventional-type miniature electric instruments—ammeters and voltmeters of all types, both a.-c. and d.-c., 3½ inch diameter and under, as covered by catalogue Rutland 6785. Those instruments which are used on passenger automobiles and trucks are *not* included. (Since radio-tuning instruments—to indicate peak volume of signal on radio receivers—are included in the Rutland classification of miniature instruments, data on these instruments were also collected in this investigation.)

The words "miniature instruments" or "instruments" as used hereafter in this report refer only to those types which are dealt with in this study.

This is not a complete market study, but is limited to the following objectives:

What is the present annual total available business in dollar value and number of miniature instruments?
Where is the bulk of this business
—by industry?
—by application?
What is the portion of this business now obtained
—by individual competitors?
—by Rutland?
From what Rutland districts, customers, and applications can an increased volume of business be obtained?

II. Procedure Followed in This Study

A. General information on the manufacture and use of miniature instruments was obtained from the following sources:
1. U. S. Census of Manufactures
2. Associations
Motor and Equipment Manufacturers Association
Automotive Electric Association
Society of Motion Picture Engineers
Code Authority of the Electric and Wet Primary Battery Industry
3. Publishers of the following:
Railway Electrical Engineer
Electronics
Radio Retailing
Automobile Trade Journal
The Battery Man
Instruments
Q.S.T. (American Radio Relay League)
Radio
Industrial Arts and Vocational Education
The Nation's Schools
American School and University

B. Additional information on the use of miniature instruments was obtained from many men in our sales and engineering departments. (See page 24 for a list of these men.)

C. With the assistance of our engineering and sales departments, a list of possible applications for miniature instruments was compiled. The names of manufactures of the types of products on this list were obtained and a check was made on their use of these instruments and on other points covered by the questionnaire.

D. Data from known and probable users of miniature instruments were obtained by:
—personal interviews by the market research staff
—Rutland salesmen
—mail questionnaire
(Some of these companies do not use miniature instruments although they make products on which other manufacturers of similar products use miniature instruments.)

E. Data on users of instruments were also obtained from a breakdown and analysis of Rutland orders received.

III. Conclusions

*A*1. Rutland's Position—(1933)

	Per Cent
Total available business	100.0
Sutherland	18.4
All competitors	81.6

*A*2. Rutland's Position—by districts (1933)

District	All types of miniature instrument	
	Estimated available business (1933)	Rutland business (1933)
1	$400,000–$475,000	$ 36,232
2	250,000– 275,000	55,368
3	100,000– 140,000	20,025
4	75,000– 100,000	23,135
Others	110,000– 145,000	49,650
		$184,410

STUDENT EXPENDITURES AT THE UNIVERSITY OF NORTH DAKOTA

by

Spencer A. Larsen[1]

Introduction

Object of This Survey—and What It Reveals

The object of this survey is to determine *how much* money University students spend and *what* they spend it for. The data presented here

[1] Mr. Larsen is now Associate Professor of Business Administration, Wayne University, Detroit.

should be of interest to parents of students and prospective students, to students themselves, and to businessmen.

What This Study Reveals to Students and Their Parents

Parents who have sons or daughters at the University are in need of information which will assist them in estimating the reasonable money needs of their children. Unquestionably a few students spend too much, and an occasional student may even defraud his parents. A greater number, doubtless, spend too little. No attempt is made here to suggest *ideal* expenditures. Rather it is intended to present average actual expenditures, which are perhaps the best indication of students' ordinary money requirements.

Students and their parents should bear in mind that what a student normally needs in the money is influenced greatly by four factors. They are: (1) residence, (2) sex, (3) class rank, or year in school, (4) fraternal or non-fraternal affiliation.

Students who live in Grand Forks, the home city of the University, naturally require less money than those who live elsewhere. Men and women require different amounts of money. As a student advances in class rank his needs for money increase because of his wider interests and activities. Thus juniors, or third-year students, ordinarily spend more than freshmen. It is an accepted fact that fraternity students generally spend more than students without fraternal affiliations. In fairness to fraternities it should be said that these greater expenditures are due, primarily, to the fact that fraternal students simply have more money and would spend it whether or not they belonged to fraternities. To measure the influence of each of the above-mentioned factors upon student expenditures is of primary concern in this survey.

What This Study Reveals to Businessmen

Businessmen want to know how much and for what students spend their money, since information of this kind assists them materially in placing their sales messages for various products before the student population. . . .

Gathering and Tabulation of Data

The basic data of this survey were obtained directly from students by means of an information blank. In getting the schedules filled out the *Dakota Student,* the campus newspaper, did much to pave the way. By means of news items and editorials it created a wholesome understanding and ready attitude toward the project. The questionnaires were filled out in regular classes under the direct supervision of the instructional staff of the University.

In all, 965 questionnaires were turned in. Of these 250 were discarded during the process of editing the schedules. Most of these were discarded because of incompleteness in some detail. Since the sample was a generous one they were discarded liberally. Some prankishness on the part of the students was to be expected. The rarity of student pranks is indicated in the fact that only three schedules clearly indicated such an attitude.

The remaining 715 schedules were used in the final tabulation. These were classified into groups on the basis of residence, sex, fraternal affiliation, and class rank. The arithmetic average for each of these groups was then determined. These averages were then multiplied by the total number of students in the University who came within each of these various groups. This gave the estimated totals for each classification. Average expenditures for each student group were checked by means of a summation of averages for individual items for that same group. The totals for all classifications were then used to build up the grand total of student expenditures.

In the process of tabulating the data, power-driven calculators clicked in the neighborhood of fifty to sixty thousand times. All calculations were rechecked by a different operator.

For reasons mentioned, and others too numerous to mention, these estimates of student expenditures are released with a feeling of confidence as to *how much* and *for what* students at the University of North Dakota spent their money during the school year 19——19—.

EXPERIENCES IN SHOPPING FOR DRESSES IN PITTSBURGH[1]

Introduction

This report is an analysis of the attitudes of 1,445 Pittsburgh women toward their experiences in shopping for dresses in Pittsburgh stores. The analysis rests on the interviewing methods brought to the Bureau a year ago by Dr. Paul F. Lazarsfeld of Vienna, the same methods that were used in the study reported three months ago under the title "Shopping for Dresses in Pittsburgh Stores."

The interviewing methods used have three primary characteristics. First of all, in order to make the interviews full and rich, the plan was to choose the interviewers as carefully as possible, to train them painstakingly, and then to ask them to interview their friends. They rang no doorbells in this plan, and they talked with no strangers who might have resented a long interview. The plan was intended to promote a friendly conversation rather than a formal cross-questioning.

Second, the discussion between the interviewers and the respondents centered not on the question "Where do you usually buy your dresses?"

[1] Research Bureau for Retail Training, University of Pittsburgh, 1935.

but rather on the question "When did you last buy a dress and what happened while you were shopping for it?" This, of course, is not exactly the way the question was asked. Indeed, the questions served only to prompt the interviewer. But the tone of the whole interview was made specific and therefore more accurate by being limited to the last purchase, and this plan had the further merit of allowing the conclusions to be drawn by the investigator rather than by the respondents.

Third, the interviewing form was arranged for the convenience of the interviewers. It passed through four preliminary editions and was made up as far as possible of check lists into which the interviewers could fit practically any answer with only a minimum of writing. This plan also facilitated the work of tabulation, but its primary purpose was to make for freedom and ease during the interview itself. As a matter of interest the interviewing form is included at the end of this report.

This study differs from the previous one in several ways. The interviewers were carefully trained to analyze the many empty answers that respondents give, such as "I go to Store *C* because I like it," or "I didn't buy there because I couldn't find what I wanted." In every case they were instructed to improvise additional questions until they had found the specific aspect of policy, or merchandise, or service that was at the bottom of the general attitude.

More than twice as many interviews were conducted as in the previous study, and in this study the questions cover a number of additional points, particularly the reasons for leaving the various stores without buying. The last 250 interviews included an additional question, based on a suggestion of one of the interviewers, referring to the size of the dress. Although the number of size responses is too small to permit significant conclusions, nevertheless the results show that if any further study is made of this problem, the size of the dress, as well as some questions about the nature of any alterations that might have been needed, should be included in the program.

The report presents various groups of conclusions, as follows:

1. The patronage of the stores—where sales are made and lost.
2. The reasons for entering each store.
3. The reasons for leaving each store without buying.
4. The characteristics of the customers of each store.

How to Read These Tables

The figures in these tables by themselves mean almost nothing. They must be taken in relation to each other and to the several group averages. In Table II, "The Comparative Performance of Various Stores," for instance, it is not important that Store *A* sold dresses to more than half of the customers who entered the store. What is important is that the

percentage was below the average of the group and that in this respect five stores made a better showing than Store *A*.

Store executives will quickly notice the "standouts," the figures which are well above or well below the others. Stores with a large number of favorable "standouts" will see at once their strong points. Stores with a number of bad spots will know where to begin their improvement.

A Final Word of Caution

Every woman in the group of respondents finally bought a dress. None of these women was a "looker."

The interviewing began with the question, "When did you last buy a dress?" If the respondent said, "I make all my dresses and buy only dress materials," the interview was ended at that point, and was not counted. Only those who had bought dresses were interviewed.

In the following introduction to a report on time studies in the university, notice the handling of the reason for the report, history of the question, purpose, definition, limitation, method used, scope, analysis of results, and answer to objections that might otherwise be raised.

Time studies are being advocated as a scientific approach to the study of educational problems relating to the amount of work assigned to students and the standards maintained in various courses and schools. They are suggested as a method of determining whether the students are given too little or too much work. It is said, on the one hand, that students have not been given enough work to keep them busy, and hence they have developed outside activities to utilize their spare time and energy. Those who argue from the other angle say that students are given too much classwork, and that, when their required work is done, they have no mental energy left with which to speculate, to do general reading, or to become interested in cultural subjects supposed to go with a college education.

General student concensus is that some courses are much harder or require much more time than other supposedly parallel courses. Students changing from one college to another often state that more work is required in one than in the other, or that the standards of different colleges differ greatly, and teachers transferring from one college to another often report marked differences in standards. Time studies may serve to obtain facts which may be used in ascertaining the quantitative standards of different instructors, departments, and colleges, as well as in determining the amount of work which should be assigned to students. My intention is not to suggest that all students be required to work the same number of hours, for that would be impractical under

present conditions. During the past fifteen years six different groups of students at the University of Pittsburgh and the University of Illinois have kept records of the time spent in preparing a number of lessons. There are not yet enough data upon which to base definite conclusions, but methods of approach may be suggested. Two methods were used in making the studies. The students in four of the six studies were requested to keep an accurate record of the time spent in preparing a number of lessons. In keeping records they recorded the time of starting to study and when they stopped, the page on which they started and that on which they stopped. This gave sample times. Some students reported the time on only three or four periods or sittings, while others reported on more than twenty periods. All of the students in certain sections in two of the studies were requested to keep a record of the time spent during one specified week in preparing for these classes, entering the time in detail as just explained. More than 80 per cent of the students complied with the request.

Such studies are open to two criticisms. The students may unintentionally speed up. On the other hand, the students may deliberately loaf or "soldier" at their work, especially if they think that the results of the studies may be used to increase the length of assignments or otherwise "adversely" affect their interests. The second criticism is that, since the time records are kept by the students themselves and not recorded by observers, the reports may be padded. The possibility of such errors in time studies made by students must be frankly admitted, but if they occur they will tend to be compensating.[1]

[1] PAUL D. CONVERSE, "Time-studies in the University," *Journal of Higher Education*, 2: 5: 259–263.

CHAPTER XII

WRITING THE ELEMENTS OF THE REPORT (*Concluded*)

(Text through Index)

I. Text: *A.* Importance of expression; *B.* Organization; *C.* Planning the presentation—II. Conclusions and Recommendations—III. Appendix: *A.* Contents; *B.* Arrangements—IV. Index: *A.* Types of indexing; *B.* Cross references; *C.* Forms of presentation; *D.* Preparation of index; *E.* Entry word; *F.* Modification words; *G.* Subhead; *H.* Style; *I.* Mechanics.

TEXT

Importance of Expression

After the necessary background has been presented in the introduction, the text of the report is concerned with the most effective organization and presentation of data resulting from the investigation.

It is assumed at this point that the investigation has been conducted carefully, sufficient and accurate material collected, and the interpretation made soundly. But more people are capable of arriving at sound conclusions than are capable of expressing them. In fact, many think the job is done when the research is completed, because they do not realize that the reader has seen little of that work and will judge the results entirely by the way they are presented. For these writers it is sad that a mass of uninterpreted tables and data fail to arouse either interest or understanding, and that, on the other hand, hazy thinking, even when clothed in the best English, leaves the reader in a state of murky indecision.

The man who spends days making a painstaking investigation and who then presents the results in a careless, slipshod fashion is comparable to the genius who is unkempt in good society—he may be tolerated but he is not freely accepted. The good report writer is rare, but he who has that ability climbs fast. It is often the chief criterion of advancement. Hence, writing is an integral

part of business training—training for an exacting world. Bacon said,

> Reading maketh a full man;
> Conversation a ready man;
> Writing an exact man.

Writes an executive of a large corporation, in his plea for men who can express themselves on paper:

> In our company they are given a course of training in each of the major departments and then they go out to one of our many retail stores or foreign branches. From that time their only contact with the executives is through their letters and reports. They are judged mainly from what they write and their advancement is often retarded by a lack of ability to express themselves.

In other words, the business writer cannot be satisfied with a low standard of proficiency, for his work will not speak for itself; it must be interpreted and communicated. Let us not forget that expression is power, and great learning without expression means limited power in reaching others.

The report writer is an expert or temporary expert who must add rhetoric to logic so as to control people's reactions. He must see cause, reason, and effect in one continuous pattern, and he must regulate content to meet purpose.

Report writing is wholly utilitarian. In fact, it is primarily a special form of expository writing. The best style for report writing is that which most effectively translates the writer's thoughts to the reader's language and understanding, thus economizing his time and attention. The purpose of a report is to carry conviction, to bring others to a point of view, to persuade them to adopt a course the writer advocates. A report, to have any value, must be read to be comprehended, and it should produce conviction and induce favorable action. If it fails to interest, if it fails to convince, it is a failure, no matter how thoroughly may be the research work or how logical the deductions.[1]

A report is a failure when the main points are not easily comprehended, and comprehension is largely a matter of clearness. Clearness comes from good organization, from arranging the different parts of the report so that their interrelations will be easily understood.

[1] J. EIGELBERNER, *Investigation of Business Problems*, p. 302.

Organization

The writer's first task is to organize or reorganize his material for effective presentation. The outline already prepared may serve as a guide, although usually it is subject to considerable revision. The final organization is made with the reader definitely in mind. The purpose of the report and the knowledge of the reader will determine the arrangement. A progress report suggests the chronological order and an organization report, the logical.

When one is sure of the reader's interest, the logical order of arrangement is good, for it develops the facts before the conclusions. But when little knowledge or interest on the part of the reader can be presupposed, the psychological order, which first emphasizes results, is effective. This order is also effective when the reader trusts the writer's ability and is interested primarily in the conclusions.

That the organization of a report is often open to criticism is evidenced by the following letter to a chamber of commerce:

DEAR MR. SMITH:

Following are a few general remarks concerning the industrial survey prepared by a committee of your Chamber of Commerce.

1. Much information presented in fact form fails to convince because of the omission of reason for a given condition or salient feature which could easily be obtained. Example: On page 7 the High School is said to be inadequate, but no facts or figures are presented to support the statement. If a survey is to serve its full purpose, it should present facts which will not only attract industries, but which will serve as a basis for remedial action. If it is desired not to present unfavorable data, then the inadequacy of the High School should not be mentioned at all. Again, on page 33, the statement is made that the per capita wealth of the city is high, but nowhere in the book could I find a figure that would enable me to decide that question for myself.

2. There is much reiteration of the statement that Blank is a good industrial location, but there is no attempt to analyze carefully the industries that would fit best there with the exception of some few of the more obvious ones. On the basis of the statement of commodities hauled in and out by the railroads, a much better job could have been done.

3. The section dealing with rail transportation is very good and was apparently written by a railroad man who knew what he was

doing. He presents the service facts that a manufacturer would want to know, as well as important class rates.

4. There is a tendency to scatter related material throughout the survey. For instance, the value of Blank Institute as a pool for trained help for industries and as a research center for industrial problems is dealt with sketchily in several different places, instead of being rounded out into a composite statement contained in one place. Again, the material descriptive of social and living conditions is scattered and disorganized, and this is an important omission, because so frequently, when other factors are somewhere near equal, the livability of a place may decide the question in its favor. This was stressed many times at the Industrial Managers' Conference in April. Altogether, one gets the impression of patchiness.

5. For your location, the rates for electricity seem high, especially for lighting. There may be reasons for this with which I am not familiar. You will recall that the Roanoke study (prepared by professional engineers) commented freely on this condition found there. There may be room for it here.

Very truly yours,

Orderly communication of ideas is wholly dependent on a definite plan. The use which the report is to serve largely determines that plan, as to both order of material and amount of discussion necessary. The arrangement of material—or the steps of the plan—should be as logical and concise as a problem in mathematics and should always point toward helping the reader solve his problem.

In selecting the best plan of organization it is sometimes not amiss to recall the country preacher's rules for a sermon: "First, I tell them what I am going to say; second, I say it; and third, I tell them what I've said." Far worse advice could be given for report writing. The introduction of a report tells what you are going to say. The text says it, while the conclusion summarizes it.

The arrangement of the text should be logical, clear-cut, and mechanically inviting. The main heads will be the broad, basic factors into which the problem was resolved during the collection and interpretation of data.

If the basic elements were incorrect, they will be doubly apparent when used as major heads in the written report. For example, a study of government relations and legislation, exclu-

sive of taxes, as used in company annual reports would show woeful lack of analysis if the following mixture of major and minor issues were used as heads:

Governmental Relations. (Too general. Not a division; practically the entire title.)
Employee Relations } (Same, since the subject is government
National Labor Relation Board } relations?)
Future Prospects. (Possible, but vague terminology.)
Requirements of Business Operation. (Vague.)
Judicial Action. (General. Include all legislation?)

Obviously these label heads are not clear. The writer plainly marks his report as the product of unorganized, immature thinking.

A better, and more fundamental, discussion might be expected from this:

1. Restrictive Legislation. (Legislation which will restrict the free operation of the business by the owners.)
2. Legislation Benefiting Competitors. (Legislation which will benefit competitors and harm *X* company.)
3. Legislation Causing Additional Burdens. (Legislation placing additional burdens and expense on *X* company.)
4. Lawsuits. (Lawsuits to which the government is or was a party; *X* company justification given.)

This same example might be carried a bit further to illustrate another common fault of text organization, namely, discussing things as isolated units instead of establishing basic criteria that run through all units. For instance, in studying the effect of government relations and legislation on various companies, the lazy writer often discusses company *Y* in detail and then does the same for company *Z*. But if the National Labor Board is one of the basic issues in such a report, the reader wants to know *all* the companies' relations to it, and he does not want to dig it out piece-meal from discussions of a dozen different companies and then eliminate the duplication, in order to find for himself the high lights.

In making comparisons, the writer should keep the bases in the same category. If the report is on farm buying power, the different-sized farms or the different locations should be kept separated for a well-organized report.

Each major division should have adequate heads and subheads and should be thoroughly covered before proceeding to the next

section. A topic paragraph at the beginning and a summarizing paragraph at the end of each section will aid unity and coherence. Each minor section should likewise have transitional sentences or paragraphs to show its relation to the major issue. When a section requires many paragraphs there should always be transitional elements pointing back to the preceding sections. For example, "In addition to the two plans just discussed, there is a third possibility," tends to summarize several preceding ideas. "Paved roads are another element of transportation that affects the factory location," is a transitional sentence that might follow a discussion of railroads. "Since the need of premiums seems well established, we may next examine the types of premiums best adapted for this business," is a transition that makes the reader realize that he has thoroughly completed one step and is now ready for the next. A report that proceeds in a series of such complete steps must give the impression of logical presentation.

The following paragraphs from the beginning and end of one section of a long report show: (1) how the first paragraphs point back to the preceding section and outline what follows; (2) how the last paragraphs summarize the discussion of what was promised in the beginning.[1]

In the previous chapter data have been presented which indicate how the orthodox retail drugstores in Knoxville, Tennessee, have reacted in their price policies to the introduction of the state Fair Trade Act. The effect of this act on prices and merchandising policies in cut-rate stores will be considered in this chapter.

The material in this chapter will shed light on three general questions. What changes have taken place in the prices of cut-rate stores between January, 1937, and April, 1938, and can the changes be attributed to the Fair Trade Act? Has there been any tendency for the minimum price set by manufacturers to become the maximum price in these cut-rate stores? Have either cut-rate or orthodox stores attempted to follow a merchandising policy calculated either to help or to hinder manufacturers who have issued fair trade contracts? . . .

. . . . . .

The following points seem to be clearly evident from the data presented in this chapter:

[1] CHARLES W. LEWIS, "Price Maintenance in Knoxville, Tennessee, under the Tennessee Fair Trade Act of 1937," *University of Tennessee Record*, 42: 6: 40, 48, November, 1939.

1. The prices of controlled commodities in cut-rate stores have generally risen materially since the passage of the state Fair Trade Act; whereas the prices of non-controlled commodities during the same period in the same stores showed a general decrease in keeping with the general trend of prices.

2. There appears to be a very definite tendency for the minimum price as set by manufacturers to become the maximum price in cut-rate stores. The prices in the three stores studied which were exactly at the minimum were approximately 90 per cent, 87 per cent, and 57 per cent.

3. While inadequate material was available for reaching a definite conclusion as to whether either orthodox or cut-rate stores were following a merchandising policy calculated either to help or to hinder manufacturers who have issued fair trade contracts, from the sketchy data obtainable it appears that neither are orthodox stores trying to push the sale of controlled items nor are cut-rate stores trying to push the sale of non-controlled items to any great extent, but that of the two types of stores the cut-rate stores appear to be the more aggressive.

While heads and subheads are useful in making the reading easier, they should not be expected to furnish all the transition. As a matter of fact, the report should first be written as a closely knit whole and the heads put in later, as an editor puts in the heads on a reporter's story. No first sentence should contain a pronoun referring to a head.

Let us look at some typical plans of organization. While these include the introductory sections, already discussed, they will be of especial interest to the reader in checking the text material.

Here is a variation of a routine outline:

Why the study was made
Why the study is important
Object, results, and use
How the study was made
Conclusions and recommendation
Chief findings—practical use—specific gains

An accountant's report:

Introduction
Scope
Discussion of results of operation
Discussion of balance sheet
Improvements suggested
Close

Suggested organization of a technical report:

1. Introduction
   Show briefly the relation of the experiment to the general subject, explaining the object or purpose.
2. Theoretical conditions
   When considerable theory is involved, discuss it here.
3. Procedure or method
   Describe apparatus. Explain how experiment was performed. (Detailed lists in appendix.)
4. Discussion of results
   (Sometimes in Appendix, if too detailed.)
5. Conclusions
6. Bibliography
7. Appendix[1]

General Outline[2]

I. Scope and objectives
II. Procedure
III. Conclusions
   A. Rutland Company position according to available business in
      1. Types of instruments
      2. Rutland districts
      3. Percentage of total obtained by each competitor
      4. Principal markets
   B. Summary of facts which suggest ways to increase Rutland miniature instrument sales
IV. Total available market
   A. By number and dollar value (1923–1933)
   B. By industries and applications
V. Facts collected from users, effecting the possibility of increasing sales of Rutland miniature instruments
   A. Familiarity of users with Rutland instruments
   B. Procedure followed by users in buying instruments
   C. Design characteristics of importance to users
VI. Analysis of Rutland orders received in 1933 for miniature instruments
VII. Calculations
VIII. Sample questionnaire used in this investigation
IX. Detailed data collected from users
   A. In principal markets
   B. In "other" markets

[1] A. L. ALBERT, "Standards for Laboratory Reports," *Journal of Engineering Education*, 25: 297–302.

[2] Rutland Meter Company, "A Study of the Market for Miniature Electric Instruments."

X. Additional lists of miniature instrument users.
XI. Acknowledgments.

Believing that municipal efficiency is gained only when the voters are well informed, the Vermont State Chamber of Commerce boosted town report competition with the following statement and rules of organization:

Taxpayers' Bill of Rights

Art. 1.—Public officials with their consultant editors and citizen aides shall every year furnish every Taxpayer a Book, which shall be a statesmanlike review of finances and affairs. This statesmanlike review shall be clear, simple, graphic, attractive, comparative, complete. The Book shall analyze, interpret, prophesy, enabling citizens to understand government and to share government. The Book shall be a Civic Bible—staged like an ad.[1]

Town Report Competition Rules

1. Novelty and attractiveness of cover
2. General appearance and orderly arrangement
3. Budget setup
4. Presentation of balance sheet and financial status
   a. Results presented, compared, with other years, future
   b. Balance sheet—assets and liabilities (cash only)
   c. Appraisal of all city properties
5. Striking summary of most notable achievements of the past year
6. Quality and substance in departmental reports
7. Historical and statistical data about the town
8. Schedule of distributions over a series of years
9. Graphic display of debt, delinquent taxes, relief, etc.
10. Planning page—the future

Planning the Presentation

A good type of lead for reports that have to be "sold" to casual readers is to indicate the advantages to be gained by reading the report. Some other points to consider in organizing for presentation are:

1. Handle obvious procedure before the more subtle.
2. Watch logical sequence of points.
3. Treat related facts and topics under one heading.
4. Show the relationship of each main point to the ultimate objective.
5. Keep the bases of comparison in the same category.

[1] James P. Taylor, secretary, Vermont State Chamber of Commerce.

6. Use topic-sentence style to insure paragraph unity.

7. Clarify with summary preceding and ending a long section.

8. Determine the criteria for analyzing, make those the governing points, and analyze comparatively.

If 100 letters are to be studied, and the criteria of comparison are to be the lead, close, elements of conviction, and mechanics, discuss all the letters under these main points instead of one entire letter and then another. Thus the standards will be comparable and the answers clear.

9. Show criteria in the introduction.

10. Emphasize high lights, low lights, and averages, especially of statistics. Do not repeat everything that is in a table.

Point out striking changes. Large increases or decreases in working capital, funded debt, or capital stock should be played up. Sources of funds and their disposition, use of ratio, results of operation are all high lights of an audit and should be marked for emphasis in a written report.

11. Plan to emphasize the who, what, why, when, where, and how of the investigation in proportion to their value.

12. Plan to interpret tables, charts, and graphs when they are in the body of the report. Show relationship and meaning of pertinent facts. Never give the reader a mass of undigested data and expect him to squeeze meaning from them.

13. Do not present a report that is one table after another without discussion. A report should be an expository analysis rather than a statistical digest.

14. Show trends.

15. Put interesting points early. They do not necessarily follow their order of appearance during the investigation.

16. *Not:* "We counted the petty cash on Jan. 19."

But: "The improvement in the Company's financial condition during the year is demonstrated by the following comparison of net current assets and of the relation of current assets and current liabilities. This improvement was caused through an increase in sales and a decrease in cost."

17. If there is a cash shortage of importance, put it near the beginning; at the end it seems covering up.

18. Good news will catch more readers than neutral or bad news.

19. *Not:* The following is a list of Exhibits and Schedules.

But: "The company earned a profit of $185,000 in the last year compared with $155,000 the year before." This not only gives the pleasant news of a profit but ties up with the year before which tends to make the annual report a running history of the business.

A report on the installation of an accounting system will usually consist of a letter of transmittal, a statement of the situation as the accountant found it, suggestions for improving the system or the design of an entirely new system, and plans for carrying out these improvements or installing the new system, together with supporting schedules and forms.

If it is possible to do so, put in the forefront of your report, as concisely as possible, what your client is anxious to know, your advice or your deductions. . . .

Do not forget the marginal headings and see that each paragraph deals exclusively, but completely, with the section of your subject indicated by the heading. . . .

Avoid in the body of the report lengthy or elaborate statements of figures and long extracts from or epitomes of documents. These are better set out in schedules annexed to the report.[1]

The suggested forms for the ledgers and journals should be included in the appendix, rather than in the body of the report.

To prepare a well-written report that can be read rapidly and accurately, without pauses for rereading, requires an architectural vision for arranging essentials in logical sequence.

For the correct use of charts and graphs and mechanics in making the text more readable, see Chaps. XVI and XVII. Other necessary considerations for the readable report are English, tone, adaptation, persuasion, judicial qualities, etc. But since these require discussion at some length, let us complete the elements—conclusion, recommendation, appendix, index—and then return to the writing considerations.

CONCLUSIONS AND RECOMMENDATIONS

Impartial conclusions based on the facts developed in the text of the report are usually presented at the end, although we have mentioned arrangements which place conclusions at the beginning. In any case, the conclusions may be followed by any recommendations which the writer considers justified, if or when they are required or desired.

The conclusions bring together a condensed summary of the results of the major points investigated. They are conclusions of fact without the writer's personal opinion. From them the reader may form his own opinion or make his own recommendations. Usually the conclusions are brief; frequently they are presented in list or tabulated form. Do not include anything that has not been previously discussed. Place strong points at the beginning and at the end.

[1] P. H. BLACKWELL, "How to Present Information," *Accountant*, April 15, 1933, p. 501.

One warning, however, against over-mechanical condensation: do not treat different elements as isolated factors; show their relation to each other and to the whole.

In case of individual units in the report, conclusions may be made at the beginning or end of each unit. When all units have close connection, however, usually the conclusions will cover the entire report and will come at the end. Conclusions should bring together a general summary of progress, sometimes checking off points satisfactorily handled against those showing no gain.

The recommendations may be tinged with the personality of the writer, since that is his section of the report. Naturally the recommendations are based on facts clearly substantiated by the data set forth in the conclusions, but the writer legitimately may give his own personal interpretation of those facts, knowing that the reader will make due allowances for his position, his status, and his known relation to the subject. Because of this possible injection of the personal element, it is best to separate the conclusions and recommendations, so that the reader will never feel that personal opinion influenced the conclusions.

Often recommendations are not included. In fact, they are included only when the client requests them, when previous experience has shown that the company expects them, or when the investigator especially feels that his work should lead to definite action. Of course, there are executives or clients who feel they are not getting their money's worth if a company hired to make an investigation does not give recommendations. Many small industries thoroughly appreciate recommendations by outside auditors. Regardless of circumstances, before he makes recommendations the investigator should be sure of their soundness because changes in operation may be extremely costly.

Recommendations are not usually found in scientific reports unless these are for commercial use. In that case recommendations are just as desirable as in any other type of business report.

Recommendations should be decided and positive, usually suggesting but one course of action. To present alternatives is often to put the reader on the horns of a dilemma from which there will result no action. Suggesting that the client change either the personnel of his office or his filing methods is not so effective as to study the situation thoroughly, to decide on the better action, and to recommend this action only.

In making recommendations, the scope of the report must be considered. If the scope is limited, the recommendations should not be too far-reaching.

Recommendations may include specific points needing further treatment, together with definite methods or plans for carrying out suggested changes. Although the writer should be positive in his recommendations, he should by no means assume the reader's prerogative of making decisions. It is true that forcefully stated recommendations are often of value to the reader because of the new point of view presented, but final action is left to the executive.

In making either conclusions or recommendations, do not weaken the major points by over-emphasizing those which are minor. If there is a large number of each, group them to show relative importance.

Recommendations[1]

The foregoing analysis of the transportation situation in the St. Louis milkshed indicates that substantial savings to producers, better pay to haulers, and more efficient service to distributor and to consumer can be developed in this area by certain changes in present practices. The authors therefore make the following recommendations, believing not only that they are warranted but that they are susceptible to immediate practical application.

1. In order to avoid unnecessary hauling costs, milk now manufactured at city plants should be diverted to country plants. It is clearly uneconomic to haul milk long distances to be manufactured into butter or other products whose market values do not include the high transportation costs involved.

2. Careful consideration should be given to market policies which will encourage a more even production of milk, since this will make it possible to bring about substantial savings in transportation costs.

3. Hauling routes from farms to milk plants in the St. Louis milkshed should be gradually rearranged to reduce the distance that milk is hauled and to increase the volume of milk per load. Farmers in this area could save approximately $250,000, or $24 per farmer yearly, if routes were rearranged on an economic basis.

4. Along with a rerouting program, schedules for truck arrivals at receiving stations should be made in order to prevent unnecessary delays

[1] R. W. BARTLETT and W. F. CASKEY, *Milk Transportation Problems in the St. Louis Milkshed*, University of Illinois Agricultural Experiment Station, *Bulletin* 430, March, 1937.

in unloading milk at receiving plants and in order to insure earlier delivery to these plants.

5. Since hauling charges paid by small-volume producers in this milkshed frequently fall below the actual cost incurred, it is recommended that careful consideration be given to establishing a minimum pick-up charge. In the Dayton milkshed, when the daily average hauling charge at the regular rate drops below 10 cents, a minimum pick-up charge of 10 cents a day is made.

6. Complete records of the costs of operating milk trucks should be kept by truckers since these are essential in order to determine how trucking costs in this area can be lowered and in establishing hauling rates that will be fair to both farmers and truckers.

APPENDIX

Following the body of the report and preceding the index is the appendix which, like the appendix of a book, is used for detailed exhibits that belong in the report for reference but which would deaden the readability of the body. Supplementary data which all or part of the readers might require to verify the report may be included in the appendix.

Contents

These supplementary data, often laboriously collected to form part of the record, may be of varied nature. For instance, a historical sketch of specific or general interest as a reference may be found in the appendix. Likewise included there is mathematical treatment, such as derivation of formulas necessary for the body of the report, but important only for technical reference. When several pages of tables or statistics are valuable as evidence but are not needed in the discussion section, they may be put in the appendix.

Other possible contents of the appendix are:

Compiled data—complete data secured in chronological order of tests, etc.

Special features—design and application of special instruments, with detailed description

Formulas—how developed, samples, etc.

Unexpected observations—peculiar features arising during the investigation but not directly bearing on the subject

Related subsidiary facts

Further details of methods used, if necessary

Supporting tables

Speeches, laws, etc., too long for the body of the report but necessary for reference and proof

Copies of questionnaires used in the investigation
Committee reports

Exhibits may be included when they are appropriate and not too large. Usually exhibits of a physical nature will accompany the report separately. The exhibits should be easy to handle and to understand. If the exhibit is golf balls, they may be put in a box, plainly marked or numbered to correspond to a key in the report. When numerous exhibits are to accompany a report, there should be a list included at the beginning or end of the report and a duplicate attached to the box containing the exhibits.

Charts, graphs, sketches, and all kinds of pictorial presentation (discussed in Chap. XVI) do not need to be inserted in the text of the report. Unless the pictorial element constitutes practically all the report, the quantity included in the body should be limited so that the reader will not be detained in his reading.

Arrangements

A page labeled "appendix" precedes the exhibits. Of course, a list of appendix entries has already appeared in the Table of Contents.

The material in the appendix may follow the chronological order in which it was compiled, but usually it will be arranged in the order in which it is mentioned in the body of the report. Each separate exhibit in the appendix—when there are several—should be designated either as 1, 2, etc., or Exhibit *A*, Exhibit *B*, etc. This permits reference in the body of the report to Exhibit *A*, etc., thus making unnecessary a complete heading.

Illustration of Lists of Exhibits

*A*1. Statement of Duties (face)..... 10: 25
*A*2. Statement of Duties (reverse side)..... 10: 26
B. Typical Organization Chart..... 12: 27

or

		Page
Exhibit *A*.	President's Message.....	295
Exhibit *B*.	Report of the Law Committee.....	307
Exhibit *C*.	Report of the Scholarship Committee.....	331

INDEX[1]

Because most reports are short, an index is not often needed. In the case of long, especially printed, reports, however, an index

[1] Adapted from *New York State Library School Bulletin* 50, "Indexing."

is appropriate for the purpose of quickly locating particular points. While the table of contents is an arrangement of topics discussed in the report, it does not enable the reader to find many specific details. On the other hand, the index is merely a pointer to details.

To prepare an index requires the thorough knowledge of the contents of the report, which the writer naturally has. His problem is to show where information is available by means of a *finding* plan—namely, the right kind of index.

The index will be prefaced with an explanation of all marks used that may not be clear. For example, if the index follows the system of exact reference by ninths of a page, it is necessary to explain that 45^3 means that the reference will be found on page 45 three-ninths or one-third of the way down the page. An asterisk may mean that a figure will be found on the page indicated.

Preparatory to indexing, a definite plan should be decided upon and followed, particularly as to the style of entries and as to the minuteness of detail, for later it will be impossible to shift without much waste labor. One should try to select a plan that will be adapted to as many readers as possible, which means considering whether the readers will be general, expert, or professional. If, for instance, the index is for doctors, Latin names may be used, or both Latin and English; but if it is for engineers, much Latin is not advisable.

It will be necessary to decide what minor items to include, and how finely distinctions are to be drawn. When occasionally the printer decrees that there will be available only a definite number of pages for the index, he at least settles the problem of extent.

Types of Indexing

There are all types of indexing; some books have as many as 15 or 20 different indexes, ranging from the alphabetical to all types of classification according to content. The alphabetical index is the most useful for ordinary usage. Classification under content heads is helpful for specialized readers, but in most cases it requires the reader to know too much about the subject to make for general ease in finding material.

There are three types of entries that will be used most by the report writer: the *subject entry*, as accountancy, banking, sales

letters; the *title entry*, as the title of an article, etc.; the *name entry*, as the name of a person, place, institution, etc.

Cross References

Following a heading, the expression *see* ——— is the general instruction to look elsewhere for entries on this subject. For example,

Letter of transmittal (*see* Transmittal, letter of)

The reference *See also* ——— indicates a subdivision of the subject or a related subject containing allied matter. For example,

Beverages, 45. (*See also* Coffee; Tea; Wine)

The reference *see* should be set in parentheses and written with a small *s*; but *See also*, which begins a sentence, should be written with a capital *S* and set in parentheses; underscore in typescript in both cases.

Forms of Presentation

The following three forms of presentation are the most commonly used:

Jones, J. V., 126, 135, **185**, 264 (heavy type shows the chief reference)

The more complete:

Jones, J. V., 184
life and work, 185
relation to Smith, 264 (note the alphabetical arrangement of subentries)

Condensed and chronological:

Jones, J. V., civil war influence, 126; life and work, 185; education, 264

Double entry, author and titles:

Rush, A. W.
by auto to Mexico, 24
"Canals of New York, The," 70

Preparation of Index

After having decided upon the plan to follow, the report will be read and the entry and subentry words marked. This may be done by underlining the entry words with one, two, or three lines to indicate their positions as entry, or first or second sub-

entry. An "x" will indicate a "*see* ———" reference, and an "x also" may be used for a "*See also* ———." Variations of check marks can be evolved to serve the same purpose.

After reading and marking, the entry words are taken off on slips of paper or stiff index cards, and care is taken to check the page numbers. If the typewriter is used, several entries may be placed on one page and then clipped. Insert cross references, and separate alphabetically. If marks are used that may not be familiar to the printer, a table or key will be included.

Entry Word

The entry word should strike at the root of the question and should be a word that the reader will seek, not one that is so specialized or so technical that he will not think of it. Because such general phrases as "Help" and "Differences in quality" are not vivid, they make poor entry words. The entry words should usually be nouns or substantive phrases. With a phrase, enter under the most significant word or in two places. "Fruit growing in Oregon" would be entered in two places. "Taxes" may combine several things under the one head, but "Contests" is not sufficient for "Tennis."

Words constantly used together such as "Current issue," should not be split. Give all the description necessary for full understanding. Avoid words unfamiliar to the reader. It is usually advisable to make a cross reference between uncommon and common words.

Heads or entry words in the index should avoid generalities. If the entire report concerns Mexico, that name will not appear as an entry because the whole report bears it. If the report is a comparison of several countries, however, an entry may read:

Mexico, oil, annual production, 64
British capital invested in, 78

Some general entries are needed to combine like factors, in which case the entries must clearly indicate the subheads to be expected under them, *e.g.*,

Mountains, Pike's Peak, 28
Sierra Nevadas, 30

Modification Words

The word or phrase following the entry word to limit or to explain its meaning is called the *modification.*

Errors, control of, 69

Subhead

The subhead is a second value or third value heading.

Mountains, 21
  Pike's Peak, 28
    height, 32

Style

In book titles, omit the *A*, *An*, or *The* at the beginning of the line and add it at the end. Italic type or some other distinctive style of type is used to indicate the name of a book or publication. Usually the title is run as it is, but sometimes it is permissible to pick a keyword, *e.g.*,

Economics, The Principles of.

Names are inverted when used as entry words, as

Twain, Mark, *see* Clemens, S. L.

Mechanics

Very few capital letters will be used in the good index. The conservative style of using capitals for proper nouns, states, and places, however, should be observed.

Page numbers immediately following the entry are easy to read and will save the strain of trying to follow leaders to the right-hand margin. This is the reason most indexes are set in two columns. With more than one volume, the index will be at the end of the last volume, with page numbers prefixed with the volume number, as II, 380.

Double spacing between each letter group, possibly with the first word of the new series in a heavier type, will make for easy reading, as

Foundry, size, 48

Gage, classification, 26
  design, 28

Dates should be in italics or in some other contrasting type. Inclusive pages may be marked thus:

Gages, accuracy of, 4–12

All entries should be in some definite order of arrangement, usually alphabetical, although a chronological or logical order may be followed. In alphabetical order, the modifying word following the entry word does not figure in the alphabetizing, as

Light, stellar
Lightning

Alphabetizing is according to main words, not prepositions. Sometimes the arrangement of subheads is in descending order of importance as

Income tax, budget proposals, 8
  investments, 10
  revisions, 13

Compound words are used as a unit. Book titles appear in *quotes.*

The division or arrangement of the index should be based on definite service to the reader. This discussion is not designed to treat the subject of indexing completely, but rather to show a few of the possibilities that may be helpful in a simple case of indexing. When the report is of such size as to require complicated indexing, the writer will need to make a more complete study of the problem. A list of suitable references will be found in the bibliography.

CHAPTER XIII

PUTTING THE REPORT INTO WORDS

I. Style in Report Writing—II. Rhetorical Qualities: *A.* Unity; *B.* Emphasis; *C.* Clearness—III. Dressing the Thought—IV. Tone and Technique—V. Presenting the Evidence: *A.* Judicial qualities; *B.* Logic in presenting evidence; *C.* Hasty generalization; *D.* Analogy; *E.* Generalities; *F.* Fallacies.

STYLE IN REPORT WRITING

The objectives of a report are to secure a reading, to be understood, to gain belief, and to induce action. To attain these objectives the report writer must concern himself with the style of writing as well as with the facts.

Reports are not acted upon because they are not read, because they are not clear, because they are not convincing, or because they are not persuasive. It is dangerous to assume that reports go to interested readers and therefore to ignore the factor of interest in the presentation. Since it is the style of writing that makes for interest, a close study of style may well be urged.

R. U. Fitting says:

> While the importance of skillful presentation is universally realized today among men of affairs in respect to business correspondence and publicity material, it is only beginning to be considered in connection with report making.
>
> But the fact is, as any experienced reader of reports discovers, that fully 50 per cent of the effect of a report depends on how it is written—that is, how the material is selected, arranged, and presented. Men who have to prepare reports need to possess, whatever their other qualifications, the ability to write.[1]

The question of what is good style in business reports at once presents itself. To answer it, we may consider two widely accepted meanings of style. "Le style c'est l'homme" (the style is the man). Style in this sense is an expression of the

[1] R. U. Fitting, *Report Writing*, p. 9.

writer's personality, the quality of the writer's ideas, and the manner in which they present themselves to the writer. It has its source in a man's power and manner of perceiving, of feeling, and of living. It applies to reports by reflecting the sincerity, the straightforwardness, and the human qualities of the writer. It applies to them insofar as modesty, tact, calmness, aggressiveness, originality, and endurance reflect the personality of the writer. The writer, moreover, wants to reflect such a personality as will inspire confidence in himself and create respect for what he has written. It is refreshing to find the characteristic of pleasing personality in a report. It keeps the report from being cut and dried, which weakens the appeal.

Style as a reflection of personality is, however, much more applicable to literature than to business reports. In business reports, we are concerned with the other sense in which style is employed, style as *craft*. Style defined as craft emphasizes not so much the quality of the writer's ideas as the method of presenting his ideas. As defined by Vernon Lee in *The Handling of Words*, style in this sense "means such a manner of dividing and arranging a subject and of selecting words, as will convey the meaning of the Writer to the Reader with the least possible difference between the effect produced and that intended, and also with the least possible wear and tear of the Reader's capacity and good will."

A definition of style in *Better Business English* interprets the style applicable to reports, style defined as craft: "Style in sports and occupations of skill is that method of activity which uniformly gives the best results with the least real and apparent expenditure of effort. Style in writing is the same."[1]

To supplement this interpretation, we need to consider again the purpose of a report. Surely it is to carry conviction, to bring others to our point of view, to persuade them to adopt the course we advocate—in short, to carry our point. As in all writing, the purpose is to make the reader think the right thought, feel in the right way, or do the right thing. To borrow a paragraph from Vernon Lee in *The Handling of Words:*

> The Writer urges the Reader to realize, so far as possible, the same thoughts, emotions, and impressions as himself. To do this, the writer

[1] J. M. MANLY and J. A. POWELL, *Better Business English*, p. 275.

must, as it were, draw the Reader to a certain goal along a certain road of his choice; . . . like a horse, he [the reader] has to be always kept awake, and kept extra awake whenever any new turn is coming, so that much of the craft of writing consists in preventing the Reader from anticipating wrongly on the sense of the Writer, going off on details in the wrong directions, lagging behind, or getting lost in a maze of streets.

If style is a craft, the writer is constructing. He is influencing in the reader's mind the same reaction which he himself has. The writer's materials are "words and groupings of words called sentences, paragraphs, and chapters." He uses other "groupings such as passages, explanation, retrospects," and so forth. By choosing and arranging words, he is copying, so to speak, his own feelings and ideas. He is playing upon the contents of the reader's mind, for the response he gets to any particular word will depend upon the visual, audible, tactile, and emotional response which the reader's experience has given to that word. A style of writing should be developed that will be economical of the reader's time, economical of words, careful of diction, and not devoid of personality. The writer who submits a 100-page report, sometimes merely to indicate that he has collected considerable material, when the whole investigation could be condensed at least half, is encroaching upon an executive's time and patience and is inviting a rebuke plus instructions to rewrite. Reports dictated and not revised are usually wordy, lacking careful word discrimination and adaptation.

RHETORICAL QUALITIES

Since the formal report is a written communication, it must be characterized by good rhetorical, judicial, and interest qualities, as must all good writing. Of the rhetorical qualities, coherence, the arrangement of material, has been covered under Organization in the preceding chapter.

Unity

Unity means focusing on a clearly defined purpose. Everything included must be pertinent to the problem, and everything pertinent must be included. Unity can be attained in a report if one takes carefully the first steps of the investigational procedure. These are analyzing the problem, defining it, and determining its objective. The value of clearly defining the objective

is that it guides the person making the investigation or writing the report in deciding what is pertinent and what irrelevant to accomplishing its purpose. The specific phrasing of the objective in the beginning is one of the best ways to insure unity.

In securing unity, the report writer is aiming at completeness. He wants nothing less and nothing more than is necessary to accomplish the purpose of the report. He faces constantly the problem of what amount of detail can be included without making the report tedious and without interrupting too long the reader's train of thought. Any material which is doubtful on either count is put in the appendix or omitted.

Emphasis

Emphasis, in a report, calls for evaluating correctly each element and indicating this value by giving to it its correct amount of attention. Evaluating facts correctly means giving them only as much weight as they have value in accomplishing the object of the report. The report writer must be careful not to give undue value to facts that have been unusually difficult to obtain.

Indicating the value of material by giving it the correct amount of attention means that, in the presentation, highly important facts will either be placed in conspicuous positions in the report—at the beginning, for instance—or will be given more extended treatment than minor points. The report writer also makes use of many mechanical devices to call attention to vital facts.

In addition to charts and diagrams, mechanical tools of emphasis are arrangement and selection of type, short paragraphs, indention, spacing, heads, footnotes, underlining, boxes. Attention is focused on a small section of a large table or chart when it is reproduced separately and run with the discussion.

Emphasis is secured by the proper selection of material well adapted to the reader and to the report and by the arrangement of that material for readability, with regard to position and amount of space.

In accountancy reports, for instance, readers want findings—what was done or not done, conditions and results, analytical and interpretative information of the year's operations. But the accountant must place his emphasis on the points of especial interest to each group of readers. His comments will depend upon the size of the business and the purpose of the report. For

bankers, minor bookkeeping errors may be omitted, unless there is fraud. For the purchaser of a business, past history and changes may be emphasized. For big companies that have competent accountants, the outside auditor will place little emphasis on the discussion of routine verifications.

Points that either may be questioned or go against tradition should be elaborated for greater emphasis, as should features strongly favorable to a subject. Definite facts and figures should always be used. Comparisons of various kinds are common means of giving emphasis to facts. Specific expression is another means of emphasis. To say the "electricity was extended to Bonneville, Columbia, Camden, Mendota, Erie, Thayer, and Duluth" is much more vivid to the stockholders, many of whom live in these districts, than merely to say that seven communities were added to the electric service.

Few people will read a paragraph crammed with figures. It is more understandable and emphatic to put the figures in table form and to discuss merely the outstanding points—usually the high lights, the low lights, and the averages. Added emphasis is gained by following the journalist's basic rule of "playing up" the unusual or news angle. In that way interesting facts will not be buried under a mass of run-of-the-mine detail.

When the subject matter is unfamiliar to the reader or when the ideas handled are abstract, frequent examples should be used.

Clearness

Clearness and completeness are the final criteria of report writing. In clearness lies strength; in vagueness, ambiguity, or obscurity lies weakness.

Heads and subheads, short paragraphs, and pictorial presentation are mechanical means to clearness. Forceful diction, well-written and varied sentences, easy transitions, summarizing sentences, figures of speech, adaptation, arrangement, and specific detail are the rhetorical roads.

Unnecessarily long introductions, descriptions, etc., are elements of obscurity. Inaccuracy of expression—including incorrect spelling, grammar, and punctuation—is perhaps the worst transgressor of all. For perfection in this type of writing, one's style should be wholly unnoticed because of the crystal clearness of the message.

The inexperienced investigator's report often lacks clearness because of too many undigested and non-essential details. The experienced man frequently errs because personal familiarity with the subject causes him to skip points that are essential for the reader.

When the report is being written for the public, the language must be as concrete and as simple as is that of the newspaper. Lincoln's reaction to people who talked over his head probably typifies that of the lay mind to a report written in technical language. When asked how he acquired his unusual ability to put things plainly, he replied:

> When a mere child, I used to get irritated when anybody talked to me in a way I could not understand. I don't think I ever got angry at anything else in my life. But that always disturbed my temper and has ever since. I can remember going to my little bedroom, after hearing the neighbors talk of an evening with my father, and spending no small part of the night walking up and down, and trying to make out what was the exact meaning of some of their, to me, dark sayings. I could not sleep, though I often tried to, when I got on such a hunt after an idea until I had caught it; and when I thought I had got it, I was not satisfied until I had said it simply enough, as I thought, for any boy I knew to comprehend. This was a kind of passion with me, and it has stuck by me; for I am never easy now, when I am handling a thought, till I have bounded it north, and bounded it south, and bounded it east, and bounded it west.

In submitting to a layman audience a report on a technical subject, this writer recognized that he had to present terms in understandable form.

> But when I speak of "integration" in any territory, I mean interchange over trunk transmission lines designed to transmit great quantities of power at high voltage, over great distances, so as to give to the whole territory thus integrated the advantage of the cheapest possible electric generation at the lowest possible transmission cost.[1]

The following footnote, in the same report, not only added interest for many readers but probably clarified for them something that had been vague since their grammar-school days.

[1] GIFFORD PINCHOT, former Governor of Pennsylvania, *Report of the Giant Power Survey*, p. 24.

He [Watt] selected a heavy dray horse, a dozen muscular men, and, by means of a rope and traces, beginning with four men, added man after man pulling against the horse, until he found that when eight men were pulling they balanced the horse's strength.

Then continuing his experiments, he found that a horse could lift, by means of block and tackle, 330 pounds at a rate of 100 feet per minute, which, of course, was the same as lifting 33,000 pounds 1 foot a minute, or 550 pounds in 1 second; accordingly he designated his steam engines and sold them on that basis. That is known as mechanical horsepower.

On the other hand, many a report is written in such an involved style that it is obscure to the lay reader. The following is a paragraph from a financial report sent to average readers with the idea of inducing them to invest:

The redemption value of Blank Trust Certificates, Series *B* (after the 1 per cent redemption charge has been deducted), may, until otherwise determined by Blank Trust Company, be applied, in multiples of $1,000, in payment of subscriptions for Blank Trust Certificates, Series *A*, issued by Blank Trust Company (minimum face value per Certificate $10,000), which subscriptions shall in all cases where said Blank Certificates, Series *B*, are duly presented for redemption as of the first Friday in each quarter, namely, the first Friday in January, April, July, and October, be exempt, to the extent of such application, from the entrance charge of 1 per cent, payable in respect of other subscriptions for said Blank Trust Certificates, Series *A*.

Without an explanation of terms, the usefulness of the following, directed toward legislators, is doubtful:

These plants have a prime mover capacity of approximately 17,545 kw., generating 12,469,981 kwh.

On the other hand, semitechnical details in the following are told to the average reader in a way he can understand and repeat. That is good salesmanship.

The majority of these rural lines are built along strategically located highways and form a part of a definite program of expansion which will extend over a period of years and which will provide adequate electric service to farms throughout the company's territory. The principal feeders built under this program are so located that only comparatively short lateral extensions will be required to reach the farms.[1]

[1] Public Service Company of Northern Illinois, Annual Report.

Good diction and sentence structure make intelligible this interpretation of figures.

With the construction of 266 miles of rural lines during 19— the company's total mileage of such lines was increased to 1,387, representing an increase of 23.6 per cent over 19—. From these lines, service is supplied to 3,506 rural customers, 806 of which were added during the year.[1]

In an article urging better style in reports, W. K. Palmer cited the following illustration of his point. Read this for clearness—or lack of it.

The grade and curves will be easy and the line will probably be operated by electricity, and there won't be any rock so the line will not be expensive to build, and there will be plenty of travel because the country is well settled with a good class of people that raise cattle and hogs, and the dairy business is a great business in that region so there will be a lot of milk cans and butter and eggs that can be carried every day on the new road which will make the freight business good.[2]

Lack of clearness because of insufficient facts is a common fault, as in:

On motion of Mr. Blank it was regularly moved and seconded that _____ Street be improved.

It might be unfortunate for the taxpayers if this street extended several miles, as there are no limits to the motion. Since nothing is said about kind of improvement, cost, or how the money will be obtained, the probability of the improvement is doubtful.

DRESSING THE THOUGHT

Dr. Johnson said, "Language is the dress of thought." Let us now assume accuracy of thought and proper organization and give attention to the dress—the way that the material is actually presented to the reader. For language must not be liable for damage inflicted upon thought in transit.

Our minds are so constructed that we give attention only to those things that interest us and try to keep uninteresting things from entering our consciousness. The writer starts with a mass

[1] *Ibid.*

[2] W. K. PALMER, "The Writing of Engineering Reports," *Engineering News*, 85: 1103.

of data and a prospective reader. Like the artist, he selects a few salient features, or facts, to emphasize. He rejects the unimportant, the commonplace, the irrelevant, or the too difficult, and retains the useful and interesting. For since interest is an emotion, facts are not interesting in themselves, but only because of the emotions aroused by facts![1]

We know that all the hours of research are unknown to the reader, that he judges results entirely by the written report that is given him. If it is humdrum, it is headed for the files. If it buries important facts or if it constitutes mere compilation of data, it does not arouse interest. Obviously, then, the report must be interesting and convincing in its presentation. To that end it presents facts not as mere facts but as support to a plan of organization.

Since all writing must start with words, which grow into sentences, power over words is necessary for commanding, compelling, persuasive writing. Words are the tools; to attempt to write well without an adequate vocabulary is like trying to build a house without the requisite hammer and saw.

For good choice of words, specialize on the nouns and verbs, which are strong words; as is so often urged, use color nouns and action verbs. Be sparing with adjectives and adverbs, which often blur meaning, and be careful of vague or stringy connectives.

This section is in no sense a handbook of composition. It merely points out some of the common errors found in reports with the suggestion that the writer go back to a handbook and review his rhetoric, if and as he needs it.

Data must be presented in interesting, readable garb, which means using figures of speech, concrete terms, specific diction. Fine writing is not required, but specific, concise, vivid writing is necessary for accuracy and brevity. This editor's salty advice is worth a thought:

> A wise old editor of a small-town paper used to tell his reporters to write the news in plain, simple words, without putting on airs. Here is how he put the case himself:
>
> "In this office we do not commence, we begin. We do not peruse a book, we read it. We do not purchase, we buy. We have no souvenirs, we have keepsakes. A spade is called a spade.

[1] W. H. EASTON, "Interesting Your Readers," *Electric Journal*, 27: 645–646, November, 1930.

"In this town we do not reside in residences, we live in homes. We do not retire, we go to bed. We do not pass away, we die. We are buried in coffins, not caskets. We have no morticians. We are not all gentlemen, but we are all men. All women are not ladies, but all women are women. All women are females, it is true, but dogs, horses, and pigs can also be females. Hence, in deference to our women, we do not class them as mere females.

"Our priests, ministers, and rabbis are not divines. Our lawyers are not barristers. Our real-estate dealers are not realtors. Our plumbers are not sanitary engineers. No beauticians live here.

"All fires, remember, are not conflagrations. All testimony is not evidence. And if any reporter writes of a body landing with 'a dull, sickening thud,' he will land on the sidewalk with a jolt, his hat in one hand and his pay envelope in the other."

Glory be! Every writer, every speaker ought to get such a talking to, plain and flat. In the old days no one used a little word, if he could think of a big one; but that day is gone. Too many of us use words to hide thought, or the lack of it. To be able to put big ideas into little words is the finest art. The wise old Bible knows how to tell the plain truth.

"If any man say, I love God, and hateth his brother, he is a liar." Not a prevaricator, but just a downright liar. It does not mince words, and we know what it means.

God, life, home, faith, hope, love, death—most of the words that stir our hearts and light our path are simple words.[1]

The first rule of writing is to have something to say, to say it directly, and to stop.

So-called business English is merely good English applied to a specialized terminology which is not jargon. There are, however, types of jargon commonly found in business writing. In order that one may effectively avoid them, they are briefly treated here.

The first is the cliché or rubber-stamp expression, such as "we acknowledge receipt of," "herewith attached," "referring to the matter," "in accordance with," "yours of the 12 inst.," "we should like to call your attention to the fact," "best laid plans," and similar travesties that sound pompous but are really inaccurate time-wasters.

The second is a more insidious type, embracing such words as "case," "instance," "character," "nature," "in order to," "in regard to," "in connection with," "due to the fact," etc.

[1] JOSEPH FORT NEWTON, *The Philadelphia Inquirer*.

None of this jargon is accurate—it is only approximation. It wastes time and space, costs money, and makes for ineffective presentation. Instead of shortening writing it lengthens it and destroys all naturalness and vividness.

"The road is *of a* very uneven *character.*" First, a road does not have *character,* and, second, the entire expression is so abstract that it leaves no definite idea in the mind of the reader.

"The laborers returned to work *in most instances.*" They returned to work in the factory instead of in instances.

"The labor *situation* is passing through a period of unrest." Is it labor or situation that is passing? Or is the unrest causing a situation?

Words such as "problem," "standpoint," "eliminate," "tendency," "degree," are vague and cumbersome. The use of foreign terms, *e.g., status quo,* or of slang, colloquial expressions, or business catchwords should be limited to absolute necessity. Generalities such as "recently" and "a few years ago" are vague, uncertain, and give the report a wobbly effect.

In report writing language must be a precision instrument as accurate as an accountant's figures.

The right word is the right tool. Note the difference in meaning of the following words and consider how many times you have seen them misused: "efficient"—"effective"; "substituted"—"replaced"; "partial"—"incomplete"; "erect"—"construct"; "paid"—"collected"; "amalgamate"—"mix"; "eliminate"—"defeat"; "profit"—"net profit" or "profit from operation"; "balance"—"remainder"; "partially"—"partly"; "approximate"—"about"; "cost of manufacturing has increased"—"per cent of cost of manufacturing to sales has increased."

Avoid the use of wordy expressions: Perfectly straight line (cannot be straighter than straight); 12 inches in length (long); tends to aid (aids); it is the opinion of many (many believe); the work being done by these various investigators (this investigation); examples which may be cited that are familiar to you are over-production (familiar examples are over-production).

Imperative diction such as "must," "should," "have to," "demand" is usually ruled out by psychological reasons. The reader of a report wants facts, but the action that he will take is his own prerogative. He does not want to be told that he *must* do this, or he *should* do that.

Superlatives, vague pronouns, and stringy prepositional phrases are other common errors. Mixed reference to the company as both singular and plural and reference to the "best city in the state" are equally ineffective.

When all the sentences in a paragraph start in subject-verb style, the effect is deadly. Frequent references to "the writer" or to "Mr. Smith" are awkward and stilted.

Avoid abruptness from topic to topic. Sections should read smoothly without the use of heads. Topic and summarizing sentences help to make the transition smooth. Be sure that the beginning of each paragraph points back as well as ahead.

Sentences beginning "There are . . . ," "It is . . . ," "However," have little personality and often are instances of vague reference. The beginning of a sentence is too important to waste with such weak phraseology.

Since the report writer is responsible for what he says, rather than what he means to say, he should make careful distinction in such expressions as the following:

We *verified* the funds. [Unless all funds were actually verified.]

The customer notes were *examined* or *accounted for* (not *confirmed* by debtors) or *test-checked*, which *indicated* (not *showed*) no material difference.

The investment is stated at *values carried on the books*. [Usually not at *book value*.]

The items are *reflected* in the statements. [Not *properly* reflected.]

Depreciation is provided at rates which *appear* adequate. [*Considered* adequate may involve the writer too much.]

Funds *will be* obtained. [Guarantees performance beyond the realm of the accountant.]

From reading many reports, we have found that most frequently the following types of sentence are accountable for weak writing. Incorrect words and phrases are *set in italic*.

Connective:

The business has been operated profitably, *but* Jones *tends* to maintain large receivables and heavy inventories. [Unnecessarily derogatory.]

Psychology:

No recent financial statement *could be obtained*. [Refused?]

They *seem* to have a good trade, *but* the prices are low because of competition.

The present lighting system is *very unsatisfactory*. [General; also biased when used as an introductory sentance.]

Wrong Tense, Lack of Agreement:

One-fourth of the rural accounts *were* slow in recent months. [Have been.]

The data *is* conclusive. [Are.]

The desks *are located* in a bad place, and this *caused* confusion. [Causes.]

He said that the statement *will show* that both inventory and liabilities *will be decreased;* that otherwise it *would be* the *same.*

Repetition:

Trade payments *drag.* They are *slow* in paying some of their bills.

The main *office,* which houses the executive *offices,* is far from . . . .

The stenographers average eight trips to the *files* and spend 20 per cent of their time at the *files.*

Whenever he *needed* to discuss sales, he *needed* to pass through two offices.

The most impressive result obtained was that *of* the discovering the waste *of* time in the action *of* the chief accountant because *of* the location *of* his office.

In other words . . . [Say it precisely once—and only once. This usually introduces repetition.]

Jargon:

Insurance is carried on the merchandise *to the extent* of $125,000.

Monday was selected as an average day *as far as* business activity *is concerned.* [. . . day for business activity.]

Poor Diction:

He *felt* that the money should be paid.

According to Smith . . . . [. . . to H. W. Smith, president.]

The owners employ two *other* clerks.

The store is *surrounded* by a meat market on the east and a bakery on the west.

Groceries of *all* standard brands are sold for cash. [Not *all.*]

About $100 is owing on fixtures, but this balance *will be clear* March 1. [Amount too vague; action too positive.]

Wordiness:

Two clerks are employed to *serve the customers.*

The company purchased new fixtures, which were installed last October. These installations have been *entirely* paid for, except for $100 due March 1.

The advertising and accounting departments *should* be moved *so* that they will be *alongside of one another.* [Adjacent.]

Coherence:

Modern merchandise methods are used, *and* handbill advertising in the neighborhood is efficient.

Unity:

The object of this report is to analyze the office arrangement to determine which department *makes the most intraoffice trips* and to determine whether *or not* present congestion can be lessened. [Confuses object and method, with neither made clear.]

Transition:

The rest of the capital was supplied by a friend. The last depression caught Mr. Jones with heavy inventories.

Specificness:

Pay *suitable* wages. *Satisfactory* copy. Plan will save a *great deal. Many* people looked at the window.

Over-emphasis:

Three typewriters make a *terrific* noise. [!]

Emphasis:

The content and presentation of *annual reports* have changed in recent years, *and* the purpose of this *report* is to show how governmental relations are handled in *annual reports*. [Tries to add apples and horses. If the first part is included, it should be subordinated.]

An example is found in an annual report of Blank and Co. *They tell* that *they* have 110,000 stockholders. In addition *to this* they *tell* in a general way who *they* are and what *they* do. [Errors: repetition, mixed reference, faulty construction, wordiness, choppiness, poor punctuation.]

In order to *give* the shareholders a better understanding of the company, the report *gives* the general trend of business, *how* it will *effect* them and then explains in some detail the financial statements. *They* review the current operations in a *manner comprehensive* to the average man. In the *larger reports* the price policy, chief costs, and future prospects are discussed. [Errors: poor diction, incorrect spelling, wrong punctuation, repetition, mixed reference, lack of parallel construction, wordiness.]

Here's a marathon sentence that would stop any reader, taken by Mr. Gracey from an actual report:

Under court order dated April 9, 1937, the Jones bondholders were allowed a general claim of $13,950 subject to the provision that, if all general claims allowed against Jones are not paid in full, the dividends on the bondholders' general claims shall not exceed an amount which, together with the proceeds from the sale of the mortgaged assets, will pay to the bondholders the principal amount of the bonds outstanding plus accrued interest thereon to April 30, 1935, and subject to the further provisions that in any event the dividends on the bondholders' general claim, together with the proceeds from

the sale of the mortgaged assets, shall not exceed the principal amount of the bonds outstanding plus accrued interest thereon to date of payment.[1]

Here is some business jargon at its best—or worst:

Mid-west Freight Association submittal 413485 proposes to amend all transit arrangements on mixed feed at points west of the River moving via Quincy, Ill., may be used in the manufacture of mixed feed on basis of the feed rate from Quincy to final destination, applicable to that portion of the molasses entering into the mixed feed by limiting the origin territory to blackstrap molasses originating at Quincy, Ill., and points east thereof, including points in the Quincy, Ill., switching district; also by providing that as to blackstrap molasses received to Quincy, Ill., billing carriers at transit points require certificate to the effect that same originated at Quincy, Ill., or that if it actually originated west thereof, it is not subject to transit at Quincy, Ill.

It is stated that individual lines' tariffs governing the manufacture of mixed feed at such points at Peoria, Nashville, Galesburg and Princeton, Ill., authorize the use of blackstrap molasses originating at points west of Quincy, Ill., moving via Quincy as a transit ingredient; that the Quincy rate on feed to final destination be protected on that portion of the blackstrap molasses entering into the mixture there being no joint through rate on mixed feed from points west of the Miss. River to points in Southern territory, lines west of Quincy do not participate in any readjustment of the revenue on blackstrap molasses originating at points west of the Miss. River may be drawn into Quincy stored and subsequently reshipped to further destinations on basis of through rate from origin to final destination, settlement being made by claim; that billing covering the movement from Quincy carries no reference to the origins; that lines in Mid-west territory granting transit on mixed feed have no way of determining if the molasses was subject to storing in transit arrangements at readjustment of the charges where such molasses is used in the manufacture of mixed feed. Further that the present arrangements have been found to be unprofitable, therefore it is proposed to amend the tariffs as outlined in the foregoing.[2]

The man who wrote the following was wasting his company's money:

Presume your investigation of the track repair expense as well as transferring of coal, March 7, account, derailed cars, developed same as chargeable to joint switching account instead of on the basis of cars being handled at time of accident. The same is also applicable to bill for track repairs, April 8.

[1] R. D. GRACEY, "High Standards," *The Canadian Chartered Accountant*, 32: 372, May, 1938.

[2] Names and places have been changed.

Three outstanding faults of the last example are lack of parallel construction, omission of words, and faulty reference, which result in a total lack of clearness.

The illustrations that have been given are intended merely to emphasize that loose writing is too often found in business writing. It is easier to be verbose and rambling than to be concise. But precision is essential in presenting the factual material of reports, and it must be attained by self-discipline and effort. There is no substitute for study and practice.

Even though the thought is clear in the mind of the writer, he must dress it in the proper garb to attract the reader or all his work will be lost.

TONE AND TECHNIQUE

The tone is determined by the point of view of the reader. He is usually a busy man, often an executive with more responsibility than the writer. He wants definite, positive thought presented in cool, unbiased exposition which is impersonal, cheerful, advisory, but neither imperative nor didactic. The tone of the report should, of course, be *impartial* if it would carry weight, because a "colored" report, like a "colored" newspaper story, is soon detected by the discriminating reader, and the entire work is discredited. The tone should be tolerant, broad-minded, fair, dignified, sincere.

Since tone and technique are so closely allied, let us examine some report-writing techniques which not only contribute to the tone but which produce a result that is easiest for the reader to understand. Naturally the simplest, most straightforward style of writing is the most impressive and the most useful.

Unless a man is an authority in a subject, the report is written in the impersonal, third-person style, with the exception of the letter of transmittal, which may be a more personal message from the writer to the reader and may be written in the first person. The present tense is preferable to other tenses if there is a reasonable choice.

Not—This topic will be discussed later.

But—This topic is discussed on page 25.

Trite expressions have a bad effect on the educated reader. He thinks that if a man cannot get out of a mental rut in his expression, it is probable that he exercised no imagination in his

analysis. The man who first said, "That which we call a rose by any other name would smell as sweet" was a genius, but his imitators lose stature.

Reference to tables should be made only incidentally to support the text. "There is a table on page 5 showing—" might better read, "Increased auto production (Table 1, page 5) indicates an upswing in the steel market." In the discussion give the reader credit for some initiative and ability and do not repeat all the table data. Instead use the space for outstanding points and contrasts.

Avoid a preaching or patronizing tone. For instance, do not give an elementary lesson in economics unless there is no doubt that it will be appreciated.

Avoid a contentious, biased, sarcastic tone. Always reflect the scientific attitude.

Do not defend the accuracy or honesty of the report. To do so arouses suspicion. If the investigation has been thorough, the facts are correct, and they should be taken for granted.

Use exact titles of people and things.

Always interpret facts and figures so as to show relationships with the basic elements of the report. Otherwise, the reader may make the wrong interpretation.

Use tables when many figures are necessary, because too many statistics in the text divert attention.

Be sure references are clear. If you say, "Advertising is 10 per cent below par," par must be given.

Do not plunge the reader into an analysis of a point without showing the relationship of the point to the objective.

Read the report aloud to discover long, awkward sentences.

For interest and clarity, use concrete, vivid illustrations. Other suggestions for holding interest:

Hold to the central theme.
Have a strong point at the beginning and the end of each section.
Use visual devices.
Use specific examples.
Use vivid figures of speech.
Occasionally ask a provocative question.
Apply examples and/or discussion to the reader's experience.
Use concrete description.
Use analogy, but do not offer it as positive proof.

In presenting a preliminary report to a superior, put in a quantity of detail; it is easy to delete later.

In an article giving advice to prospective writers of scientific articles, E. E. Slosson says:[1]

Don't overestimate the reader's knowledge or underestimate his intelligence.
Don't try to tell all you know in 500 words.
Don't think because the subject is old to you that it is to the public.
Don't think that the readers are obliged to read you; "catch your reader first."
Don't omit human interest.
Don't forget the reader is always saying "Why, what for, what of it?"
Don't say, "This discovery is interesting."
Don't fail to put your best foot forward.
Don't define a hard word by a harder one.
Don't be afraid of technical terms.

To illustrate the use of superfluous explanation, Mr. Slosson gives these examples:

At zero hour the barrage was raised and the poilu and the doughboy sprang over the top, sticking their bayonets into the boche.

At zero hour—to use the military term for the time set for the beginning of an offensive—the barrage—that is to say, the line on which the artillery fire is directed—was raised and the poilu—that is, a French slang term for soldier meaning "hairy" and corresponding to our "roughneck"—and the doughboy—that is, an American slang term for infantryman derived, etc.—sprang over the top—that is, surmounted the parapet, etc.

PRESENTING THE EVIDENCE

Judicial Qualities

Adequate presentation of evidence involves such careful judgment of data that it is well to summarize certain judicial qualities, namely, accuracy, completeness, precision of statement, distinction in fact, opinion and assumption, and appropriate credit. Of course the proper impersonal, unbiased, reserved tone, the

[1] E. E. SLOSSON, "Don'ts for Would-be Writers of Scientific Articles for the Public Press," *Industrial and Engineering Chemistry*, 11: 19: 71–72.

correct emphasis but not over-emphasis, and the organization of material might well be added to judicial qualities, at least in part, but they have been fully discussed.

Accuracy is the result of competent judgment. It results, in the first place, from the temperament and training of the investigator. Some people by temperament are accurate in observation and correct in emphasis; others acquire these qualities; and some can never acquire them. The written report is never more accurate than the preceding investigation and analysis. Accuracy comes, in the second place, from a careful recording and analysis of facts.

Completeness means that all points shall be adequately supported by proof. Although a huge volume of data does not always indicate a good report, a wealth of material conveys the idea of a substantial piece of research, promises that all questions will be answered without the need for supplementary reports, and gives a fair idea of the amount of work done.

In order that evidence be adequate, it must be *precise in statement.* Generalities, lack of reserve, and vague references are the greatest enemies of precision. Showing the significance of facts in relation to the general problem may well be a form of precision in presentation.

The judicial quality of a report results from a *clear distinction being made between fact, opinion, and assumption.* "A statement of fact is not open to question. A statement of opinion is open to question because it may be false. A statement of assumption is open to question because it may not be reasonable under the circumstances."[1]

Making a distinction between statements of fact, opinion, and assumption is necessary because every business report contains some unknowns. These unknowns arise from limitations in time and money or from inability to obtain actual facts. In the absence of facts, some opinions and assumptions will be introduced as evidence in the report. The question arises, then, of how to make them convincing. Because belief in opinions depends upon who expresses them, the authority for opinion should always be given. Proper credit will not only add weight to the proof, but will relieve the writer of much responsibility.

[1] NEIL H. BORDEN and CHARLES A. GLOVER, *Suggestions on Report Writing*, p. 26.

Assumptions will carry weight in proportion to the quality of the reasons given for making them. It must be remembered that consensus of experts is almost as convincing as facts by experts.

Logic in Presenting Evidence

Although Mill says "Even the most cultivated portion of our species has not yet learned to abstain from drawing conclusions for which the evidence is insufficient," we must maintain that most reasoning by readers of reports is based on evidence.

In determining how to handle the all-important evidence to be featured in the presentation, the report writer will test it again for probability, for the general laws of human experience, for prior facts, for consistency with other evidence to be presented, and for interest to the reader. Has the evidence been selected to fit both the space limit and the natural limit of human patience and attention? Is the selection fair and broad?

In deciding whether to give added space to an authority it is well to determine whether the testimony was written or oral; ordinary or expert; fact, opinion, or assumption; well known; intended for this particular situation.

In deciding how to present authority, the writer will want to know: Do the readers know the man as an authority on this question? What is the emotional attitude of the reader toward this authority? Is the authority speaking in an unbiased manner? When and where did he express himself? In what manner? Is the proof out-of-date now? Is there enough authority used? Is the use clear? Is authority used in the places needing it? Does the authority differ from others? Legitimately so? Is the authority competent?

When an authority has said something in an apt and concise manner, it is often effective to give the statement in the form of a quotation so that the reader will see the exact words. Quotations, if not too long or too frequent, make for effective presentation. They may also be used to show non-concurrence. Showing the exact form adds emphasis and belief and retains the original flavor of the material.

Without careful analysis of evidence and meticulous phrasing of sentences, the report writer finds himself faced with problems like the following:

1. Are the facts pertinent and essential?

"The wage of John Smith is $1,500" is of little interest in a municipal report, except possibly as appendix material.

2. Are they representative?

"Motoraid employees are saving regularly as shown by an interview with each foreman." A foreman is scarcely in a position to vouch for the savings of all the employees.

3. Are they accurate and reliable?

"The Blank Company made 11 per cent last year" may need to be hedged with the qualifying statement that this was before certain charge-offs.

4. Does the statement seem probable?

"This direct-mail piece pulled 72 per cent" is unreasonable without further explanation.

5. Is reference to authority definite?

"President Jones said . . . ." When? Where? In what connection?

6. Is authority competent?

An advertising man is seldom an authority on stocks and bonds, nor is a motor magnate likely to be an authority on grand opera.

7. Is authority prejudiced or biased?

A politician naturally favors a law that he has fostered; a salesman sees only good in stock that he sells.

8. Has he had sufficient opportunity to know the facts?

"Senator Whoosis advocates the Swedish economic system"—after a six weeks' visit!

9. Is information the result of observation or hearsay?

"Smith said that the government was going to build dams on Overflow river." After he had merely watched the surveyors.

10. Is authority aware of the significance of his statements?

"Chemist Jones said that this product will replace steel." He meant for certain minor and specified uses, but this caused a drop in the market.

11. Are the facts out of date?

"Rents in Blankville reach 25 per cent of income" was based on a seven-year-old report. Since then, rents have dropped.

12. Is the authority likely to be accepted?

Herbert Hoover's statement, regardless of its correctness, might be anathema to certain groups of readers.

13. Will the facts cause a certain effect regularly?

"Investment trusts paid 15 per cent" was true at one time, but it doesn't prove anything now.

14. Is a statement begging the question?

"With the commercial success of television, stock at 30 is a good buy." The commercial success is a false assumption.

15. Is a result assigned to a single cause, when in reality, there are several?

"The returned-goods evil is the result of loose credit." It may likewise be caused by bad fitting and poor salesmanship.

16. Are there insufficient data to warrant conclusions?

"Twenty women said that they refused to buy from door-to-door salesmen. Therefore we should abandon door-to-door selling."

17. Are the cases typical?

"Walnut growers have done successful advertising. Tung-oil producers can do likewise."

18. Is persuasion confused with proof?

"Money invested in Blank Company aids starving women and children."

Hasty Generalization

Hasty generalization, which is drawing conclusions from too few data, is made more frequently while interpreting data than while actually writing the report. One must realize, too, that perfectly legitimate conclusions presented in vague or indefinite terms may appear generalizations. For instance, there were adequate data in the following illustrations, but loose writing made them seem questionable.

Much trial-and-error method seems to be reflected in, "There was *considerable* difference of *opinion* as to the value. . . . " The writer probably referred to facts instead of opinion, but his choice of words leaves the wrong impression. This is also true in the following report: "It was unanimously 'believed that

it was ineffective' whereupon a new 'strong belief' was formed, and it is their 'belief' now that 'it could be applied successfully'."

An attempt to "equalize these apparent inconsistencies" might have been based on facts, but the writer loses all of their value.

It is bad enough to make interpretation of data on hasty generalization, but it is doubly bad to give that impression when sufficient facts were really established in the investigation.

It might be well to add that generalization—setting up a general law after the study of adequate specific cases—is a legitimate form of evidence and should not be confused with hasty generalization.

Analogy

Analogy assumes that if a thing has one or two characteristics in common with something else, it will have a third characteristic in common. Naturally such an assumption is often fallacious and cannot be used as complete proof. Analogy—particularly figurative analogy—may often be used in a report to make a point clear but not to prove it conclusively. Such analogy should be carefully presented so that the reader will not think it is being offered as proof.

Example of figurative analogy:

"Don't change generals in the middle of a campaign because you wouldn't change horses in the middle of the stream." [Technically, of course, a change of horses in the middle of some streams would be advantageous, and a general removed in the middle of a campaign might save lives and win battles.]

To attempt to introduce analogy as proof sometimes leads to ludicrous conclusions.

"Since a flea jumps 1,300 times its own length, a man should jump 1½ miles." "Since a horse gets its growth in four years and lives to be twenty, a man should live to be one hundred."

While it is not good proof, analogy frequently aids in presenting facts clearly or in adapting the material to the reader. For when the material in the report is unfamiliar to the reader, presenting it as analogous to something that he knows will recall familiar associations and will permit him to grasp the facts more quickly.

"When the Vanderbilts purchased the Big X, the common stock was selling around $70 a share, and it is now selling close to $235. . . . If the Vanderbilts can do with the C.I.P.H. what they did with the Big X, the stock should be a good buy." [The first sentence alone would be offering analogy as proof, but the last sentence labels the first as merely an illustration. This kind of psychology often puts the reader in a receptive frame of mind, though it can hardly be defended on a factual basis.]

In reporting on airplane motors to a reader unfamiliar with them, it might add to clearness to compare them with automobile motors, which probably would be within the reader's knowledge.

Generalities

Emphasis and generalities are foreign to each other and cannot be reconciled. General statements, coming from insufficient proof or from a barren vocabulary, serve only to confuse or antagonize the reader.

"A large number of inquiries have been received." [How many is "large"? Two dozen or five hundred?]

"Several people said . . . ." [Leaves the impression that so few could be inveigled into making a statement that the writer was afraid to mention the actual number.]

"Much rain . . . ." [May mean 2 inches or 10.]

"The beginning of the year 1940 finds our business normal and with satisfactory prospects. A survey of probable demand for 1940 indicates a reasonable increase." [Such general statements make a report sound questionable even if its material is basically sound. The reader doubts the status of the company, its management, and its prospects all because of the general terms "normal," "satisfactory," and "reasonable." Definite units of measure would have given the desired effect.]

"Standards of quality have been raised and maintained in our products, and the policy of materially improving details of our product has been followed out in an effort to keep quality above that of competition. We have materially added to our lines in exclusive features and have perfected plans for considerable advance in this respect during the year." [Even the stockholders in the company, to whom this was addressed, probably knew so little about the "standards of quality raised," the "policy of materially improving details," and the "exclusive features added" that they might think the references were to anything from new production machinery to new office equipment for the president.]

Fallacies

Even though an investigator has interpreted his data carefully and correctly, for various reasons he may write a report that leaves the impression of fallacious reasoning.

Sometimes he has been so close to the work that he will assume a truth in writing and work from that assumption, when he has not actually proved it to the satisfaction of the reader. Maybe he has proved it in his investigation, but the reader must see the evidence to be convinced that this begging the question is not merely a dodge.

Although many data have been collected during the investigation, the writer may not include sufficient of them in his report and hence he may leave the impression of drawing conclusions from insufficient facts.

An apparent fallacy, though not always a real one, may come from not properly defining the question or terms and may thus cause the reader to criticize the facts from an erroneous point of view.

In attempting to adapt the report to the reader, the writer should omit material capable of such misunderstanding as to make his conclusions seem illogical. Likewise, he will not play up one part of a thing so much that he casts doubt upon the rest.

A certain personnel policy is not proved good or bad simply because a large number of companies favor or disfavor it. While testimony of numbers will have some effect, facts or the reasons why, are absolutely necessary to gain conviction.

Presenting evidence with a traditional or emotional flavor may improve an oration, but it has little effect on a report reader who wants facts. Finally, to assure himself against fallacious reasoning, a careful investigator will check his written results against some such list of undesirables as the following:

Making comparisons between things not having common qualities
Indicating facts that simply cannot be produced by the conditions
Considering something as a cause which is really an effect of another cause
Facts that happened to cause a certain effect, but would not do so regularly
Something assumed as a cause that operated after the effect was already obtained
Using a cause that is inadequate to produce the effect
Begging the question
Making hasty generalization
Assigning a result to a single cause, when it is the result of a combination of causes
Using cases that are not typical
Applying as a general law the results of a particular deduction
Giving insufficient data to warrant conclusions
Making insufficient definition of terms

Depending on testimony that is of little value
Citing insufficient, doubtful, or prejudiced authority
Using analogy improperly
Employing persuasion as proof
Considering as authoritative results that are based on too few or improper figures
Comparing data that were collected from shifting points of view
Presenting unconnected results

CHAPTER XIV

HELPING THE READER TO UNDERSTAND

I. Interpreting for the Reader—II. Adapting to the Reader—III. Getting Action by Persuasion—IV. Humanizing the Report—V. Making the Town Report Intelligible—VI. Pictorial Presentation—VII. Check List for Writing.

INTERPRETING FOR THE READER

Many reports, by accident or design, do more to deaden than to arouse the reader's interest. At the same time they withhold from him information that he needs. Passing over those written by design, consideration of those written by accident shows such a lack of proper interpretation of details that they must be mysteries to many readers and are at least difficult of comprehension for all others.

Until terms and types of accounting service are definitely classified and defined, until the need for advertising a business passes, until the human element is eliminated from business, reports should be thoroughly explained in terms of the general problem involved.

Perhaps the worst offense that falls under interpretation is giving the reader a mass of figures, correct though they may be, with no attempt to show him significant combinations and results. It is the report writer's business to interpret the pertinent figures and combination of figures. Because he has worked with them for weeks and knows the background better than anyone else, his interpretation should be more complete than the reader's, and a great timesaver.

The interpretation of a financial report is determined by its purpose and its readers. The code of financial circles does not have to be explained to the banker, but it does have to be made elementary for the layman investor. The average reader welcomes explanatory material.

Audit reports may contain full or abbreviated comments as determined by the specific authorization. However, some accounting firms, in reporting on small industries, make it a

practice, in the absence of contrary instructions, to give the company the benefit of their experience through detailed comments and suggestions. Practically all companies that receive these reports once insist on the same detailed interpretation in the future. Naturally this practice is not so essential for large companies that have paid economists and research men.

Comments and criticisms on the audit report should be constructive whenever possible. In private reports, the client or employer depends upon the advice of the investigator and expects aid from his interpretation. Recognizing this need and responsibility, firms making professional reports keep a staff of specialists in all phases of business management and control who use audits principally as a basis from which to criticize constructively a client's operations and to assist him in determining future policy.

Striking changes, such as an unusual increase in business, furnish interesting and oftentimes valuable material for comment. Other suggestions of material that may warrant comment are:

1. Detailed information regarding the statement
2. Explanation of important changes during the year
   - *a.* Production
   - *b.* Prices
   - *c.* Distribution
   - *d.* Fixed charges
   - *e.* Expansion
   - *f.* Surplus accounts
   - *g.* Reduction of costs
3. Personnel management
   - *a.* Award of medals, etc.
4. Economic conditions and relations

The American Telephone and Telegraph Company discusses the following topics in an interesting manner:

I. Extension of service
   - *A.* New telephones
   - *B.* Replacements

II. Policy statement
   - *A.* Measures to maintain

III. Progress
   - *A.* Finances
   - *B.* Accuracy and speed of service
     1. Completed calls
     2. Informational calls
     3. Toll calls
     4. Quicker installations
     5. New-type telephones
   - *C.* Extension of transatlantic service
   - *D.* Television
   - *E.* Results of study of speech and hearing
   - *F.* Disasters

G. Personnel work
1. Insurance
2. Pensions, etc.

When a stockholder completes reading such a report, he feels that he knows something about the business in which he has invested his money, even though the details of the financial statement may be vague.

The banker who formerly loaned on the balance-sheet report now demands many data to supplement the work of the auditor. He wants the balance sheet with its background interpreted for him. Entries referring to the plant, product, material on hand, etc., must be specifically explained. He wants to know about the organization, work in process, conditions and value of finished products, sales policy, working force, efficiency of operation, costs, accounting, and engineering facilities in addition to those things referred to in the financial statement. The report accompanying an application for a loan is a presentation of facts plus their interpretation.

A report on production methods, time study, or locating a factory entails many items and many tables of figures. Careful interpretation of each set of figures is essential in bringing out the main points and in saving the reader's time. This often includes comparisons with set standards, which may not appear in the current investigation but which are necessary for a thorough understanding of the situation. The writer, as a temporary expert, must know fully the background of the problem so that he can bring to bear any points that will aid interpretation.

ADAPTING TO THE READER

Most business reports are written for the purpose of getting information to the reader so that he will act in a prescribed way. Obviously, then, the writing should be adapted to his point of view. If an executive is interested primarily in how much a thing will cost or when it will be done, the data should be presented to answer these questions fully and quickly.

Because writers emphasize technical data to the exclusion of their immediate application to solving a problem, executives face many reports with a "do-or-die" expression. Even the technical reader, accustomed as he is to statistics, sometimes shrinks from reports that are a mass of figures, especially if the figures are not arranged and presented in the easiest and most logical

manner. To correct this situation the report writer needs to make a study of the human side of his problem and to write his reports as though the reader were on the other side of the table from him, where he can watch the expression on his face as he reads each section. By taking the role of reader as well as writer, he will determine in advance many questions that the reader will want answered, such as terms and expressions that are not clear.

Lack of imagination in fitting figures into the lives of the readers or into their economic conditions causes many financial reports to be stiff, stereotyped, and unadapted. Significant facts either are not featured or are selected for their interest to the writer rather than the reader. They are neither interpreted nor adapted.

Terminology such as issues, mortgages, interest charges, kilowatt-hours, all must be dry, legalistic, forbidding terms unless special effort is made to adapt them to the reader.

Choice of subject matter, news value, human interest, persuasion are important in telling the story to the reader. To make human the story, modern practice demands that conversational tone, good English, and all the arts of the writer be employed to gain the interest and good will of the reading public or to obtain the responsive attention of an executive who is accustomed to well-presented material in other fields and sees no reason why he should not find it in reports.

For effective presentation, the report must be adapted to the

1. Reader's point of view
2. Reader's experience and knowledge
3. Reader's method of thinking
4. Nature of the subject matter

The man who is going to open a mine will have a different point of view from the man who is going to invest in one. A report on tractors for a farm group will not have to spend so much time on the general need for tractors as if the report had been made twenty years ago, because the group now has gained experience and knowledge of the subject. The bankers' or brokers' method of thinking concerning bonds makes it possible and desirable to use financial terms, while if a report on the same bonds were made to a possible group of laymen buyers it would have to be altered to fit their background and purpose.

For the reader whose method of thinking is ultra-conservative, a report must be tactfully written if it is trying to change his current practice. For the executive who makes quick decisions, the report will have to be adapted in tone and organization.

Adapting the report to the nature of the subject matter may determine whether it will be long, short, simple, formal, technical, condensed, or detailed. Some executives expect most of their reports in simple letter style, with accompanying exhibits. This style fits the subject matter, which is usually simple and confined to one or two points; it also fits the readers' method of thinking. When they grow accustomed to a certain style in these regular reports, they know where to look for each item. They may prefer to have no introductory material and may wish to draw their own conclusions. The reports are adapted to the executives' needs or desires, and to attempt to present a report in constantly varying style would be poor adaptation.

Titles and arrangements with which the accountant is perfectly familiar may be so much Greek to the section boss in Department 1*A*. Charles Reitell tells of a factory in which the cost system was of the most advanced type. Apparently nothing had been overlooked in the effort to achieve perfection, but the desired results were not being accomplished. Foremen and bosses received the reports but apparently paid little heed to them as possible aids in improving performance. Finally the accountant hit upon an idea. He took his report forms and removed all the old customary account titles, department numbers, etc. He replaced them with personalized heads; for instance, in place of the former ordinary reference to the department by number, he put the foreman's name, and he similarly personalized the headings on the other columns and forms which were used for reports to the minor executives. "Both a personal pride and a personal responsibility were evoked forthwith, and at once decided interest in getting a good report came from the minor bosses."[1] The same principle of adaptation to knowledge and experience through appropriate titles and arrangements holds true for the more important executives.

Most business reports are interesting to the executive because of the results attained. He trusts the investigator for the accu-

[1] Charles Reitell, "Humanizing Cost Findings," *National Association of Cost Accountants Bulletin*, April 1, 1929.

racy of the data, or he would not have given him the commission. Therefore, the wise investigator takes cognizance of this desire for results first and does not force the executive to follow through a maze of data arranged in chronological order before his search is rewarded.

Of course, occasionally the report is one in which the executive demands all the data so that he can draw his own conclusions instead of accepting the conclusions of the report. In that case the logical or chronological order of arrangement is correct. But many industrial-engineering report writers would do well usually to follow the modern style of presenting conclusions and recommendations first and to leave the data to be studied at will. From this idea has come the *double* report, which first gives the interpretation of the high lights and the low lights for the reader's quick grasp, and then adds masses of data which would be of interest to a few technical readers (especially for reference) but which would kill all general interest if they were included in the explanatory section.

GETTING ACTION BY PERSUASION

Although it may be sacrilege toward the old concept of report writing to admit the use of persuasion, it is so commonly done that we cannot omit brief mention of it. Of course persuasion in the sense of influencing the reader beyond the value of the facts is not found in reputable reports, but persuasion in the sense of presenting the material in a manner which will assure its being accorded the consideration to which it is due is employed in direct proportion to the ability of the writer. Public consultants, found in some types of engineering, in marketing, and in advertising agencies, "keep the wolf from the door" by the accuracy of their investigations and by their convincing presentations.

Persuasion is largely a matter of gauging the reader's resistance, getting on common ground, and identifying your course with his beliefs; for instance, a report on slum clearance might emphasize humanitarianism, disease and crime, or real-estate values. The primary motives that cause men to buy also cause them to act, namely, duty, admiration and approval, emulation, power, adventure, loyalty, and fear.

Certain consulting engineering firms spend almost as much on getting their reports ready for presentation as they do on the actual collection of data. They recognize the fact that many business executives are influenced materially in their actions and reactions by the appearance and general impression of the report and that they are frequently more interested in conclusions than in the nature of the data and method of their accumulation.

Before a vote is taken on appropriating money for an engineering project the directors or public must have the engineer's report and give it some attention. Usually the plan involved is a new departure, toward which the voters hold the customary antagonism. Consequently the engineer's report will have to break down that antagonism and to substitute conviction. To say that this does not embody salesmanship in knowing how to present material effectively is winking at fact.

Properly presenting facts pro and con and relating them to other considerations is a persuasive, convincing method. Using carefully deduced findings (not guesses) taken step by step from unquestioned facts and expanding the subject in terms clear and convincing to the reader are steps of persuasion. Pictures of alleys needing sewers or of inefficient or dangerous machinery or charts of health statistics are persuasive.

Persuasion in the reputable report is merely proof provided with interest and sometimes with a motive of self-interest for its acceptance. In business reports one seldom finds appeal to such motives as sympathy, pride, fear, etc., although it is not unknown to some forms of civic or community report such as the Family Welfare Society or the chamber of commerce. Emphasizing "the advantages to be gained" rather than "reasons why" is supplying a motive for the acceptance of the report.

When emphasis on certain features of the subject which the writer has come to believe especially important is brought forcefully to the attention of the reader, it constitutes persuasion. To be legitimate, the points emphasized must be impartially selected, and, to make that possible, the interest and judgment of the writer must be impersonal and fair.

Persuasion is used in the business report, intentionally or unintentionally, by means of fairness in presenting data, restraint in writing, sincerity in tone, tact in handling disagreeable material, the establishing of confidence in the writer, the mechan-

ical readability of the report. the tone used, and sometimes the aggressiveness shown.

Diction, or the vehicle by means of which thought is expressed, does much to inspire confidence in the writer. Adapting diction, tone, illustrations, etc., to the reader is an element of persuasion. It is human nature to be more or less antagonistic to what is unknown or not readily understood. Removing this barrier is merely persuasion. Vivid word pictures, analogies, typical instances—all are means of making the material vivid to the reader. Direct quotation of good authority may overcome the strong conservative power of precedent.

Violation of tact is a violation of persuasion principles. To convict the reader of ignorance if he does not immediately install your new registers will probably mean that you lock his mental door to acceptance. To refer to an unpleasant experience of the reader is usually tactless because it tends to stir up old fears and prejudices. Yet no man is a god, and the report that makes him appear as one will be seriously questioned. Recognizing that a suggestion is only a suggestion and leaving the prerogative of decision to the reader are marks of tact and, hence, of persuasion. Studying people—their needs, desires, etc.—furnishes the background for persuasion in the report.

In a report presented to an industry, this persuasive ring of battle has as much effect as the facts which it contains.

> _____ proposes to make a fight for what it considers its rightful market—and more, to make a fight for that fringe market wherein the selection of its product or _____ will be swayed more by educational propaganda, good salesmanship, and merchandising, than by any self-evident necessity for one of the other materials. . . . It is necessary to meet this competition with better organization, better educational methods, more skillful handling of the customer.

HUMANIZING THE REPORT

Company annual reports illustrate the necessity for adaptation and human interest and show that some companies recognize that fact. Readers are not "financial-minded." Therefore, the regular terminology of the financial report must be written with "you attitude" instead of "we attitude." Financial reports lack interest to the average reader. They bury all achievements under cold figures. Yet during the year in every business events

occur which may be full of human interest. Probably because their business is so widespread and so dependent on "people," insurance companies were among the first businesses to attach interesting data to their financial reports. They recognized the opportunity to develop confidence in the company's management, to foster greater pride in the employees, and to acquaint the public with the scope and importance of the company's activities. New acquisitions, additions, improvements, new markets entered, changes in personnel—these are only a few of the things that can be and are told to an interested audience.

The old style of introducing a reader to the annual report was formal and obvious.

To the Stockholders:

The Seventy-fifth Annual Report of the Blank Company for the year ending December 31, 1939, is herewith presented with accompanying exhibits of the year's receipts and disbursements and of assets and liabilities at the end of the year.

A more direct and interesting type of lead utilizes something of news value.

In common with nearly all businesses, the Blank Industry found the year 19— a trying period.

Another company frankly admits a bad year.

Volume and profit for the twenty-eighth year of our company's business are substantially lower than last year.

Presenting a more favorable picture is:

As shown in this report of your company's activities at home and abroad for 1940, earnings compare favorably with those of 1939.

Realizing that there are both *you* and *I* in business, company reports tend more and more to emphasize the conversational style.

You will note that . . . .

Your company holds the mortgage . . . .

For *your* information we give *you* . . . .

But humanization of report style is not secured by merely mentioning "your company" and "your management." If the spirit is lacking, the effect is self-conscious and comparable to that gained by quoting large figures from the balance sheet in the first paragraph.

A better tone is found in these excerpts.

These comments embody substantially the information I should try to bring to each and every employee of the Blank Company if I had time to sit down with you and report to you personally on the 1940 operations of our company.

This annual report for 1940 is being sent not only to stockholders, but also to all employees of the Blank Company.

I believe that a real partnership exists between these two most important factors, because of the investments both have made in the business. The stockholder has invested his savings, the employee his daily services. Neither can prosper long at the expense of the other . . . both are entitled to a complete and understandable accounting by the management.

Here is a list of stores and mail-order plants in which you are a partner.

This business of yours is so varied in character that it is impossible to include in this report a detailed account of every development. A conscientious effort is made, however, to record all salient facts that are of direct interest to the shareholder. If further information is desired, inquiries will be cheerfully answered. The management is always keenly interested in receiving helpful suggestions and constructive criticism.

Other forms of interest and persuasion are found in graphic presentation of expenditures, statements of the amount of money invested for each worker, pictures of employees at work or at play, awards won for safety or improvement suggestions, pictures of company products, and methods of production. A photograph of an inhalator squad in action may reconcile the irate taxpayer to the expenditure.

The substitution of everyday language for financial terms is often good salesmanship. Assets, liabilities, reserves may not mean much to the average employee, but he knows what "things we owe" means, and that is the basis for the new terminology.

Every-day Language in an Income Statement

We billed our customers for products purchased from us	$51,699,063
From which we had to deduct for bad debts and allowances	4,846,326
Leaving us a net return from sales of	$46,852,737
We received dividends from other corporations amounting to	46,372
And interest, rents, and income from other sources amounting to	167,421
Which gave us a total income to work with of	$47,066,530

Note the new terminology in the following:

How the Corporation Earned Its Living in 1939*

	Total Amount (Millions of Dollars)	Per Cent of Total	Total Amount Per Employee
U. S. Steel sold to the public goods and services	$857	100.0	$3,829
This revenue was disposed of as follows:			
Goods and services purchased from others	$310	36.2	$1,384
Wear and usage of facilities (depletion and depreciation)	61	7.1	274
Taxes	67	7.8	299
Interest paid (for the use of savings, the ownership of which is evidenced by outstanding bonds and other obligations)	9	1.1	42
Leaving for wages for the services of men and facilities	410	47.8	1,830
This was disposed of as follows:			
Wages and salaries for men (being 90 per cent)	369		
Wages for the use of facilities	41		
This was equal to a *wage of* 3.0 *per cent for the use of tools* in the form of plants, facilities, equipment, and other assets essential to the production and sale of goods and services and the payment of wages and salaries. These tools or assets represented savings, the ownership of which is evidenced by outstanding preferred and common stock.			
This wage was disposed of as follows:			
To the holders of preferred stock	25		
Set aside for future needs	16		

* "U. S. Steel Corporation Annual Report," 1939.

As one company defines *surplus*, "This is the profit made by the investor-partners since the beginning of the company, that they have not taken out in dividends. The investor-partners left the balance of profits in the company for a rainy day."

Contrast, for instance, the method used by two companies in telling the reader about the sales volume of their respective organizations for the period covered by the reports.

The annual report of one manufacturing company tells the story in this way.

> The lower sales volume for the year reflects a continuation of the hesitancy on the part of the buying public that was apparent and mentioned in the last Stockholders' Report submitted a year ago.

Lewis H. Brown, president of Johns-Manville Corporation, tells about that company's sales with a cartoon and the wry comment:

> As you can see, the J-M Sales Dollar had a rough time of it in 1938.

Both companies also had to pay taxes and they tell the reader about it in their reports, in their own way. The first company explains:

> It is again appropriate to refer to the increasing tax burden carried by your corporation, a detailed comparison of the payments for the past four years appearing as follows . . . .

The second company relates, showing Johnny Dollar with a big slice gone:

> Then along came the tax collectors, local, state, and federal, and when they left the J-M sales dollar was down to 35 cents.

Whereas the old annual report was merely an unintelligible financial statement, the modern one discusses the company from at least four angles: (1) economic and social aspects, (2) financial aspects, (3) operating and product facts, (4) selling the industry as a whole.

It interprets for the stockholder and the employee the four-cornered partnership between investor, labor, customer, and management. Economic conditions, legislation, taxation, employee relations, operations, research, and product development are "sold" to the reader. Rumor is shattered by facts. Pictures of employees and officers humanize the report. Pictographs make figures vivid. Some of the many subjects covered concerning employees are: wages and annual income, working conditions, health, employment statistics, insurance and benefit plans, safety measures, training courses, pensions, bonuses, pay roll and wages, length of service, amount invested per worker, credit unions, collective bargaining, etc.

Personalized presentation in the report includes conversational style, question and answer, appreciation of stockholder and employee loyalty, invitations to visitors, competitive situation, anniversary numbers, identification of personnel, directory of branches, product sales, action pictures.

A profitable study of the increasing interest in annual reports may be made by analyzing recent reports to find how the following topics are handled:

1. Comparison of several reports having to do with labor economics—wages, pay roll, etc.
2. How much and what kind of attention is given to employees in the annual report?
3. Methods and extent of presenting tax information.
4. Economics as handled in annual reports—prices, markets, buying power, tariff, etc. (exclusive of labor and taxes, since they were covered in 1 and 3).
5. Governmental relations (exclusive of taxes).
6. Humanizing financial facts (types of breakdown, how dramatized, terminology, etc.).
7. Relation of business to society (stockholder, management, employee, customer).
8. Educating readers in the company and in the general industry (product development, uses, extent, research, etc.).
9. Personalizing the annual report.
10. Format and make-up.
11. Interesting methods of presenting financial and operating information.
12. Public and community relations.
13. Outline of all possible heads that are covered in 12 or more annual reports.
14. Salesmanship in annual reports.
15. Selected examples of good and bad writing in annual reports.
16. Study of auditor's certificates.

MAKING THE TOWN REPORT INTELLIGIBLE

Words and phrases that express the correct meaning, create the proper atmosphere, and give a true picture of the facts to the reader are the tools of the report writer. By means of these methods, the technical phrases of the accountant and professional administrator are translated to the understanding of the average reader.

Unfortunately, the municipal report of the past was largely a mass of facts and figures seemingly intended to boost the city administration or to befog the reader so that he would know nothing about his government. With the increase of government

functions, the tax levies rose sharply. The hard-pressed taxpayer became more curious as to the purposes of his government, and the equally hard-pressed officials found it beneficial to give a clear accounting of their stewardship. From this meeting of minds, urged on by C. E. Ridley, executive director of the International City Managers' Association, and James P. Taylor, secretary of the Vermont State Chamber of Commerce, the municipal report has been developing a definite trend toward readability and hence greater usefulness.

The personalized style in which the reports of small Vermont towns are written well illustrates the trend to familiarize all classes of citizens with the activities of their community.

Extreme frankness in report writing is illustrated in the question put to the citizens of Charlotte, Vt.: "Several citizens have paid for the use of the town tractor. Have you?"

The professional atmosphere of a city health-department report is dispelled by this introduction:

> How was your health in 1935? What effort did you make to keep normal and healthy? Did the family budget go as a preventive rather than a curative measure?
>
> Your city made every effort to prevent disease and to make a safe community in which to live.

Short, vital sentences, such as these, describing incidents that to most people have become prosaic for lack of action, lift the activities of city government to a position of adventure.

The city report gains life from interesting anecdotes of the mayor's office, the police department, and even the humble dog pound. This last department may have been obscured by more important activities, but a brief paragraph in a Topeka, Kan., report brought it to the attention of the public.

> Recently a gas line has been ordered to carry natural gas to the pound so that heat will be provided that the impounded animals may have humane treatment.

By catering to the human interest of the average reader and by describing otherwise dull facts in interesting, simple, and even colorful language, many involved descriptions are made readable.

Two logical factors enter into the compilation of the modern town report: (1) the content and its arrangement, and (2) the techniques by which presentation can effectively be made.

The most logical arrangement and description of the content of the report may be outlined in this way:

1. An attractive and attention-compelling *cover*, not necessarily expensive, but set up in an interesting way, using photographs, sketches, and hand-lettered names and slogans.
2. An informative and attractive *title page*, neat in arrangement, setting the formal tone of the report that is to follow.
3. A complete and logically arranged *table of contents.*
4. A brief but informative *introduction.*
5. A formal *letter of transmittal*, preferably original in form.
6. An outline of the *achievements of the past year* and plans for the future with suggested methods for their execution.
7. An *organization chart* of the structure of the city government for information and reference.
8. *Departmental reports* logically arranged and interestingly written.
9. A *financial section* containing complete accounting schedules for special analysis and an adequately described *budget summary.*

The methods by which these various topics are effectively presented are:

1. An interesting style of descriptive and narrative writing that will report all the facts to the reader regardless of his position.
2. Illustrative material, photographs, and sketches, that will beautify the report, economize the space used for description, and bring to the attention of the reader little-known facts about the city's activities.
3. The presentation of comparisons, trends, and relationships of various factors by means of graphs and charts that economize space and report statistics in a visual manner.

The work of James P. Taylor in making effective town annual reports represents the application of the principles of adaptation and interest. He believes that the way to make a better town is to educate the citizens. Through the use of graphic charts, every voter can see instantly the state of affairs in each department. Costs of other towns contrasted in comparative charts and tables urge local citizens to vote for greater efficiency.

The lack of interest typical of the old-style municipal report is aptly described here.

Too frequently in the past, at a certain time of the year, someone decides, "Now I must produce an annual report." He takes out a pile

of productions, and makes up another like unto them. There is a time-honored list of items, none of which may be omitted. The routinism passes easily from form to content, so that, instead of vigorous description or narrative, there is apt to be a complacent restatement of hackneyed phrases. In place of a typographical covering for an encyclopedia should be substituted an annual report drafted with the interests of the lay citizens in view. The report should not be planned for those who already know a great deal about the municipality; it is for those who do not know much about the city hall.[1]

The typical municipal report of several years ago opened upon a very formal letter of transmittal, which was followed by page upon page of drab statistical tables with little more explanation than the titles to the schedules. This usually constituted the entire report.

The modern annual town report, however, starts with a summary letter of transmittal, informal in style, which sets the tone of the entire report and presents in a brief and interesting manner the accomplishments of the city during the past year, the current financial situation, and a tentative plan of activity of the coming year.[2]

Following the letter of transmittal, a complete chart of the organization of the city government is given. In some reports the name of the official in charge of each department or function is included on this chart; while in others a roster of all the officials is given on the opposite page. This type of introductory material helps the reader to gain a unified picture of municipal government as a whole. The body of the report is broken up into divisions, one for each of the major departments or activities.[3]

Careful editing of the material going into the annual report has been one of the outstanding advances of municipal reporting technique. The style of writing used tends to be journalistic in both title and text material.

In place of the stereotyped title, "Annual Report of the City of Blank," more interesting titles, such as "Municipal Affairs," "Civic Affairs," "New York Advancing," and "Wichita Progress

[1] WYLIE KILPATRICK, "The Preparation of Public Reports—I," *American City*, 44: 125, April, 1935.

[2] C. E. RIDLEY, "Annual Appraisal of Municipal Reports," *National Municipal Review*, 24: 35–38, January, 1935.

[3] "Techniques of Municipal Reporting," *Public Management*, 17: 365–368, December, 1935.

Annual," are used to attract attention and give life to the whole report at the outset.[1]

Major division headings have been made equally attractive by new-style, journalistic, subject-and-verb heads which indicate specifically what is in the succeeding section: "City Manager Edy Presents Budget of $1,270,000—Tax $1.59," "City Purchasing Agent Buys 60 Per Cent in City," "Brighter Trees for City Streets Is Plan," "Austin Remains on a Cash Basis," "White Fleet Improves Garbage Division."[2] A good-natured tone is struck in the title of a thumbnail sketch of the activities of one city by "What Your City Does for You! But What Do You Do?"[3]

The easily read, interesting style used in describing certain functions of city government is well illustrated by excerpts from a Wichita, Kan., report describing the benefits received from its system of street maintenance:

> If you lived in a frontier county your budget would have been taxed to the limit to cover maintenance of roads to and from your property. A good deal of time and effort would have gone into making roads passable and safe. Since you live within city limits, your private expenses were negligible for such upkeep. Your city took care of it for you. If you lived on a dirt street the city graded and marked it for you. If you lived on a paved street it repaired, swept, and flushed it for you.[4]

Increasing importance has been placed upon illustrative material by the editors of municipal reports. Photographs of the physical plant and equipment of a city are used to brighten up reports that might otherwise tend to bore the reader. The use of photographs on the covers of reports is also common. Trenton, N. J., covers its annual report with a reproduction of an aerial map of the city upon which is imposed the title, "Trenton Reports—19—." Several cities use the device of "bleeding-off" pictures on the pages of their reports.[5] Topsham, Vt., received

[1] E. D. WOOLPERT, "Annual Municipal Reports—1936 Models," *Public Management*, 18: 297–300, February, 1937.

[2] "Two Types of City Reports," *American City*, 42: 179, January, 1930.

[3] *Ibid.*

[4] WOOLPERT, *op. cit.*

[5] *Ibid.*

a great deal of publicity one year when the cover of its report carried a picture of a prize-winning cow owned by one of its inhabitants.

The problems in presenting reports on municipal affairs in an intelligent and understandable way have been and are being met by the more progressive communities. In commenting upon the improvements in municipal reporting, as gauged from the results of annual appraisal, we find:

> This decade has seen remarkable changes in the quality as well as in the quantity of municipal reports. The auditor's report, with minute detail, . . . is fast disappearing. No longer is the hurried and harried citizen expected to wade through a hundred pages of facts and figures. Instead, he is treated to a brief, attractive, readable, interesting account of the activities of his city's government; brief, because the average length has decreased from 90 to 55 pages; attractive, because in physical make-up and illustrative material the modern report compares favorably with the best periodicals; readable, because the reports are not compilations but narratives, well organized with tables of contents and organization charts; interesting, because they treat of government in terms of activities as well as of expenditures.[1]

In addition to meeting a demand for accurate information, modern municipal reports are responsible for an increasing interest in the activities of town government on the part of citizens in general. They are being sold on citizenship—not on the city administration.

The various competitions and contests carried on by public and private agencies to improve municipal reports are responsible for much of the improvement. Not only do they provide an incentive to modernize reporting technique, but they do great service in assisting communities to solve their particular problems.

The following criteria are used in the appraisal of municipal reports:[2]

I. Date of Publication

1. *Promptness.*—The report will have little value unless published soon after the end of the period covered—six weeks as a maximum.

[1] C. E. RIDLEY, "Annual Appraisal of Municipal Reports," *National Municipal Review*, 26: 34, January, 1937.

[2] *Ibid.*, 26: 1: 1-5.

II. Physical Make-up

2. *Size.*—Convenient for reading and filing, preferably 6 by 9 inches.

3. *Paper and type.*—Paper should be of such a grade and the type of such size and character as to be easily read.

4. *Important facts.*—The more important facts should be emphasized by change of type or by artistic presentation.

5. *Attractiveness.*—The cover, title, introduction, and general appearance should aim to attract the reader and encourage further examination.

III. Content

A. *Illustrative Material*

6. *Diagrams and charts.*—Certain established rules should be followed to insure an accurate and effective presentation.

7. *Maps and pictures.*—A few well-chosen maps to indicate certain improvements, and a liberal supply of pictures, pertinent to the report, should be included.

8. *Distribution.*—Great care should be exercised in placing the illustrative material contiguous to the relevant reading material.

B. *Composition*

9. *Table of contents.*—A short table of contents in the front of the report is a great aid for ready reference.

10. *Organization chart.*—An organization chart or table indicating the services rendered by each unit, if placed in the front of the report, will help the reader to a clearer understanding of what follows.

11. *Letter of transmittal.*—A short letter of transmittal which either contains or is followed by a summary of outstanding accomplishments and recommendations for the future should open the report.

12. *Recommendations and accomplishments.*—A comparison of past recommendations with the progress toward their execution will serve as an index to the year's achievements.

13. *Length.*—Fifty pages should be the maximum length.

14. *Literary style.*—The text should be clear and concise, reflecting proper attention to grammar, sentence structure, and diction.

15. *Arrangement.*—The report of the various governmental units should correlate with the organization structure or follow some other logical arrangement.

16. *Balanced content.*—The material should show a complete picture, and each activity should occupy space in proportion to its relative importance.

17. *Statistics.*—Certain statistics must be included, but, wherever appropriate, they should be supplemented by simple diagrams or charts.

18. *Comparative data.*—The present year's accomplishments should be compared with those of previous years, but only with full consideration of all factors involved.

19. *Financial statements.*—Three or four financial statements should be included, showing amount expended and the means of financing each function and organization unit.

20. *Propaganda.*—It is unethical and in poor taste to include material for departmental or personal aggrandizement. Photographs of officials, especially of administrators, seem out of place in a public report.

PICTORIAL PRESENTATION

Pictorial presentation, perhaps civilization's oldest method of achieving clarity and vividness, is being employed more and more by modern report writers, especially in presenting statistics to the general public.

Illustrations are justified upon the ground of adjusting to the reader the presentation of the idea. In one metropolitan daily survey of a trading zone, one finds such pictorial illustrations as maps, pie charts, bags of money, graphs, and pyramids. In another survey, one sees pictorial representation of values of homes by heights of houses, upkeep of homes by a series of chairs of different quality, electricity in homes by a light bulb superimposed upon the house, incidence of vocations by men in garbs characteristic of their professions, days on which soup is served and the number of times each day by the number of cups placed in a column. It is unnecessary to give a list of the many varieties of illustration since these may be easily seen in public reports, especially in the annual reports of industrial companies.

The value of the representation can, of course, be judged only in the light of purpose. That illustration has value is demonstrated by its widespread use in presenting business conditions and results. Charts serve both the administrative and the publicity function of business, although to be effective in either case they must be adapted to their immediate purpose.

CHECK LIST FOR WRITING

When the report is written, read it aloud. If it is easy to read, it will be easy for the reader to understand. If there are places that seem slow, they are probably either wordy or not clear, or both.

After writing the body of the report, ask yourself these questions:

Have I used correct and adequate facts from among the data collected?

Is the scope of the report properly limited?

Did I define my terms and issues clearly?

Is the presentation concise? Perfectly clear?

Are the conclusions sound and the recommendations workable?

Have I quoted good and sufficient authority?

Are the major and minor issues clearly set forth?

Have I adapted the report to the reader's point of view?

Have I adapted it to the reader's experience and knowledge?

Have I adapted it to his style?

Does my writing fit the subject matter, or is it too technical?

Have I used enough imagination in presenting the facts to answer all the unasked questions in the reader's mind?

Have I used the best pictorial presentation for this type of reader?

Is the mechanical make-up easy to read?

Have I by means of type size and placement distinguished among the different values of heads?

Have I used an order of material arrangement that will attract and hold the reader's interest?

Have I given the proper amount of space to the things that should be emphasized? And less to minor points?

Does the report sound as if a human being wrote it?

Is the tone impartial, yet human?

Is the report fair, tolerant, broad-minded, dignified, but not stiff?

Are the conclusions definite rather than evasive?

Are the recommendations advisory rather than imperative?

Have I at any point overstepped and assumed the prerogative of the reader?

Are my diction and sentence structure precise, varied, and fresh, or are they "just routine"?

Have I introduced any evidence that will be questioned?

Have I depended at any time on false analogy or hasty generalization?

Are the paragraphs short enough to be read easily?

Did I make the background clear to the reader before I asked him to read the body of the report?

Style in business writing is that "form of thinking in words which gives the fundamental idea its greatest efficiency. Style is perfection of operation." Every writer of a business report should always remember that he is not writing to display his

vocabulary, his education, his wit, or his personality, but to get results.

The report that has the best style is not the one that gets admiration for form, diction, etc., though it may deserve praise under scrutiny, but it is the one that is acted upon because the facts and opinions are so well presented that the reader follows their meaning uninterruptedly and contentedly without undue exertion.

CHAPTER XV

PUTTING THE RULES INTO PRACTICE

I. Memorandum Report—II. Letter Report—III. Short Report.

To discuss reports on the basis of length is as difficult as answering the question, "How long is a string?" Obviously it should be long enough to tie up the package and no longer.

Likewise, a report should be as short as possible and still cover the necessary ground. We have discussed in detail the writing of a comprehensive analytical report, with the understanding that the report writer might use all or any part of the discussion, depending on the extent and purpose of his investigation. In any case the general tone and procedure remain the same.

Because long reports are difficult to reprint, we here illustrate the principles of the preceding chapters in some shorter types.

Of reports that do not require a complete analytical investigation and presentation, there are three common types—memorandum, letter, and short informal or semiformal.

MEMORANDUM REPORT

The memorandum placed on the executive's desk showing the supply of paper in the stock room is a type of report. It may be prepared at regular intervals or upon special request. Since there is little investigation needed, the result is presented in correspondingly simple form.

Many memorandum reports are wholly routine and are merely concerned with filling in a printed form. The chief problem falls to the man who prepares the original form, for the form must be clear and simple yet provide exact information. It is often necessary to collect data in a form that ties up with previous facts or with data from other departments.

A monthly report to a business research bureau to aid in compilation of state statistics takes this form.

Confidential Credit Report for July, 19—

No. _____

Please send by return mail
To: Bureau of Business Research
The University of Texas, Austin, Texas

1. Net sales..... $_____
2. Credit sales..... $_____
3. Total salaries of credit department ..... $_____
4. Outstandings, July 1..... $_____
5. Collections during month..... $_____

Note.—It will not be necessary for you to mention the name or address of your store. This card bears your number and the key to this number is held in strict confidence by the Bureau of Business Research, The University of Texas.

For intraorganization reports, many companies use a memorandum form similar to this.

To: _____ DATE: _____
FROM: _____ DEPARTMENT: _____
SUBJECT: _____
REMARKS: _____

This army-style identification is often used to preface reports of several pages.

A slightly more detailed memorandum style, which furnishes opportunity for more discussion and is better arranged for routing to several readers and for filing, is this.

SUBJECT: _____
OBJECT: _____
REMARKS: _____
CONCLUSIONS: _____
RECOMMENDATIONS: _____
REQUESTED BY: _____ DATE: _____
PREPARED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____
NOTED BY: _____
_____
_____
ROUTED TO: _____ COPIES TO: _____
_____ _____
_____ _____

For small jobs requiring minor specifications, the following memorandum form is in common use:

FIRM NAME: _____
ADDRESS: _____
DATE: _____

To: Smith Shipping Co.
Chicago, Ill.

We hereby agree to perform the following detailed work at your plant for the sum of _____ dollars and _____ cents ($_____), including all labor and materials.

DESCRIPTION OF WORK:

_____
_____
_____
_____

LOCATION:

_____
_____

We employ union labor only and are fully protected by Workmen's Compensation and Public Liability Insurance.

SIGNED: _____
Name of company: _____
Signature of official: _____
Title of official signing: _____

Memorandum Report for the Advertising Manager

The attached comparison of Blankville and Binkville linage is of interest and should be helpful on two or three points at least. The situation in Blankville with the *Sunday Tribune* and the *Evening Times* is comparable to our setup here in Binkville. The first thing that will strike you is that the department stores there place 31.8 per cent of their advertising in the morning papers. This means that the morning papers carry about 60 per cent as much linage in this classification as the evening papers, and furthermore 33 per cent more department-store advertising is carried in the morning papers in Blankville than is carried in Binkville.

Another indication that the department-store advertising is more equitably spread over all three papers in Blankville is the fact that 18.6 per cent of the total department-store advertising is carried in the Sunday papers, whereas in Binkville only 11.9 per cent of the department-store advertising is carried in the Sunday paper.

LINAGE COMPARISONS—BLANKVILLE AND BINKVILLE
1st six months, 19—
Total Retail Linage

Blankville		Binkville
1,156,711	Morning	680,965
2,542,969	Evening	1,964,275
867,365	Sunday	514,684
4,567,045	Totals	3,159,924

Total Department-store Linage

588,558	Morning	295,716
918,439	Evening	807,916
337,152	Sunday	149,299
1,844,149	Totals	1,252,931

Percentages

Department-store advertising as a percentage of total retail advertising in each paper

51.2%	Morning	43.4%
36.1%	Evening	41.2%
38.8%	Sunday	29.02%
40.5%	All three papers	39.8%

Percentage of total department-store linage in each paper

31.8%	Morning	23.6%
49.6%	Evening	64.5%
18.6%	Sunday	11.9%
100.0%	Totals	100.0%

LETTER REPORT

Both within an organization and in general business, many reports are submitted in letter form. The content of such a letter report is the result of a minor special investigation, of the writer's own knowledge and experience, or, as is commonly the case, a combination of both. The scope of such a report is usually limited except as it may be broadened by the writer's experience.

The tone of a letter report is more often informal than formal, although the relation between the writer and reader will be the determining factor. Following the style of a complete report in abbreviated form, the letter may, in a single sentence, state the object of the report, authorization for it, scope covered, and method used.

Conclusions, with just enough supporting data to make them clear and convincing, constitute the body of the letter; recommendations, if requested or if implied through the relations of the writer and reader, may be included, usually in the form of the writer's opinions.

Because of its compactness, the letter report should be as carefully organized as a long report. When the letter is of some length and covers several points, the various sections should be given heads.

DEAR SIR:

I have investigated in a somewhat general way, as you requested in your letter of February 4, the advisability and possibility of disposing of your farm in this county.

Frankly, land is selling slowly here, and, although there have been a few indications of revived activity recently, the outlook is not yet promising. Increased taxes due to gravel roads and the general depression in prices for farm products have kept people here from saving much money and have taken away a desire for more land.

Because of the three straight overflows in your district with the attendant breaks in the levee, the levee tax, as you know, has averaged about $10 per acre. Owners of bottom land adjoining yours have been burdened with this tax and are in no position to make further purchases, and it will take several years to make the upland farmers forget the recent river disasters to the extent of investing in this land.

Inadequate shipping facilities cause this to be a rather poor market, and because of stringent times local feeders are buying only enough grain to last till spring. The effect of this is noticeable at the banks.

The farm itself should be one of the first to sell. Its location, convenience, and the condition of its buildings all are extremely favorable for an early sale when land begins to sell. In my opinion, this time will not arrive for another two years.

As nearly as I can estimate current prices, land similar to yours would not be worth more than $60 per acre at the present time. Judging from old mortgages, valuations, and what I know the farm will produce, $90 per acre should be the minimum. It seems to me that to sell now would be too great a sacrifice.

I have investigated the papers as you requested. The deed and abstract were in correct form except for the fact that one old mortgage did not show that it had been released. I have attended to that and am returning the papers as satisfactory.

Sincerely yours,

Mr. Arthur C. Holm,
Holm, Page Company,
2136 Kishwaukee St.,
Blank, Ill.

DEAR SIR:

The plans and specifications for the extension of our machine tool plant at Blank, Ill., as voted by our Board of Directors last July 8, have just been completed. We are now ready to accept bids

on this project from reliable contractors according to the following specifications.

Project

The Smith Machine Tool Company of Blank, Ill., will construct a new west wing to its existing plant located at 2235 Eleventh Street in that city. The new addition will have two stories and a basement, each being 140 feet long and 80 feet wide (11,200 sq. ft.), to be used for general manufacturing purposes.

Material Specifications

The foundation of the new structure will be of reinforced concrete resting on solid bedrock known to exist 16 feet below the ground level. The upper structure will be supported by grade A structural steel; enclosed by brick veneer (various types specified); insulated by fireproofed Maizewood (a cornstalk by-product); roofed by concrete, tar, and gravel; and floored with reinforced concrete.

The detailed specifications concerning the exact dimensions, quality, quantity, and design of materials and fixtures (*e.g.*, plumbing and wiring fixtures) may be had from the company's specification sheets and drawings kept for convenient reference at the plant office.

Contingent Extras

All unforeseen engineering difficulties not encountered in ordinary construction projects or developing from a misrepresentation in our specifications will be assumed as an additional construction cost by the Smith Company. If during the erection the Smith Company decides to make some minor changes in its plans, that right is reserved for the company provided the alteration involves less than $100 expense to either party. In the event of greater changes a new contract will be made with the same or different contractors to cover the additional costs.

Erection Requirements

The Smith Company prefers that construction on the new addition begin before the end of January. In any event it must be completed before September 1, 1939, to make way for the installation of machinery to be operated during the next month, which opens the rush season. In recognition of the will of its own workers and customers, the Smith Company must require that all construction under its control be handled by union labor. Transportation, labor, or price maladjustments cannot be assumed as

an expense nor as a reason for delayed completion by the Smith Company.

Payment for Erection

At the start of construction activities the Smith Company will place at the contractor's disposal one-fourth of the contract price in cash. The second fourth will be paid in cash to the contractor when the project is half completed, and the last half will be paid when the structure is wholly finished according to contract specifications.

Contractor's Bond

The Smith Company will not require of the contractor whose bid is accepted any cash bond to secure the agreement. Instead, the unpaid contract price will be held liable to forfeiture (all or in part) for any losses which the company may suffer through delay or incapacity caused by the contractor.

Bidding Specifications

The Smith Company will not accept bids covering only part of the construction project. Contractors are free to sublet all or any part of the construction they desire providing these subcontracts comply with all the original specifications (*e.g.*, labor, materials, etc.).

Acceptable bids must be in duplicate form, signed by the contractor in charge, and received *by mail* before December 31, 1938. The Smith Company reserves the right to reject any or all bids for any reason, stated or otherwise.

Announcement of the successful bidder will be made by the Smith Company on Saturday, January 14, 1939, at its plant office. The announcement will also be published in local newspapers and sent in duplicate to the contractor whose bid was accepted.

Yours truly,
John C. Brown
Chief Engineer
Smith Machine Tool Co.

The following letter report answers specific questions that have been asked:

I am returning the third-quarter statement of Blank Company with the comment that there is nothing unusual suggested in the recent transactions except that it is apparent that the Blank Company is no longer attempting to build up this fund since the number

of shares outstanding have shown a continuous decrease since the end of 1930 and are now approximately 40 per cent of the 1930 figure.

The performance of the fund over the past three years is not unusually good or unusually bad, the results being a 33 per cent increase in each of the years 1935 and 1936, a 38 per cent decline in 1937, and an 11 per cent advance for the first nine months of this year. The sale of securities and the decrease in cash have apparently been applied to the redemption of certificates as presented.

The list of securities is a representative one, and the asset value of the fund should move approximately with the general market; in other words, if you are bullish for the next year or so, as I am inclined to be, it would be just as well to retain your present holdings with the thought of cashing in at a higher market level when, as, and if reached.

The compensation of the managers is fairly liberal, being ¼ of 1 per cent quarterly on the actual value of the investment fund on the last day of each quarter, but this in turn is offset by the fact that only 1 per cent premium is charged when the certificates are issued, although you must take a 1 per cent discount when they are redeemed.

SHORT REPORT

Although not a distinct type in anything but length, the short, informal or semiformal report is common in every business. The writer necessarily follows to a certain extent the reasoning and methods of the long report but because of fewer data he varies the presentation and arrangement to fit conditions.

Preliminary pages necessary to make clear the long report are dispensed with or condensed into one or two paragraphs on the first page of the short report.

To attract attention, arouse interest quickly, and make the following data more intelligible, a summary of conclusions and recommendations frequently occupies first place in the arrangement of material, especially if the writer's ability is unquestioned.

General Business Conditions

April 20, 19—

Summary

The sharp temporary curtailment in business activity, which extended through January and February, ended in a promising upturn in the first

weeks of March. In mid-March, however, flood waters disrupted some areas and industries sufficiently to delay further improvement. Sectionally, business was lower in the eastern states, which were touched by the flood condition. In areas outside of that section improvement continued.

The most sensitive industry that led the declining tendency of early 19— was the automobile industry. In March production of automobiles speeded up to register a sizable improvement over February. Steel has shown gradual improvement from week to week and during March output was 8 per cent greater than in February. Building and electric power continue to show gains over the previous year but a more optimistic showing has been prevented by natural conditions. For similar reasons carloadings fell below last year's level in two weeks of March, and no improvement over last year was registered for the month as a whole.

Business improvement beginning in March, but delayed in some industries, will show strength during April. The *New York Times* weekly index of business conditions during the first two weeks of April showed a sharp recovery to levels higher than those reached in December and January. Further gains are expected in the next few weeks. Active Easter trade, rising retail sales of automobiles, and general spring improvement coming with milder weather, are likely to carry recovery further in April and the first part of May.

Miscellaneous and Automotive Demands Increase Steel Output

There was an 8 per cent increase in the daily output of steel in March as compared with February, an increase about in line with the seasonal pattern. Production was 17 per cent greater than in March, 19—. The rate of activity was at 58.6 per cent of capacity in March compared with 54 per cent in February and 50 per cent a year ago.

Production level advanced consistently during March and stood at 66 per cent the first week in April and 68 per cent, estimated rate for the second week. At these levels steel production is slightly above the average level of the active years, 1923 through 1929, and is only 15 per cent below the average level of 1929. Observers have continually stated that an active rate of steel output could not be maintained until the railroads and building industries contributed more to steel demand than they are at present contributing. The theory has been advanced recently, however, that miscellaneous demand for steel coming from a number of new and small industries is a major factor in supporting the present rate of activity.

Pressure for immediate delivery on existing orders may carry production slightly higher and activity will be well maintained. Commit-

ments for the future are reported slightly lighter in some markets and a softening in the price of steel scrap suggests that the crest of spring demand will be passed in the near future.

Shipments of United States Steel Corporation increased 16 per cent from February and 17 per cent from March a year ago to make a very good showing, considering the interruptions at some plants caused by floods. Since the beginning of the recovery movement, there has been only one month of better shipments, that of June, 19—, when unusual conditions caused an abnormal peak in deliveries.

Construction Plans Show Seasonal Expansion

March building recovered seasonally from February with an advance of 40 per cent. Recent months have been showing a hundred per cent increase over 19— months. In March, however, the improvement over last year dropped to 62 per cent. Residential building was 72 per cent greater than in March, 19—. Cost of building increased during March from 201.2 to 202.2 according to the *Engineering News Record* Index (1913 = 100).

First-quarter totals for 19— show encouraging increases. Permits were 83 per cent greater the first quarter of 19— than a year ago. Non-residential building showed the greatest improvement, with a 118 per cent increase. Residential building was 75 per cent higher than in the first quarter of 19—. Public-works and public-utilities construction permits showed the smallest year-to-year increase, standing at 60 per cent.[1]

The following report, prepared by a comparatively unknown departmental worker, is illustrative of a short report with the conclusions and recommendations placed at the end. It illustrated also the use of marginal heads.

Accuracy of Electric Meters

I. INTRODUCTION

A. Object

The object of this report is to show the accuracy of electric meters as measuring devices and approximately to determine the character and amount of revenue losses due to fraudulent practices of consumers.

This report was requested by Mr. Smith, Superintendent of the B_____ division, with

[1] This report, prepared by the statistical department for company use, continued with discussions of such topics as automobile production, electric output, carloadings, etc.

the idea that measures would be taken to reduce such losses if they were a sizable item.

II. METHOD AND SCOPE

The data used concerning the accuracy of electric meters were compiled from the records of tests made during 1925 and 1926 in the B_____ division. Supplementing data of service tests, other material was gathered from shop tests, which were conducted to determine the effect on accuracy of overloading electric meters. In gathering data on revenue losses, other meter departments were consulted in addition to the record of known and suspected cases of fraud at B_____. Also, confidential statements of other public-utility companies were used as a basis of comparison.

III. ACCURACY OF METERS

A. Results of Tests

That electric meters are one of the most accurate measuring devices is conclusively shown by the results of periodic service tests conducted during 1925 and 1926. During this length of time 1,245 meters were tested as periodics. Of this number, refunds of revenue were made in 6 cases. In all of these instances the meters were running slightly over 104 per cent accurate. Of the rest of the total tests, 674 were within 1 per cent of being 100 per cent accurate, 501 were within 2 per cent of being exactly accurate, 26 were between 2 and 4 per cent fast, 30 were between 2 and 4 per cent slow and 8 were above 4 per cent slow. The total grand average per cent of accuracy was 99.935 per cent for the entire 1,245 tests.

B. Accuracy and Length of Life of Meters

In all of the cases where the per cent of accuracy was over 104 per cent, the inaccuracy was found to be due to weak magnets. Also all of these meters were between ten and fifteen years old. Therefore it would seem that as the meters age they should be more carefully tested for strength of magnets. The cases where the meters tested slow were found to be influenced by rusting of bearings, or else by the gumming up of the old style oil. The use of the new oil will prevent gumming, and liberal application of oil to bearings should prevent rusting.

C. Overloading

The subject of overloading effect on accuracy of meters and the size of meters that should be installed in residences has long been a question for discussion among metermen. In order to shed a little light on this point, a test of both 5- and 10-ampere meters was made under controlled conditions of overloading. On the 5-ampere meter, which was a new meter in 100 per cent adjustment, a load of 8 amperes was placed. This load would be equal to that created by the use of an electric iron and 4 or 5 lamps of about 75-watt capacity.

After having run the meter continuously under the 8-ampere load for five hours, it was again tested. Both the heavy and light load were found to be out of adjustment. The heavy load being 0.6 per cent fast and the light load being 1 per cent slow. The 10-ampere meter was then tested and placed under the same load. After five hours' continuous registering it was tested and found to be still 100 per cent accurate. Also it was determined that a load down to ¼ ampere would register on the 10-ampere meter as readily as it would on the 5-ampere meter.

IV. LOSSES DUE TO FRAUD

A. Amount

That every public-utility company dealing in electric energy has losses of revenue due to fraud practiced by their consumers is an admitted fact. At the B_____ division in the past two years we have detected 27 cases. The amount of revenue that was lost through these 27 cases was in excess of $200 per month, according to a conservative estimate. Inquiries of our neighboring divisions, D_____ and C_____, yielded estimates of losses due to detected cases in the past two years in excess of $400 and $250 per month respectively. The field men here at B_____, which includes testers, meter readers, and installation workers, estimate that there are over 200 cases of fraud, which they have not been able to detect.

B. Methods Used

The most common and prevailing method of fraud is that of shorting the meter out of the

circuit by means of a "jumper." The seals are sometimes broken and the reading of the meter changed, but this is usually found the first time that the meter is read. One of the most difficult methods to find is that of wiring the house so that a switch, located in an obscure place, can take the meter out of the circuit at will. Sometimes, but not very often, the meter readers make an error in reading. Such errors are easily found and are generally corrected by the following month.

V. CONCLUSIONS

As a result of the investigation it seems that electric meters are about as accurate as possible, and that there is no loss to either the company or the consumer because of inaccurate registering of the meters.

As to the effect of overloading on the accuracy of electric meters, it is clearly shown that overloading does affect the accuracy of meters to some extent.

Losses due to fraud amount to a sizable item but in comparison to the known losses of other divisions and other companies, the estimate of losses here is not too large.

VI. RECOMMENDATIONS

Electric meters are accurate when not overloaded; therefore it is recommended that in all future installations 10-ampere meters be used except in the case of very small houses.

In the case of the losses by fraud, it is recommended that the line wires be enclosed in conduit up to the fuse box and that the fuse box be of the type that can be sealed. This would entail an expense to the consumer that he would not likely look upon favorably. Therefore, as it would be impossible to force the consumer to make such expenditures, it is recommended that the company make the installation at its own expense. It is believed such a course would cut the losses by fraud to a negligible item and would thereby pay for itself within a short time.

(Signed) W. S. WILSON
Engineering Department

Interoffice Report 16

To: H. Cady, Office Manager
FROM: R. A. Meyer, Clerk
DATE: March 29, 193—
COPIES TO: L. Smith, Comptroller
S. Brown, Auditor

SUBJECT: Need and recommendations for rearrangement of General Accounting Office.

OBJECT: During the past six months, the increase in work handled by the General Accounting Office has caused a certain amount of congestion in the use of records in the office files.

In November, 19—, eight (8) clerks were added to the accounting staff, but no arrangements were made with regard to their proper position along the route of work or to their distance from the files in which the records were kept.

To determine the extent of this congestion in obtaining the records used by the clerks and to make proposals for a more efficient arrangement of the office, this investigation was made.

METHODS: The methods used in making this investigation were as follows:

I. *Analysis of File Receipts.* When a record is removed from the files, a card giving the number and date of the file, together with the clerk's name and the time and date removed, is filled out and placed in a small file box. These cards are known as "file receipts."

The checking and verifying of vouchers received from the Bursar's Office precede their posting in the General Accounting Office. Therefore, the greatest use of the records is made upon the receipt of vouchers from the Bursar's Office.

Mr. Jones, Chief Clerk of the Bursar's Office, has furnished the following table (Table 1) showing the various times of the day when vouchers are received by the Accounting Office for posting.

(TABLE 1)

(Hours of the Day When Vouchers Are Received by the Accounting Office)[1]

Since the file receipts are destroyed when the records are returned to the files, permission was obtained from Mr. Colvin, Chief Accountant, to instruct the clerks to deposit all file receipts for returned records in a box placed on the file cases during the investigation.

For purposes of analysis, the office was divided into four (4) areas, as shown in Diagram 1, to determine the position of the clerks removing the most records from the files. The route of work is also shown.

(DIAGRAM 1)

(Areas into Which Office Was Divided for Analysis of File Receipts)

To secure an adequate sample of the number of withdrawals, the analysis was made over a period of two weeks, at specified

[1] All tables and diagrams have been omitted.

times on certain days to coincide with the peak periods as given in Table 1. The times at which the actual test checks were made are shown in Table 2.

(TABLE 2)

(Time at Which Test Checks of File Receipts Were Made)

At each of these specified times, or a few minutes thereafter, the file slips were removed from both the regular and special file boxes and were counted. By counting the file receipts in both the boxes, an accurate check was obtained on all records removed during the past twenty-four hours, thereby including those that were kept in the desks overnight.

II. *Observation of Routes Used by Clerks.* At the time the test checks of file receipts were made, a few minutes, approximately five (5) minutes per day, were spent in observing the routes followed by the clerks in going to and coming from the files.

RESULTS: I. The results of the test checks of file receipts are shown in Table 3.

(TABLE 3)

(Numbers of Records Removed to Specified Areas during Test Checks)

The above analysis of the test checks shows that thirty-nine per cent (39 %) of the records removed from the files are removed by the clerks in the area farthest from the files (Area 4). The clerks in the area closest to the files (Area 1) remove only fourteen per cent (14 %) of the records used.

II. The results of the observation of the routes taken by the clerks in going to and coming from the files are shown in Diagram 2. Under the present arrangement, it will be noted that the path followed by a clerk in Area 4 is very indirect. Considering the number of records removed by the clerks in this area, the time involved in trips to and from the files is of considerable importance.

(DIAGRAM 2)

(Routes Followed by Clerks in Each Area in Going to and Coming from Files)

RECOMMENDATIONS: The results of the test checks of file receipts and the observation of the routes followed by clerks going to and coming from the files suggest some type of rearrangement for the General Accounting Office.

A suggested arrangement for the General Accounting Office is outlined in Diagram 3. It also shows a more direct route of the work and more direct paths to be followed by the clerks going to and coming from the files.

(DIAGRAM 3)

(Suggested Arrangement for the General Accounting Office)

The advantages of this suggested arrangement may be observed by comparing Diagram 3 with Diagram 2. The principal advantages of an arrangement as suggested in Diagram 3 are:

1. The clerks making the greatest and most frequent use of the files are closest to the files.
2. Because of this, the congestion involved in the removal of records from the files by other members of the office would be reduced to a minimum.
3. The routing of the work as it is received from the Bursar's Office would be more direct by placing the clerks along the route of the vouchers according to the sequence in which their work is performed.
4. The time spent by the clerks making the greatest and most frequent use of the records would be reduced to a minimum.

The cost involved in making such a rearrangement would be very little. An estimate received from Mr. Sheets, Estimate Clerk of the Physical Plant, set the total cost at $13.50 (18 man-hours at 75¢ per hour). Since all the equipment involved in the suggested rearrangement is movable, the labor of arranging the desks is the only item of expense.

Reports of various credit-reporting agencies are good examples of short, condensed analytical reports, covering the past, the present, and, to some extent, the future, although they often merely give some indication of the subject's future ability to pay without making actual predictions.

The basic purpose of a credit report is to show why a person *is* or *is not* entitled to credit. The report attacks this *one idea* from every point of view. The general pattern of these reports utilizes many sections of the analytical report. A brief history carries the story to the date of the interview and enables the reader better to understand the present. This identifies the business, its officers, location, capital structure, franchises, age, etc. At the end of the history section there may be a "punch line" showing progress or retrogression.

Other heads may be:

Method of Operation—gives a picture of the essential business methods and surroundings.

Fire Hazard—reports record; nature and condition of premises; characteristics of neighbors.

Comparative Statements—shows gains or losses.

Statement—gives assets, liabilities, sales, operating details, insurance.

Trade Record—shows relations with wholesalers or retailers—amount of credit, payment record, etc.

Comments—provides summary of conclusions, and *present* impressions, which furnish the climax of the "short story."

Each major section, even though it may be only a paragraph, has a well-displayed head. Although very condensed, each thought is expressed in a complete sentence, which has a subject and predicate. The so-called *telegraphic style* that omits subjects and verbs forces the reader to supply too much detail and to do too much guesswork; it thus makes for errror and waste of his time and attention. To use only essential details and to avoid connecting unrelated subjects with "and" is a test of good writing.

Faced with the problem of all investigators, the credit reporter must combine brain and heart. His facts must be of record, his opinions and impressions must be reasonable and clearly labeled, his decisions must not only be fair to each of the parties involved but must likewise be safe for his own sake.

Credit Report

JOHNSON, WILLIAM	Hardware Division Hardware and Paints	809 Nevada St. Chicago, Ill. February 14, 19—

HISTORY

He is fifty-nine, married, a native Chicagoan of German parentage. As a young man, Johnson was employed in this line, and in 1902 he had saved enough to start in the hardware business on his own account. Since then, he has operated continuously, with moderate success, at this address. The business has always provided a comfortable living for the family, children have been educated, and now enough is derived to maintain a home for his wife and himself.

METHOD OF OPERATION

Paint, domestic hardware, tools, and variety goods are retailed to a neighborhood trade which is comprised, mainly, of wage earners. Prices are moderate, and there is no near-by competition. About 75 accounts are sold on EOM terms. Purchases are made from one supplier, and the account is paid on the 10th and 25th of each month.

The store occupies a space about 25 by 55 feet in a brick building which is situated on an outlying semiresidential street. Complete lines of merchandise are stocked. Although somewhat cramped for space, merchandise is displayed in orderly fashion on shelves and counters especially constructed for this purpose. Fixtures are old but serviceable. One assistant is employed who is in charge of keeping the stock arranged and does general clerical work.

Fire Hazard

Space is rented in a two-story building which is old but in normal condition. On the east is a grocery store and a vacant lot is on the west. Johnson has his living quarters on the second floor. The surrounding buildings are old, but offer no unusual exposures. Contents are orderly. *Fire Record:* No fires reported.

Statement

(Copy of financial statement.)

Johnson is a stockholder and member in Cady Brothers, a co-operative purchasing organization through which all the purchasing is done. Considerable capital is invested in merchandise but it is essential to carry this much in order to keep the stock complete. Fixtures and machinery are old, and it is doubted whether the resale value would approximate the figure shown in the statement. He holds investments valued at $3,000 but the market value is uncertain.

He is capable and attentive, and has established a name in this community. His overhead expense is light, and, even during the prevailing conditions of recent years, he has kept his affairs in good condition.

Payments

All purchases are made through one supplier. On February 14, 19—, this supplier states that purchases average $300 to $400 a month, and the account is paid promptly on the 10th and 25th of each month.

Summary

He has an established business in this vicinity, pays promptly, and has conducted his business on a responsible basis for years.

CHAPTER XVI

PREPARATION OF TABLES AND CHARTS

I. Classification of Material—II. Tabulation—the Orderly Arrangement of Data: *A.* Rules for statistical tables; *B.* Indexing tables; *C.* Simple averages—III. Charting—the Graphic Presentation of Data: *A.* Purpose and value of charts; *B.* Advantages of charts; *C.* When to use charts; *D.* Types of simple charts; 1. Pictorial representation; 2. Maps; 3. Bar charts; 4. Circle charts; *E.* The frequency distribution; 1. Graphs; 2. The ratio chart—IV. Reproduction of Charts: *A.* Hectograph; *B.* Mimeograph; *C.* Photograph; *D.* Blueprinting; *E.* Planographing; *F.* Photostat; *G.* Printing—V. Standardization of Graphic Methods.

The preparation of tables and charts, the computation of averages, or other statistical measures should not be regarded as finishing touches in the completion of the report. Most of this phase of the work should be done in conjunction with the basic steps of the study. Charts or tables should not be inserted at random in the completed report; on the contrary, composed of collected and properly analyzed data, they are the foundation upon which the report is built. Such data should be examined and organized into tables, averages, or other statistical measures; for those which appear to be of sufficient significance, charts may be prepared. The report should then be built upon or around the data and should in part be supported by tables and statistical measures and illustrated by charts of these data. The rough draft of the report should be reviewed to see whether certain tables may be omitted and others brought in and whether charts are clear and effectively employed to tell the story of the report and hence to accomplish its objective.

The steps in preparing tables, charts, and other statistical measures coincide with the stages of the research procedure. As data are collected from various sources, the problem will present itself of how best to condense them. The worker should be sufficiently well versed in his data and field of investigation to formulate the bases of classification around which to build

tables. From these it is then possible to study the data at greater length, with greater ease, and in selected areas or combinations. In turn, tables will assist in developing thought for more detailed text study and for further formulation of ideas and tables, either new or rearranged. The process of reference back and forth may continue until the greatest possible number of inferences are derived from the data, and the data are set up in tables of maximum convenience and usefulness but of minimum size with supporting averages and charts. As in all other steps in the investigation, the processes involved in making tables require the application of logical reasoning.

The simpler and more easily used statistical tools for handling data are tables, charts, and averages. They embrace methods which involve no particular mathematical skill; everyone who deals with figures or reports will find them useful, both in preparing reports and in reading them. They must, however, contribute materially to the report, for that is their only justification. The question should always be kept in mind: Does this table, chart, or average add anything of worth to the report?

The decision to employ a statistical presentation of facts should not be made lightly; in many cases, experiments should be conducted with the data before it is definitely decided to use or not to use such methods of analysis. The reasons for this are numerous. For instance, in many cases the value of the data will be indeterminate until some steps have been taken in their classification and tabulation. While it is true that statistics should not be employed unless they can be justified, in most cases they must be tried in order to determine whether they are desirable. Statistical methods are intended for use where it is desired to achieve emphasis or to bring out relationships that otherwise would be noticed with difficulty or overlooked.

The person in charge of the preparation of a report will be more familiar with the facts than the person who is to read the report. This is natural, since he supervises the collection of data and brings the facts together. Significant relationships that are obvious to him may be less evident to the ordinary reader. It is for this reason that statistical methods, especially pictorial presentations, are desirable, for they usually give the reader a better understanding of the facts.

CLASSIFICATION OF MATERIAL

Ordinarily the first step in the analysis of data is their proper classification. Orderly, careful classification and tabulation of data are conducive not only to proper presentation but also to sound and logical analysis. The problem of classification is the arrangement of the facts according to their common characteristics. If the problem involves the sales of a manufacturer, sales might possibly be classified into those to chain stores, wholesalers, jobbers, and large retailers. Wages and salaries might be grouped into those for management, office, and factory.

The method of classification is primarily dependent upon the questions to be answered by the analysis. Almost invariably the nature of the data and the purpose of the analysis will readily suggest the method to be pursued. Often several methods of grouping the data are likely to suggest themselves, and the problem is then to choose the best or the better classification. More than one type of orderly, logical arrangement of the material is often desirable, even though only one is incorporated into the report, for the others may give additional views on the same problem and may aid materially in writing up the results. In his book on logic, John S. Mills aptly summarized the purpose of classification when he wrote,

> The ends of scientific classification are best answered when the objects are formed into groups respecting which a greater number of general propositions can be made, and those propositions more important than could be made respecting any other group into which the same things could be distributed.[1]

Of course, these groups should be mutually exclusive and clear-cut.

TABULATION—THE ORDERLY ARRANGEMENT OF DATA

Once the classifications of the material have been determined, the next step is to place it in tables that show related characteristics. Tabulation is the casting of classified material into tables. There are several reasons why the tabular form of presenting data is desirable. It facilitates the location of specific items. Figures given in discourse form are more difficult to locate and

[1] JOHN S. MILLS, *System of Logic*, Book IV, Chap. VII, Part 2. Harper & Brothers, 1872, p. 434.

appraise. If reference is made to the figures more than once, the table is preferred. Tables present material in a more concise form than possible otherwise; a well-arranged table may eliminate part of an otherwise long discussion of data. The relationships of cause and effect, which are important to analysis, can be brought out through the use of tables.

TABLE I.—ILLINOIS RETAIL TRADE FOR FEBRUARY, 1940*

City and population groups	Number of firms reporting	Sales, Feb., 1940	Percentage change from	
			Feb., 1939	Jan., 1940
Cities—100,000 and over	331	$4,366,974	16.9	6.2
Chicago	304	3,742,060	16.4	8.1
Peoria	27	624,914	19.9	6.9
Cities—50,000 to 99,999	80	1,141,596	22.1	9.2
Decatur	18	415,645	30.5	17.8
Evanston	10	202,068	12.2	6.3
Springfield	17	279,540	18.0	6.8
Cities—25,000 to 49,999	131	1,035,350	11.9	1.9
Aurora	13	135,173	9.1	1.0
Belleville	13	59,051	26.5	4.9
Bloomington	16	67,978	8.3	8.8
Galesburg	13	71,311	13.0	4.3
Joliet	15	156,539	26.5	2.9
Cities—10,000 to 24,999	125	710,189	15.7	7.2
Champaign	13	200,781	13.2	32.4
Cities—5,000 to 9,999	108	460,523	15.2	0.1
Cities—2,500 to 4,999	77	205,975	12.0	2.0
Areas—2,499 and less	175	412,561	11.0	3.4
Total	1027	$8,333,168	16.3	2.2
Total except department stores	998	5,704,685	17.3	2.7
Total of department stores	29	2,628,483	14.2	1.0

* Source: *Illinois Journal of Commerce*, 22: 5: 19, May, 1940.

Table I is simple and readable. It tells, however, an important story. Retail sales of the main cities in Illinois are presented,

in conjunction with subgroups for cities and towns by size. The number of firms from which the data are assembled is shown. In addition percentages facilitate comparison with the sales of the same month of the preceding year and with the sales of the preceding month of the same year.

Simplicity is to be desired above all, in tabular presentation of data; therefore it is often worth while to use more than one table rather than to overburden a single one. The use of columns for percentages is generally valuable; in this way, the relation of various items to one another and to a total is more easily grasped. The table should be a homogeneous entity, and unnecessary or irrelevant matter should be omitted.

Rules for Statistical Tables

F. C. Mills in his book on *Statistical Methods* gives the following worth-while rules regarding the structure of tables:[1]

1. The title should constitute a clear, concise, and complete description of the material assembled in the table.
2. Headings of columns and rows should be concise and unambiguous.
3. Variable quantities should increase from left to right and from top to bottom, when such arrangement is feasible.
4. Columns and rows may be numbered to facilitate reference to the table.
5. The units of measurement employed should be clearly indicated.
6. Sources should be given in all cases.
7. The table should constitute a unit, self-sufficient and self-explanatory. All explanations necessary for its interpretation should be included as integral parts of the table, or in the form of footnotes.

The data in the table should be neatly arranged. In order to have proper balance and proportion, there should ordinarily be more rows than columns. The material arranged in tabular order should be carefully examined to note whether the columns are properly indexed and divided under their headings. If convenient, the information thus arranged should be placed close to the text matter discussing it or applying to it. If the material is extensive when tabulated, it may be placed on a separate page opposite the text matter.

[1] F. C. Mills, *Statistical Methods Applied to Economics and Business*, rev. ed., p. 63.

If the report that is being prepared is of a scientific and extended analytical type, numerous tables may be entirely appropriate in the text. Unusually large or cumbersome tables, employed for the sake of providing a complete detailed report, may be incorporated in an appendix, with brief summary tables in the text or merely references in the text to the appendix. Should the report be intended for lighter consumption, or be more in the nature of a readable condensed version of a comprehensive study, then it is acceptable to place only a minimum of essential brief and simple tables in the text, placing all other tables in the appendix.

The more generously charts are employed, particularly, if the charts are sufficiently readable or so plain that detailed supporting data are not required, the more justification is found for the omission of supporting tables or for their relegation to a separate section or appendix.

Indexing Tables

If numerous tables and graphs are incorporated into the report, or crowded into an appendix, some system of numbering should be devised. Such a system will aid in the orderly presentation of the findings and, more particularly, in the readability of data which are derived from or dependent upon certain tables or charts. Simple direct references may thus be established. This is important if cross references become necessary between different sections of the study.

In a simple report which contains only tables, or perhaps just a few charts, a simple numerical or alphabetical arrangement will serve the purposes of cross reference and identification. It is usually desirable that these be consecutive numbers or letters for the entire report and not for each section. In reports containing both tables and charts, however, the designation should be such that corresponding tables and graphs are readily identifiable. The most common method is to give the tables Roman numerals and the charts Arabic numerals: Table X—Chart 10. If each chart has a corresponding table, the chart may be numbered Arabic and a letter may be added to this number to designate the table from which it is derived. Thus: CHART 10—Table 10*a*.

The fact that in most reports there will not be a chart to correspond to each table disrupts this latter system of numbering tables and charts. Consequently, the best style of designation

of tables and charts is to number the groups consecutively, irrespective of each other. Tables and charts may be cross-referenced either in the text or by footnotes.

Simple Averages

One of the primary objectives of the business report is to express findings in as simple and concise a manner as possible. Tables and charts are employed because they aid in the condensation of masses of quantitative data into easily handled and understandable units. An additional step in the process of simplification is frequently taken by using averages, which summarize the central tendency or characteristics of a series of figures.

There are many types of averages. A few serve most needs and are easily computed and employed. The most commonly employed averages are the mean, median, and mode.

The mean average is the so-called *common* average. It is computed by obtaining the sum of the several factors involved and dividing by the number of cases or items. Thus, if three persons are, respectively, 25, 28, and 35 years of age, their combined age, found by summation, is 88 years, and the mean average is a fraction over 29 years. The mean average, however, like any other statistical measure, has its limitations. It is easily influenced by extremely large or extremely small items, which exert undue influence on the summation and average. For example, the average based on the ages of three persons, 15, 80, and 85 years would be 60, but this figure is not representative of the data it seeks to summarize.

The median is a better average for most purposes. It is not subject to the distortions by large or extremely small items which influence the mean. The median is the middle figure in the series. If the ages of seven children were being averaged, the figures should be arranged according to numerical magnitude. The fourth figure from either end of the series, namely, the middle figure, would be the median. Should there be an even number of cases in the series, the median would be mid-way between the two central figures. One of the limitations of the median is the time involved in placing the cases in order of magnitude so that the central cases may be ascertained. If there were hundreds of cases, they would be difficult to handle, unless they could be

placed in a frequency distribution. A frequency distribution requires considerable time to make, but it is very useful for other purposes. Averages, as explained below, are more useful and significant when employed in conjunction with frequency distributions and measures of dispersion or scatter.

A less common, but nevertheless very useful, average is the mode. The mode is the average which is typical of the data which it seeks to summarize. In dealing with a series of data, it is not very difficult to approximate the mode if the data are arranged in a frequency distribution according to size of items. The group which contains the most cases will normally be the modal group. For most purposes of analysis, it is sufficient to say that the mode falls within certain limits or that the modal group, *i.e.*, the interval containing the mode, has a certain limited range. For example, in measuring performance it may be found that twelve mechanics, on being assigned to a repair job, required time as follows:

Number of Men	Number of Hours
1	2
2	3
5	4
3	5
1	7

Of the twelve employees, five completed the job in four hours. Four hours is the approximate mode or typical time required for the job, since more of the men completed the job in four hours than in any other time.

Most averages are made more meaningful and useful if they are accompanied by some measure of dispersion. Measures of dispersion tell the manner in which data are distributed. The simplest measure of dispersion is the range. It is a common expression to say, for example, that the price of corn ranged from 40 to 55 cents per bushel on a given day. If we know in addition that the average mean price was 45 cents, then a fair description has been made of the price movements on the given day. Another simple useful measure of dispersion is the quartiles, or interquartile range. The quartiles are the points in a distribution which divide it into four equal groups in terms of the number of cases involved. The first quartile is that point on a distribution or array of cases below which one-fourth of the

cases are listed and above which three-quarters of the cases are listed. By definition, the second quartile is the median. The third quartile separates the first three-fourths of the cases from the last fourth.

The greater the concentration of data about certain central figures, the smaller becomes the measure of dispersion. The greater the degree of concentration, the more accurately the central tendency may be described by an average. If the distribution of cases is symmetrical, then the three measures of central tendency, mean, median, and mode, will coincide.

CHARTING—THE GRAPHIC PRESENTATION OF DATA

Charting is the representation of statistical data by lines, areas, diagrams, graphs, photographs, and drawings. When charting is used, it follows the preparation of tables; in most cases, in fact, it is the next logical step in analyzing and presenting statistical data.

Purpose and Value of Charts

The various types of graphic and pictorial representation are not used in lieu of tables and figures but rather to supplement and to emphasize them. Charts do not result in analysis, but they do make the analysis easier and clearer, for a representation of the relations among various facts can readily be grasped by the mind through the eye. This method of organizing data for the report is especially valuable for the casual reader, who may look at a chart and, if it is not too complex, grasp all the essential facts without reading the table.

Not only are charts well suited to the casual reader, but they are also desired by many executives. The use of graphic control of production, sales estimates and actual sales, control and comparisons of sales, expense budgets, and actual expenses, graphic control of inventories, and the like has become common because of the marked advantages of graphic and pictorial control over the colorless figures.

Advantages of Charts

The advantages of such methods of control and comparison over a simple presentation of figures lie almost completely in the fact that these methods permit the executive to grasp the

significant changes in production, inventories, and the like without the difficult analysis of abstract quantities. Figures must be translated into relationships before the mind can properly realize their significance. If one sales district has sales of $100,000 and another of $1,000,000, the reader must mentally calculate their relation of 1 to 10. But if two bars are used to represent the relative sales, no such mental calculation is necessary. The eye sees the relationship in the proportionate lengths of the bars.

As already mentioned, the chart does not supplant the table but supplements it, and, in those cases where all the desired facts can be stated plainly upon the chart itself, no table is essential. However, most charts are not designed to list the detailed facts; rather they are intended to present the significant relationships and avoid details. Tables should therefore be available to support the charts for those readers who are sufficiently interested to desire them.

When to Use Charts

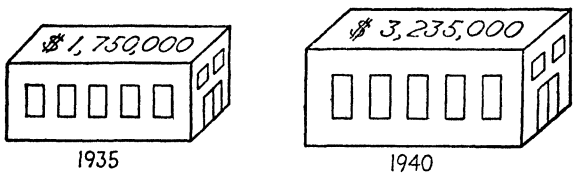
While there can be no question that charts are desirable in most presentations of facts, they should be used with discretion and sparingly, for the excessive or unnecessary use of both tables and charts tends to defeat their purpose. The report should not be so burdened with them that reading is difficult, for, unless properly used, they may easily break the continuity of the reader's thoughts. Their too frequent use deadens the share of attention which the reader will give them. On the other hand, there is the tendency for readers of a report with too many charts to "look only at the pictures."

The decision to use a chart should be determined by its value to the report and, more especially, to the reader. From the point of view of the report, the use of a chart should be determined in the light of the particular facts and of the purpose at hand. If the chart aids in developing this purpose, and if the data are sufficiently important to be emphasized by the use of a chart or are difficult to explain without one, then it should be used. From the point of view of the reader, a chart should aid him in digesting facts and perhaps should shorten the time necessary for reading. It is frequently of value to make up charts for various aspects of the data contained in the report

in order to give the writer a better view of his facts. These charts may not be presented to the reader, but the writer may draw inferences and clarify his mind from them and thus be able to present to the reader a better discussion.

Types of Simple Charts

The specific type of chart to be used to portray any given set of facts is often a matter of choice—but not nearly so arbitrary as may appear at first thought. The chart is flexible in the sense that the same set of facts may often be shown in more than one way. But there are certain types of data which can best be portrayed by certain kinds of charts, and it is important to use the type of chart best suited to the specific data at hand. The reader also must be taken into consideration; a report intended for general distribution among stockholders should not contain complicated charts such as might be presented to the production manager.



Value of Plant Investment, 1935 and 1940

CHART 1.—Statistical data represented by pictures.

Pictorial Representation.—The use of a picture to represent statistical data is a simple means of achieving vividness but is not without certain undesirable features. Its simplicity and advantages rest on the nature of the chart, for by varying the size of the picture one may bring out the comparative changes in size, value, etc. If the problem is to show the changes of the investment in the plant, a picture of a factory building can be used. In Chart 1, the sizes of the two plants are proportional as measured by their cubic contents and as based on the values given.

Similar to pictorial presentations are simple squares, cubes, triangles, and other geometric figures to depict a group of facts illustrated in Chart 2. Changes in plant investments might have

been shown by any of these figures, which are proportional in area, cubic content, diameter, etc.

These all have the same advantages and disadvantages for graphic use. Their advantages are their simplicity and the directness with which they convey an idea to the reader. Their disadvantage is that they are apt to be confusing at times because they have more than one dimension. In the picture of the factory building, the reader might interpret the relative changes in value of the plant to be indicated by the relative heights of the two diagrams, or by some other dimension, whereas the basis of comparison is cubic area. The same criticism may be made of the other geometric figures. In using such diagrams,

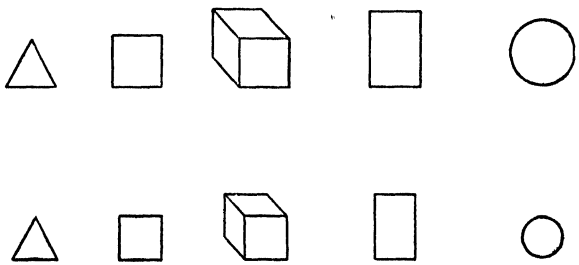


CHART 2.—Simple geometric figures for representing data.

one should exercise care so that there can be no possibility for misinterpretation. It is usually safest to specify just what dimension is the basis of comparison. This dimension may be height, area, diameter, angle, tangent, or the like.

During recent years the dramatic pictorial chart has come into general use. A simple example of the possibilities for conveying ideas in this way is given by Chart 3. It is called a dramatic chart because it dramatizes the idea to be expressed. In these charts, living characters represent the numerical values of the chart. Usually, each character represents a uniform measure of the numerical value. The criticisms directed at geometric diagrams are not present in the dramatic chart because each character represents a given quantity. Only one dimension is involved in the chart, and ambiguous interpretations are avoided. In charts of this type the characters employed may be of any kind, men, money, houses, animals, and many others. They may be so drawn that they are symbolic of the objects involved

in the report. They tell a story in terms of quality—the nature of the data—and in terms of quantity—the number of characters presented. They are most commonly found in reports for general and popular consumption, but they also have great opportunities for valuable employment in technical reports.

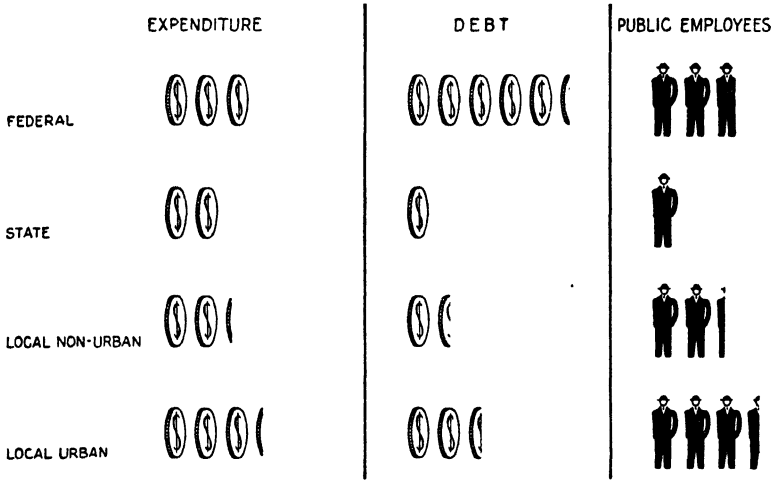


CHART 3.—Government expenditure, debt, and personnel, 1932. (*From "Our Cities," p. 3, National Resources Committee, June, 1937.*)

Maps.—If the data to be presented follow some natural geographic divisions, the use of a map should be considered. The area may be a county, state, group of states, and the like. By plotting the facts directly upon the map, a definite idea is given which relates the facts to their particular geographic territory.

Chart 4 is an illustration of the use of a map for presenting facts. If the number of geographical divisions is large, a method of shading could be used to represent different densities in the number of customers in states. Likewise, instead of having a dot for each customer, one might be used for each 10 or 50, so that many details would be eliminated. The number of customers and their percentage to the total may also be indicated on the map. If the number of divisions is large and the final map small, the use of shaded areas is usually preferred over other methods, since small figures and dots are difficult to read. Where shading is used, different shades will represent different

densities or ranges or numbers, and a key should be given on the chart, preferably in the lower left-hand corner.

Bar Charts.—Various ways of representing facts are possible with the use of bars. The length of the bars represents the magnitude of the data. It is, of course, possible to vary the width of the bars and thus show changes in more than one dimen-

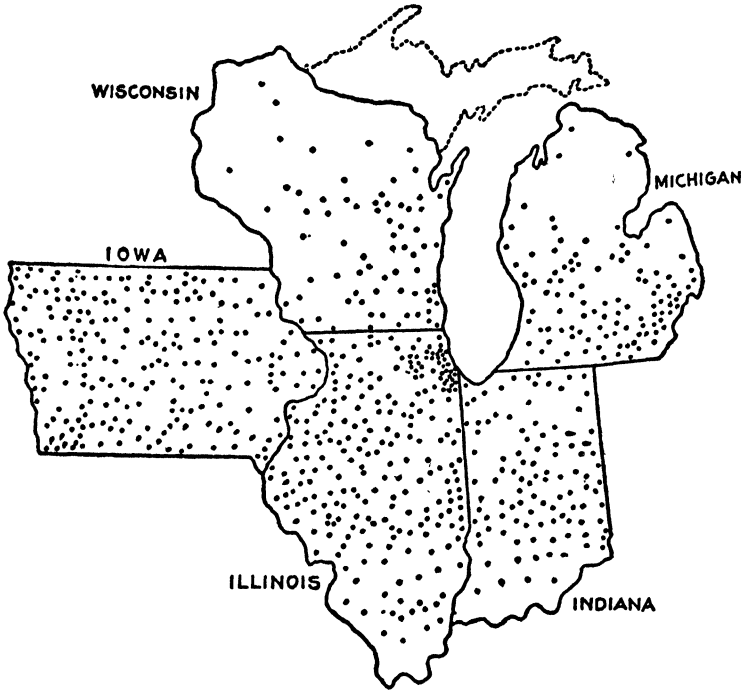


CHART 4.—Facts represented by the use of a map. Retail dealers in a sales district.

sion, but this is not desirable as it is conducive to possible distortion of the facts under consideration.

A simple comparison of enrollment trends for several years is given in Chart 5. It is a comparison of magnitudes based on the bar lengths. A satisfactory arrangement of bars is often found by placing them in a vertical instead of a horizontal position; but if the description for each bar is lengthy, the horizontal arrangement is desirable.

Two or three series of facts may be compared by bars side by side or in other relations. A two-way comparison of data is

possible in this manner. Wages, units manufactured, and value of product, for example, might be compared for two given years; three bars could represent the three items for the first year, and immediately below these another set of three bars, for the second year, might be presented. The crosshatching or shading of

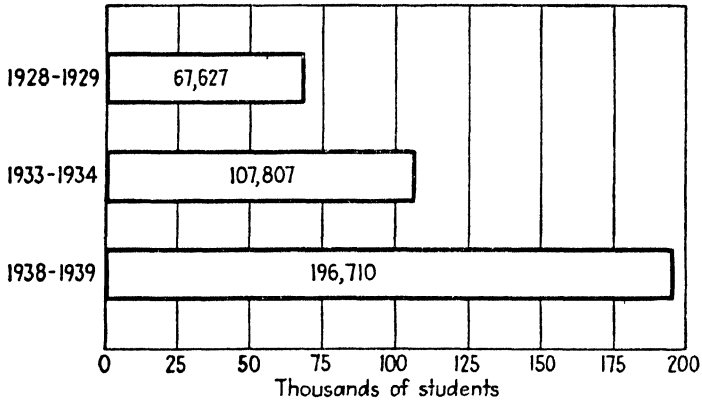


CHART 5.—Comparison of magnitudes based on length of bars. Growth of junior college enrollment in the United States. (*From Junior College Journal, February*, 1939, *p.* 265.)

the bars would bring out the relationship of the wages items for each year, and likewise for the other items portrayed. In other cases, it might be found better to pair the two series of data for wages, immediately below pair the data for units produced, and follow this in turn by value of product. The choice of the

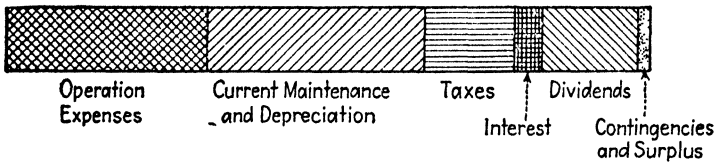


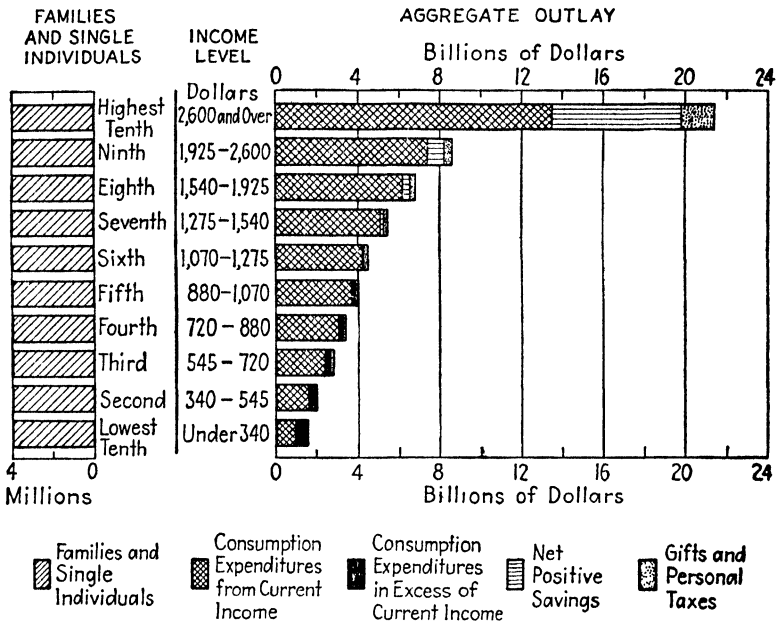
CHART 6.—Component parts of data represented by the segment bar chart. Disposition of total Bell System revenues for year ended December 31, 1939.

various combinations hinges upon where the emphasis is to be placed.

Simplicity is desired here as with all other charts. The number of bars should be kept small if a comparison is also desired between years or some additional factor. A simple use of different types of shading helps to distinguish the bars from one another and

relates those which contain data of the same nature. When the sets of facts become numerous, they can be shown as curve charts such as are discussed later.

Still another variation of the bar chart is shown in Chart 6. It is also called the segment chart. The bar is divided into segments, each representing a given part of the data. The basis



Note: Taxes shown here include only personal income taxes, poll taxes, and certain personal property taxes

CHART 7.—Aggregate outlay of each tenth of nation's consumer units for consumption, savings, and gift and personal taxes, 1935–1936. (*From "The Consumer Spends His Income," National Resources Committee, June, 1939, p. 23.*)

for comparison is the length of the bar, and each segment is proportional to the value or quantity of the data it represents. A series of bars which are divided into segments is shown in Chart 7.

The same type of bar chart may be used for comparison of similar data for two or three years. Since the actual values may vary from year to year and complicate comparison of the values of the items, the use of percentages is desirable. The use of data such as the revenues in Chart 6 to total 100 per cent allows

the bars to be kept uniform in size while showing the relative changes in items making up the total. Representation of data by this method is not advocated for more than a few years.

Circle Charts.—In some respects, the circle chart is similar to the segment bar chart described above. Both are suitable for illustrating figures which constitute the component parts of some whole unit. In Chart 6 the whole unit is gross revenues for 1939 and the component parts are operating expenses, maintenance

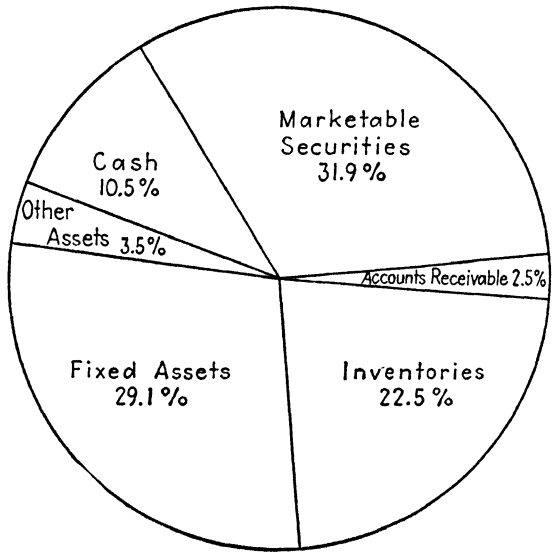


CHART 8.—Percentages represented by pie chart. The investment of the Maytag Company dollar, December 31, 1939.

and depreciation, taxes, and the like. The same facts could have been shown by a circle chart. The circle is divided into segments so that its component parts are proportional to the relative values of the data. By reducing the facts to percentages the entire circle can be used to constitute 100 cents or one dollar, and the component parts of the circle show to what uses the particular dollar is devoted. Ordinary percentages are well adapted to the circle, and, because of the ease of comparison, the circle is well suited to the use of the actual figures either alone or in conjunction with percentages. Chart 8 shows a common use of the circle chart.

Circles or pie charts are not well adapted to comparison of one value with another. It is always difficult to compare one circle with another, to gauge its area, diameter, or whatever the measure of comparison is; but if only one circle is used, the relation of various arcs or segments is easily grasped. With the aid of a protractor, one may easily divide a circle into the number of sections desired, for the protractor will measure the degrees of any desired angle.

The Frequency Distribution

The handling of large masses of data in which the time element is not an essential factor can very often be accomplished best by the use of frequency distributions. The frequency distribution is a statistical device which has been most commonly used in the biological and educational fields. It is a logical arrangement of data according to their frequency, or some common unit of measure. The essential characteristic of this statistical device is that it measures the number of cases or occurrences of certain kinds and it enables detailed facts to be reduced to groups which are readily grasped by the mind. It is found particularly useful in summarizing data where some average is also employed. The average serves the purpose of giving some one characteristic unit for the data, while the distribution gives satisfactorily the details of the arrangement.

Table II is an example of frequency distribution based upon the ratio of net income to gross revenue of 200 public-utility corporations. In this distribution, the individual-income ratios have been classified into 24 groups. These groups range from those in which the net income was negative—that is, net loss—to a few extremely high cases at 68 per cent. The most common ratio is found in the groups in which net income ranged from 12 to 16 per cent of gross revenue. This is also the modal group.

To make a frequency distribution after the data have been collected or prepared for analysis, one's next step is to select the class intervals or the groups of the cases. Ordinarily, it is wiser to make these more detailed than is likely to be wanted in the finished product; it is a simple matter to combine groups after the cases have been distributed, but it means much wasted work if the intervals must be divided and made more numerous.

TABLE II.—FREQUENCY DISTRIBUTION OF 1,578 RATIOS OF NET INCOME TO GROSS REVENUE OF 200 PUBLIC-UTILITY COMPANIES, 1915 TO 1924 INCLUSIVE*

Size of Ratio (Per Cent)	Number of Cases
Total number of cases	1,578
(−279)–(−24)	2
(−239)–(−20)	9
(−199)–(−16)	10
(−159)–(−12)	10
(−119)–(−08)	23
(−079)–(−04)	34
(−039)–(00)	58
00–039	102
04–079	182
08–119	188
12–159	217
16–199	205
20–239	166
24–279	116
28–319	76
32–359	48
36–399	44
40–439	23
44–479	21
48–519	12
52–559	8
56–599	12
60–639	6
64–679	6

* Source: "Standard Financial Ratios for the Public Utility Industry," *University of Illinois Bulletin* 26, p. 40, 1929.

The simplest way of preparing a distribution is through tallies. A work sheet is prepared on which the class intervals are marked out. The cases are then noted on this work sheet by making a tally mark under the class interval in which the specific case is located. These tallies are grouped in fives for convenience in counting. When all the cases are tallied on the work sheet, they are summarized and the results transferred to a table.

In those studies in which the number of cases is large, other methods of tallying the cases may be preferable from the point

of view both of time and of cost. If the study employs the punched-card system, then the frequency distribution may easily be made from the machine sortings. A simple mechanical method of sorting cases for frequency distributions is known as the McBee Keysort. Machine methods greatly reduce the tedious work and, if properly supervised, increase the accuracy and productiveness of the data studied.

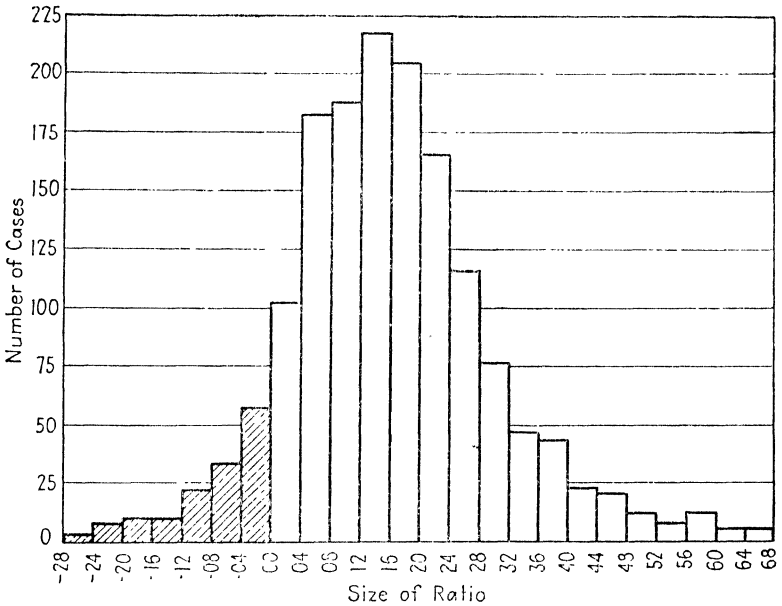


CHART 9.—Tendency of data to concentrate around a central figure, presented in chart form. Frequency distribution of the ratios of net income to gross revenues of 200 public-utility companies, 1915 to 1924, inclusive. Based on Table II.

The frequency distribution lends itself readily to charting in the form of a frequency histogram such as shown in Chart 9. In essence this is a series of bars, each proportional in length to the number of cases located in each class interval. Each bar represents one group in the frequency distribution. The usefulness of a frequency distribution and histogram may be enhanced by percentages, in which the cases for each class-interval are restated in terms of percentages of the whole. Measures of dispersion and averages also prove valuable in conjunction with such distributions. Comparisons of one distribution with

another or several others are facilitated by the use of these auxiliary statistical measures. Averages may be compared, dispersions and ranges may be compared, and percentages of frequencies within given ranges or portions of the ranges may also be profitably compared. These tools facilitate accurate comparisons of one sample with another.

It is sometimes found desirable to measure economic data in terms of two variables. In the example of the ratios of net income to gross revenues, only one variable was employed. The variable was the size of the ratio, or the size of the income in relation to the gross revenues. In studies of this kind, it is very often desired to relate changes in one direction with those in another. An analysis might have been made of the size of the ratios in relation to the size of the companies with which they were associated. Size of company could be measured in terms of total assets, in terms of revenues, in terms of power output, or the like. For the sake of simplicity, the following table assumes that an analysis is to be made on the basis of the ratio of net income to gross revenue and the size of the company in terms of total assets. To simplify the matter, the class intervals are increased in size and reduced in number. The assumed two-way frequency table might appear as follows:

TABLE III.—DISTRIBUTION OF THE RATIOS OF NET INCOME TO GROSS REVENUES OF PUBLIC-UTILITY COMPANIES CLASSIFIED BY SIZE OF TOTAL ASSETS

Size of ratio	Amount of total assets (millions of dollars)						Total
	0–9.9	10–19.9	20–29.9	30–39.9	40–49.9	50–60	
Total	5	8	20	37	14	10	94
(−239)–(−12)	..	1	1	..	..	..	2
(−119)–00	2	3	5	12	2	..	24
00–119	2	4	7	13	7	3	36
12–239	1	..	7	8	2	4	22
24–359	..	..	..	4	2	1	7
36–479	..	..	..	..	1	1	2
48–599	..	..	..	..	..	..	0
60–719	..	..	..	..	..	1	1

In preparing a two-way frequency table one must make the tallies of cases with due regard to both variable factors. The ratios, for example, were tallied according to the size of the ratio and then the size of the company. The tally was then made in that portion of the work sheet which satisfied the requirements of both factors.

The two-way frequencies may also be plotted on a scattergram, as in Chart 10. Each case is plotted at that point on the chart

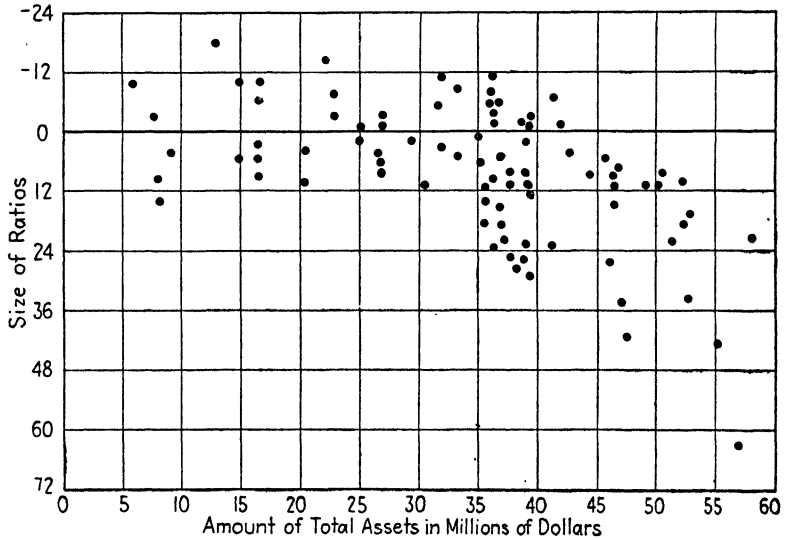


CHART 10.—Scattergram showing relationship of two variables in chart form. Relationship of size of net income to gross revenues ratios and total assets of public-utility companies.

which corresponds to its position with respect to size of ratio and size of company. Such a diagram shows trends and is helpful in ascertaining whether there is any significant correlation between two variables. In Chart 10 the data suggest that the income ratio tends to increase in direct relation to the total assets. These relationships may be made clearer by computing the means of each column and each row and noting the tendency toward increase or decrease, if any.

Graphs.—The methods of charting so far presented have not dealt or been concerned with time as an important factor. Although some of the devices already presented can be used in conjunction with data involving time elements, for most pur-

poses, if the data are for a considerable number of consecutive years, those devices are not entirely satisfactory. Series of facts in which one of the two variables is the time element are called *time series.* The next few paragraphs are devoted to methods of charting time series.

Time series can be charted on graphs. The graph upon which this type of data is plotted is based on the use of co-ordinates. Each fact that is plotted or represented on the chart has to be located with respect to two variables. One of these is usually the time factor, and the other is the quantity or magnitude of the facts pictured. The co-ordinate paper on which such data are

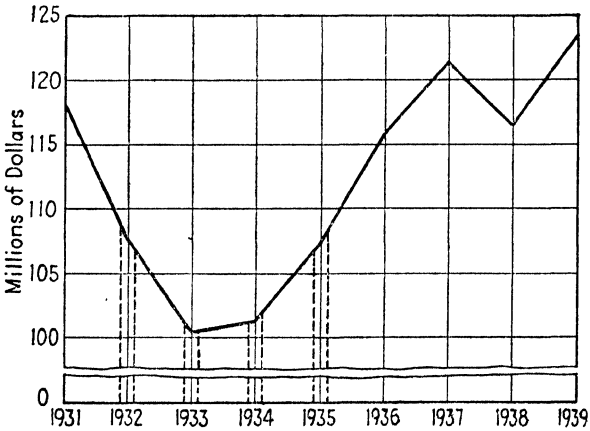


CHART 11.—Changes in data illustrated by changes in a curve. Consolidated gross revenues of the North American Company, 1931 to 1939. See Table IV.

charted contains a series of horizontal and vertical lines equidistantly spaced.

The advantages of this kind of chart over some of the others discussed are various, depending in part on the purpose of the chart. By connecting the various points plotted, one obtains a curve, which gives a continuous picture of the facts portrayed. The reader does not have to make the mental effort necessary to compare the height of one bar with that of another in order to realize the relative value of the two. Changes in the trend of the data are easily seen from the curve of the data, making it possible to contrast earlier or later periods with the given period merely by the changes in the curve.

From Chart 11 it is possible to see the relation between the graph and bar chart formerly discussed. The height of each point plotted on the chart for each year is proportional to the height of a bar drawn from the base of the chart to that point. The equidistant vertical lines take the place of the bars, and the distance of the curve above the base line gives the reader the relative "height" or value of the curve at any given point. However, since no bars are used, the base line must start at zero and should be emphasized by a heavier line. If the base line is not shown, this fact must be indicated on the chart.

TABLE IV.—THE DISPOSITION OF THE CONSOLIDATED REVENUES OF THE NORTH AMERICAN COMPANY, YEARS ENDED DECEMBER 31, 1931 TO 1939*

(000 omitted)

Year	Gross revenues	Operating expenses	Net operating revenues
1931	$117,922	$76,299	$41,623
1932	107,412	71,150	36,262
1933	100,802	68,316	31,986
1934	101,387	70,759	30,628
1935	107,030	73,957	33,073
1936	115,897	80,830	35,067
1937	121,347	85,764	35,583
1938	116,572	83,983	32,589
1939	123,238	88,604	34,634

*Source: *Moody's Manual of Investments*, Public Utilities Securities, 1940, p. 1539, Moody's Investors Service, New York.

In Chart 11 the scale of values for the gross revenues are given at the left, and the years at the bottom. The spacing of horizontal and vertical lines need not be the same unless it best suits the curve at hand. The scales chosen should be such that they will bring out the fluctuations or trend of the curve without exaggeration or distortion.

A more common and more valuable use of this type of graph is based upon the facility it offers to the reader in comprehending the relative sizes and relationships among several curves or series of data at the same time. The gross revenues, operating expenses, and net operating revenues of a public utility for a period of years are given in Table IV. It is difficult to grasp the connection of changes of these three series of figures without some mental effort, but by plotting them on graph paper, one

simplifies the problem. Two different methods of presenting these facts are given. The first graph (Chart 12) is the ordinary

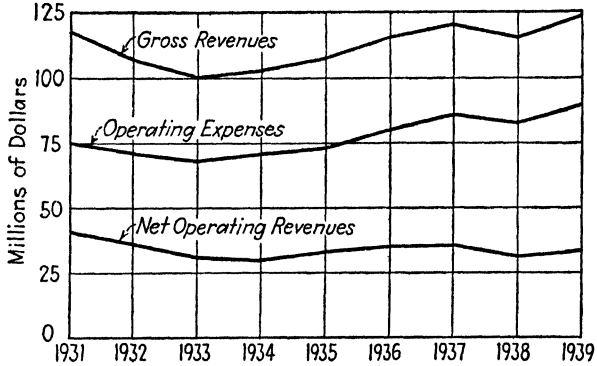


CHART 12.—Series of data compared on ordinary graph. Disposition of the gross revenues of the North American Company, 1931 to 1939. See Table IV.

curve or trend graph. The second graph (Chart 13) shows the changes in the component parts of these items which constitute the gross revenues. From Chart 12, it is easier to see the relative changes in these three curves with respect to one another. Chart 13 shows changes in component parts of total revenues.

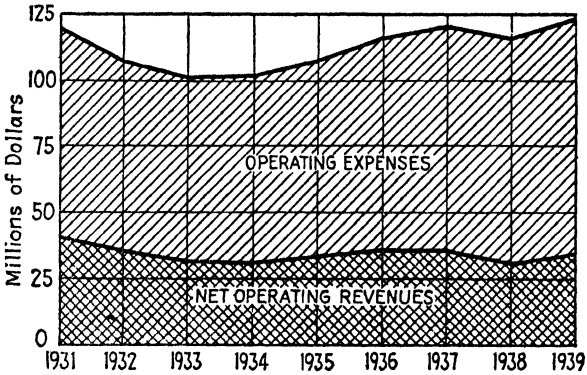


CHART 13.—Band chart showing changes in component parts of items. Distribution of gross revenues of North American Company, 1931 to 1939. See Chart IV.

The Ratio Chart.[1]—The ratio chart or semilogarithmic chart, as it is often called, is suited for measuring and comparing rates

[1] A thorough discussion of the ratio chart will be found in "The Ratio Chart," by Irving Fisher, *American Statistical Association, Quarterly Publication*, June, 1917.

of growth. In contrast to the ordinary type of graph, which measures uniform increases in magnitude or quantity by equal spaces on the graph, the ratio chart measures constant rates of growth by equal distances on the graph. The difference between the two kinds of graphs can be made plain by showing differences in the scales of measurement.

The first line of Chart 14 shows the scale for the ordinary or "natural" chart. Here each equal interval on the line measures a constant quantity. Thus a unit of measure from zero to 10 equals the same distance on the scale as from 20 to 30, or a measure of 10 units. The natural scale measures equal amounts by equal distances.

The ratio scale, however, measures rates of growth or increase. Thus on the second line of Chart 14, the distance from 10 to 20 equals the distance from 20 to 40 as well as the distance from 40 to 80. But from 20 to 40 is an increase of 20 units while from 40 to 80 is an increase of 40 units. The key to this is that the ratio chart measures "rates" of growth. Hence from 10 to 20 is an increase of 100 per cent; from 40 to 80 is an increase of 100 per cent. In other words, equal distances on the ratio scale measure equal rates of growth and not equal magnitudes as does the natural scale.

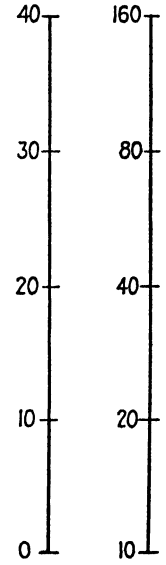


CHART 14.—Comparison of natural and ratio scales.

The value of the ratio scale can best be made plain by an actual case. Charts 15 and 16 have the same data plotted on them. These data, which are given in Table V, are the number of passenger cars registered in the United States by the automobile industry and by a single manufacturer. The two series of figures are plotted in Chart 15, which has the ordinary scale. Registrations for Chrysler Corporation cars varied from less than 200,000 to almost 900,000 cars while for the industry they varied from 1,096,000 to 3,880,000. The natural chart cannot show the relative rates of change in these two series at the same time. In comparison with the large quantities for the automobile industry, the figures for the

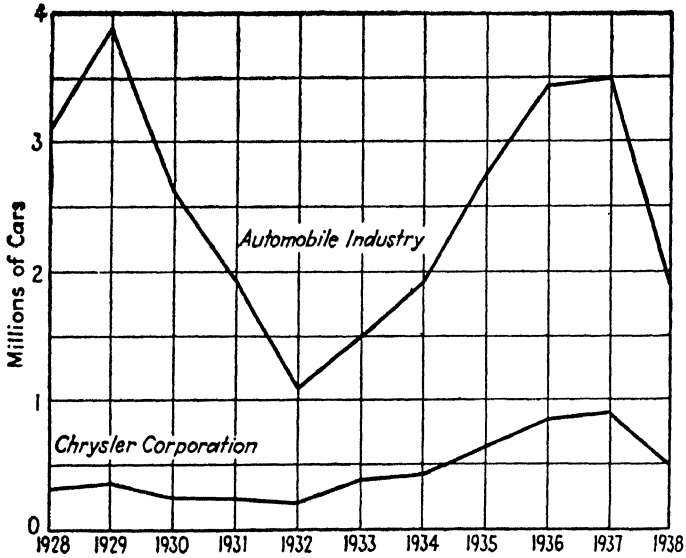


CHART 15.—Data plotted on the natural scale. The number of passenger cars registered by the automobile industry and Chrysler Corporation, 1928 to 1938. See Table V.

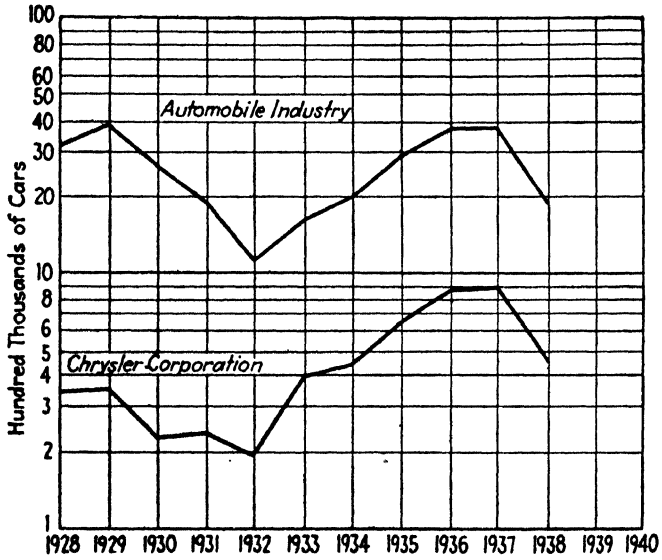


CHART 16.—Data plotted on the ratio scale. The number of passenger cars registered by the automobile industry and Chrysler Corporation, 1928 to 1938. See Table V.

Chrysler Corporation were small in the beginning of the period and occupied only a small portion of the chart.

Chart 16 shows the same data on ratio scale. The very close relation between these two curves is at once evident. It shows that the changes in car registrations of the industry and the specific manufacturer have a very intimate relation. The rates of change for these data are more interdependent than Chart 15 seems to indicate.

The ratio chart, because of its nature, is unsuited to those purposes which aim to bring out absolute changes in magnitudes of facts, but it is ideally suited for plotting several series of data where there is considerable divergence in the size of the figures in the different series.

TABLE V.—PASSENGER-CAR REGISTRATIONS BY THE AUTOMOBILE INDUSTRY AND CHRYSLER CORPORATION, 1928 TO 1938*
(000 omitted)

Year	Automobile industry	Chrysler Corporation
1928	3,133	329
1929	3,880	345
1930	2,626	225
1931	1,908	228
1932	1,096	191
1933	1,494	386
1934	1,886	432
1935	2,744	629
1936	3,404	852
1937	3,480	883
1938	1,891	473

* Source: *Automobile Topics*, East Stroudsburg, Pa.

A steady upward trend of the curves on the ratio chart indicates that they are growing at a constant rate. A steady downward trend indicates that they are decreasing at a constant rate. A curve which remains level indicates no growth or decline. If the trend curves upward more and more steeply, it indicates a greater and greater rate of growth, and vice versa for downward movement.

REPRODUCTION OF CHARTS

The method of reproducing the charts will be dependent very largely upon the number of reproductions desired. There are a number of methods, varying considerably in both cost and effectiveness. When only a very small number of copies of the report are being made—say, about five, which will be typewritten —hand copies may be made of each chart on regular ruled graph paper, which is obtainable at all book and stationery supply stores in a great variety of rulings, sizes, and thicknesses. For a small number of copies, each should be made on a good quality of paper. The work should first be done in hard lead pencil, and then either gone over with India ink or copied with India ink.

Hectograph

There are several machines on the market, for instance, the hectograph, which will reproduce 50 or more copies of a chart with reasonable legibility. The requirements are that the work must not be too small or fine, and must not call for reduction in scale; a special kind of ink must be used in making the original chart.

Mimeograph

When the number of reproductions is considerably larger than 50 but not large enough to use regular printing processes, it is possible to do good work on mimeographing machines for charts which are not too complex or too small. Except for the curved lines in the chart, it will be found possible in almost all instances to make the chart on the typewriter. All horizontal and vertical lines can be made on the typewriter in cutting the stencil, and likewise all figures and written matter can be made on the stencil for the chart. A little ingenuity and care will work out most simple charts. Of course, such charts will not be so neat as those from some of the more expensive methods of reproduction.

Photograph

The use of photographs is recommended in some instances. If the number of copies is not to be too large, and the expense is not a primary consideration, such methods of reproduction are very serviceable and accurate. Photographs may be made of a carefully drawn chart, provided that the chart is large enough

and a sufficiently good camera is available. The prints can then be pasted in the report.

Photographs have another valuable use aside from the reproduction of charts. If the report is on a subject that can be illustrated by pictures, they can often convey more concisely and accurately the conditions than can whole pages of written material. Such pictures will be found valuable in giving ideas of progress of work in connection with construction, etc. These photographs can be used to make "cuts" for the printing process of reproduction.

Blueprinting

Charts which are going to be reproduced either as blueprints or in printing processes should be copied on tracing cloth, which is a strong, durable, and translucent linen used by draftsmen. It is available at stationery and engineering supply stores. These tracings can then be used for making blueprints. Blueprinting requires special equipment and is rather expensive unless facilities are already available. This method of reproduction is satisfactory for moderately small numbers of copies. A neater and more satisfactory chart may be made by a modified form of blueprinting in which the chart is produced as black lines on white paper instead of as white lines on blue paper, as in the ordinary blueprint.

Planographing

Within recent years the planograph process of reproduction has come into general use. It is based upon the development of photography and printing. Any type of chart, graph, picture, or illustration may be reproduced by this process. Colors are not employed. Clear and accurate reproductions are made, and costs are much less than in printing. This process is very economical in reproducing 50 to several hundred copies. Special equipment is required, but commercial firms which will do this work are to be found in all the principal cities. Some companies in the larger cities serve large adjoining territories.

Photostat

To photostat charts requires special equipment. Such equipment is available in most communities in such places as county-

recorder, library, and other offices where exact copies must be made. Since it involves photographic methods, accuracy is assured. Satisfactory reproductions can be made by this method for small numbers of charts. If more than 25 are desired, other methods of reproduction will prove preferable.

Printing

When reports are to be turned out in sufficiently large quantities to justify having them printed, then the charts, pictures, etc., will be reproduced by the photographic method and a "cut" manufactured. The preparation of a clear copy of the chart on tracing cloth will ordinarily be sufficient to make a good engraving to be used in printing. Since the chart can be reduced considerably in size, the draft of it may be larger than the printed size desired. This will make possible the use of detail on the charts. However, the final size should be kept in mind, in order that reading matter, etc., will not be too small when printed. Since the photographic process will not usually be concerned with color, the tracing should be done in only one color—black, preferably India ink.

STANDARDIZATION OF GRAPHIC METHODS

In continuation of its work in fostering uniformity in graphic methods, the American Society of Mechanical Engineers has reports recommending certain uniform practices.[1] Part of one of these is reproduced on pages 371–377. Its model suggestions may well be used as standards in the preparation of graphs.

[1] *Time-Series Charts*, 1938, and *Preliminary Report of the Joint Committe on Standards for Graphic Presentation*, The American Society of Mechanica Engineers, New Yōrk. Copies of these reports can be obtained from the American Society of Mechanical Engineers, 29 West 39th Street, New York.

THE FOLLOWING ARE SUGGESTIONS WHICH THE COMMITTEE HAS THUS FAR CONSIDERED AS REPRESENTING THE MORE GENERALLY APPLICABLE PRINCIPLES OF ELEMENTARY GRAPHIC PRESENTATION:

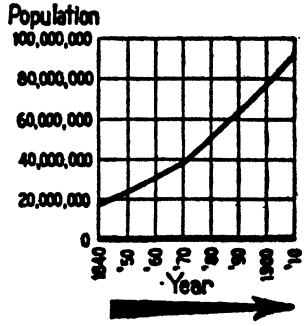


FIG. 1

FIG. 1.—The general arrangement of a diagram should proceed from left to right.

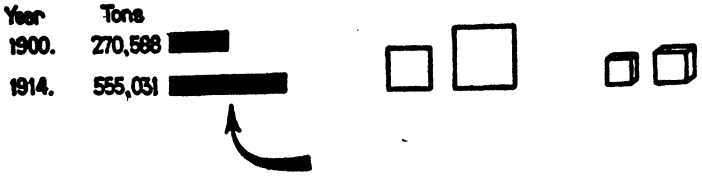


FIG. 2

FIG. 2.—Where possible represent quantities by linear magnitudes, as areas or volumes are more likely to be misinterpreted.

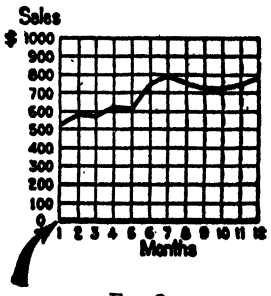


FIG. 3

FIG. 3.—For a curve the vertical scale, whenever practicable, should be so selected that the zero line will appear on the diagram.

Fig. 4.—If the zero line of the vertical scale will not normally appear on the curve diagram, the zero line should be shown by the use of a horizontal break in the diagram.

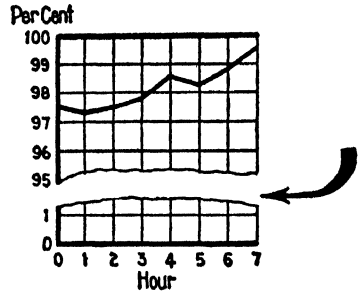


Fig. 4

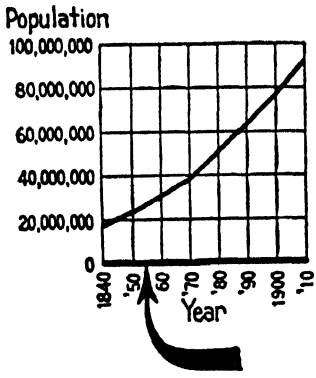


Fig. 5A

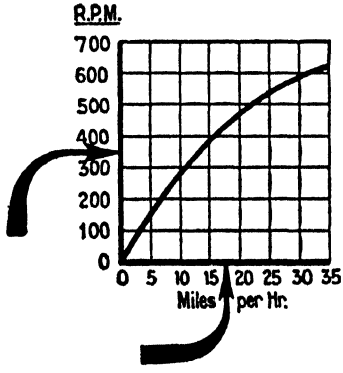


Fig. 5B

Fig. 5.—The zero lines of the scales for a curve should be sharply distinguished from the other coordinate lines.

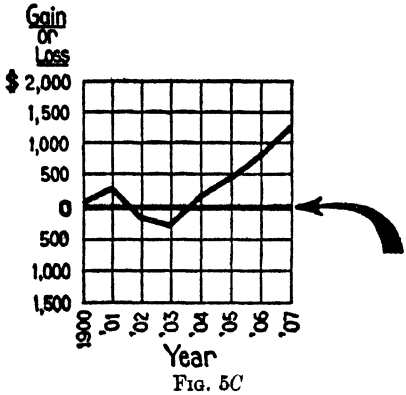


Fig. 5C

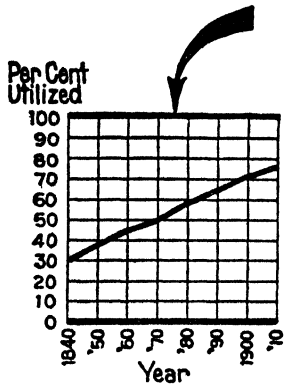


FIG. 6A

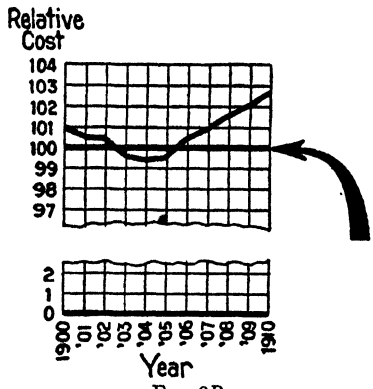


FIG. 6B

FIG. 6.—For curves having a scale representing percentages, it is usually desirable to emphasize in some distinctive way the 100 per cent line or other line as a basis of comparison.

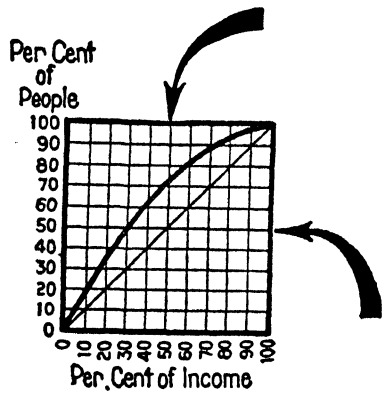


FIG. 6C

FIG. 7.—When the scale of a diagram refers to dates, and the period represented is not a complete unit, it is better not to emphasize the first and last ordinates, since such a diagram does not represent the beginning or end of time.

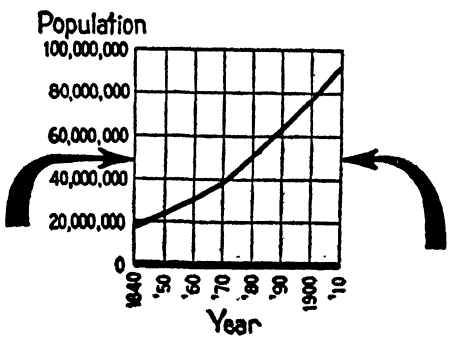


FIG. 7

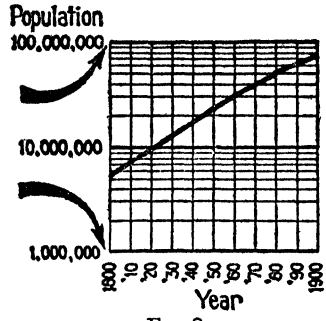


FIG. 8.—When curves are drawn on logarithmic coordinates, the limiting lines of the diagram should each be at some power of ten on the logarithmic scales.

FIG. 8

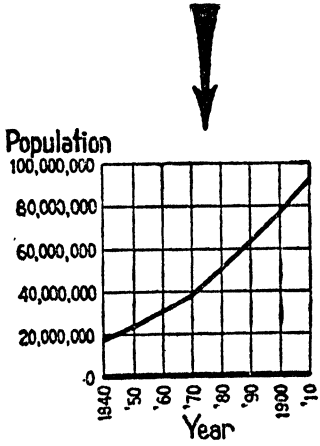


FIG. 9A

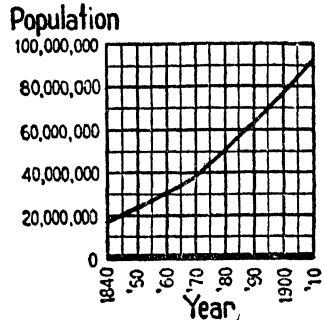


FIG. 9B

FIG. 9.—It is advisable not to show any more coordinate lines than necessary to guide the eye in reading the diagram.

FIG. 10.—The curve lines of a diagram should be sharply distinguished from the ruling.

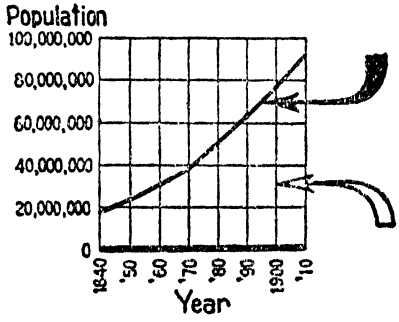


FIG. 10

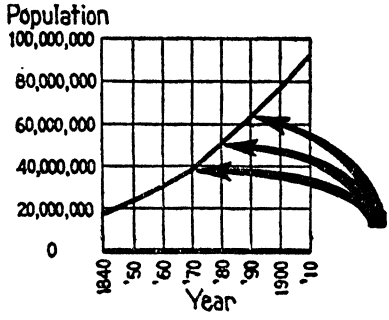


FIG. 11A

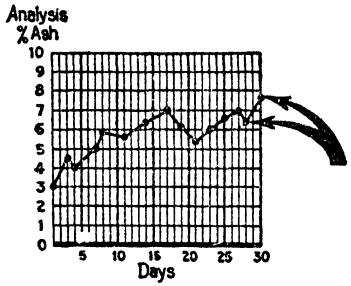


FIG. 11B

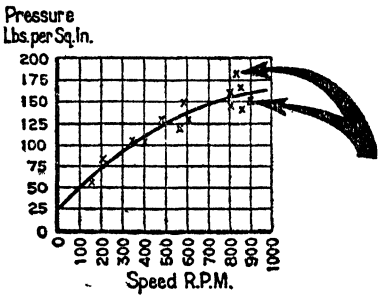


FIG. 11C

FIG. 11.—In curves representing a series of observations, it is advisable, whenever possible, to indicate clearly on the diagram all the points representing the separate observations.

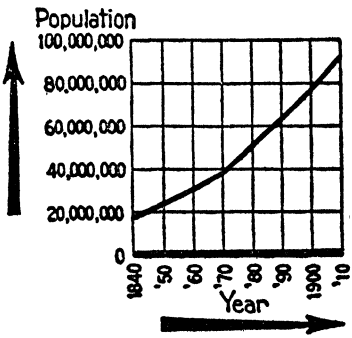


FIG. 12

FIG. 12.—The horizontal scale for curves should usually read from left to right and the vertical scale from bottom to top.

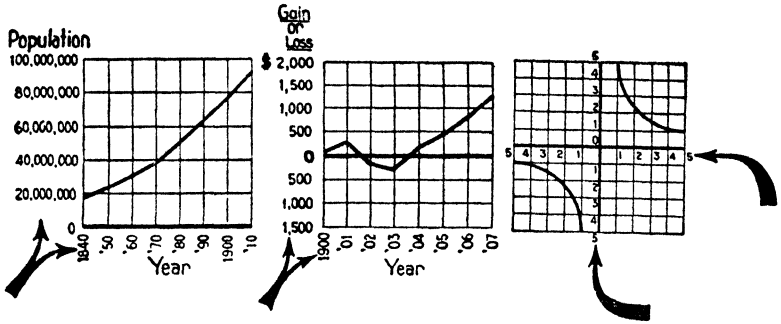


FIG. 13A FIG. 13B FIG. 13C

FIG. 13.—Figures for the scales of a diagram should be placed at the left and at the bottom or along the respective axes.

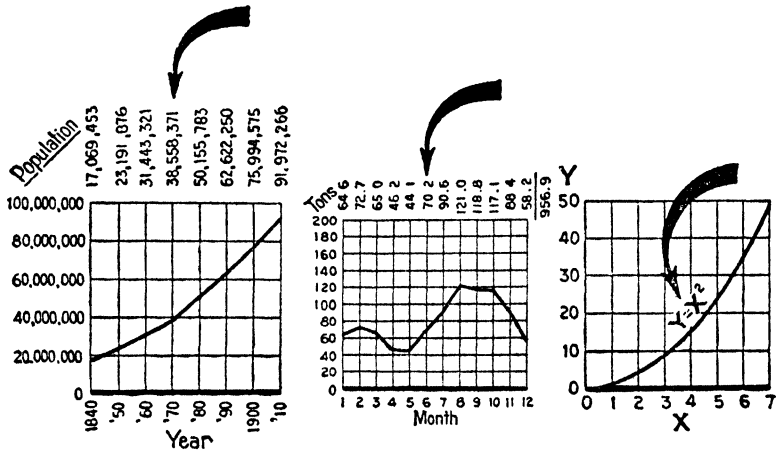
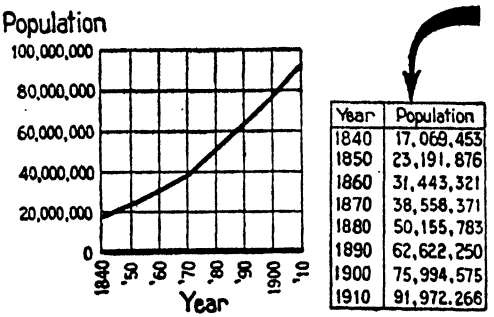


FIG. 14A FIG. 14B FIG. 14C

FIG. 14.—It is often desirable to include in the diagram the numerical data or formulas represented.

FIG. 15.—If numerical data are not included in the diagram, it is desirable to give the data in tabular form accompanying the diagram.



Year	Population
1840	17,069,453
1850	23,191,876
1860	31,443,321
1870	38,558,371
1880	50,155,783
1890	62,622,250
1900	75,994,575
1910	91,972,266

FIG. 15

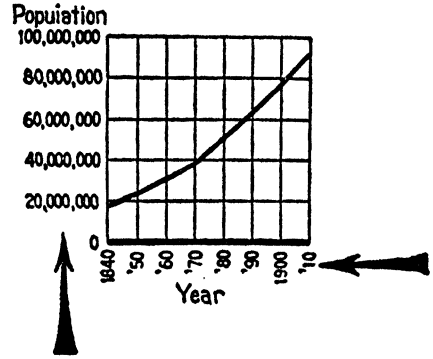


FIG. 16.—All lettering and all figures on a diagram should be placed so as to be easily read from the base as the bottom, or from the right-hand edge of the diagram as the bottom.

FIG. 16

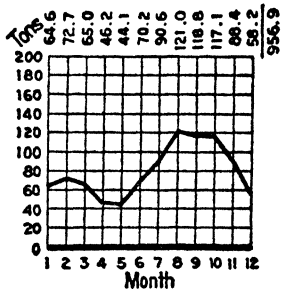


FIG. 17.—The title of a diagram should be made as clear and complete as possible. Subtitles or descriptions should be added if necessary to insure clearness.

Aluminum Castings Output of Plant No. 2, by Months, 1914:

Output is given in short tons.

Sales of scrap aluminum are not included.

FIG. 17

CHAPTER XVII

MECHANICS FOR TYPED WORK

I. General—II. Securing a Copyright—III. Page Numbers—IV. Headings and Their Punctuation—V. Underlining—VI. Quotations—VII. Spacing around Punctuation—VIII. Table of Contents—IX. Chart and Table Style: Boxing and ruling material—X. Word Division—XI. Punctuation in Lists—XII. Use of Figures, Dollars, Etc.—XIII. Abbreviations—XIV. Footnote References—XV. Bibliography.

Since a manuscript is always judged first by appearance, it is inevitable that even a mediocre report, well typed and well displayed, will often reap a better reward than a report of good content which is crowded, either in longhand or in smeared, uneven typewriting.

Because a report with material meticulously displayed has every chance of a favorable reading, one finds applicable the arts of advertising—use of different-size heads, pictures, drawings, charts, tables, graphs, arrows, rules, borders, type grouping, white space.

There are many manuals for printed work, but comparatively few business reports are ever printed. However, most are typed, and many times the investigator, especially the young man, does his own typing. Often he overlooks details such as correct spacing between sentences or after various marks of punctuation, with the result that his work is cramped, poorly displayed. In the hope of helping him, this chapter deals almost entirely with mechanics for the typist.

No attempt is made to present here all possible variations of style. It has been thought best to present one good, accepted style upon which the new writer can depend.

For illustrations of the presentation of the different elements, such as cover, title page, etc., see Chaps. IX to XII.

GENERAL

A well-prepared manuscript or report should be submitted in clear, typewritten form on one side of a good-quality white bond

paper that will stand erasures and much handling. Thin paper makes hard reading and should not be used except for routine carbon copies. Carbons that are to be circulated and widely read should be on heavier paper, for readability is an element of persuasiveness in reports. Usually the 8½- by 11-inch size paper is used, although some files are designed for the 8½- by 13-inch size.

A good ribbon, preferably black, is important in securing clean typing. To insure clear carbon copies, remove the top carbon after typing the first page, place a new one on the bottom, and move up all sheets. Repeat this process after each page, always keeping a new carbon on the bottom and the oldest one on the top, nearest the impact of the keys.

Illustrations and tables supplement, but do not duplicate either text material or each other.

Important works consulted in preparing the paper are included in an appended reference list or bibliography. Credit must be given for all material gained from other authors.

If the manuscript is not bound, the side margins are at least 1 inch wide on all pages. The top and bottom margins are of like proportion on all pages except the first page of the manuscript and the first page of each chapter. In those cases, additional white space is used. If the manuscript is bound at the top, an additional 1 inch is allowed for the top margin of all pages. If it is bound on the side, an additional 1 inch is allowed for the left-hand margin of all pages.

The spacing may be single or double, depending upon the use or purpose of the paper. Routine intracompany reports are usually single-spaced whereas a more complete and formal report —whether it is directed to the president of the company or to the public—is double-spaced. Double spacing is easier to read, especially for older eyes.

Either block or indented form of paragraph may be used. In the block form, each line begins flush with the left-hand margin. New paragraphs are indicated by double spacing between paragraphs. In the indented form the first line of each paragraph is indented five to ten spaces to the right of the left-hand margin. Indented-paragraph form should always be used when double spacing is used within the paragraphs.

SECURING A COPYRIGHT

Information or application blanks for securing a copyright may be obtained from the Register of Copyrights, Library of Congress, Washington, D. C., or your printer may do it.

PAGE NUMBERS

With the exception of the title page and the copyright page, which are allowed for but not numbered, all pages preceding the introduction or first chapter are numbered with small Roman numerals. This includes all prefatory material through the synopsis. Beginning with the first page of the introduction, or of the first chapter if there is no introduction, the manuscript proper, including the appendix and bibliography, is numbered with Arabic numerals.

If the manuscript is to be bound at the top, center the page number about ¾ inch from the bottom of the page. If it is to be bound on the side, center the page number about ½ inch from the top of the page or align it with the right margin about two spaces above the first typed line. When additional white space is used, as at the beginning of each chapter or main section, the page number may be dropped to two spaces below the last typed line and centered.

When occasionally one must add material after the numbering is completed, each additional page takes the number of the page it follows, and is shown to be an additional page by means of a letter, as 3*a*, 5*b*, etc. It is advisable to warn the reader at the bottom of page 3 that "page 3*a* follows." When, on the contrary, a sheet is omitted, the previous sheet is numbered with both its proper numeral and that of the one left out. If, for instance, one omits page 31, the number at the top of page 30 should be 30–31.

HEADINGS AND THEIR PUNCTUATION

Make the system of headings consistent throughout the work. In single-spaced work, triple space above main heads; double space after them. In double-spaced work, leave four spaces above and three spaces after centered heads. In two-line heads, do not break a phrase and do not divide a word at the end of a line. Unless they are underscored, single-space heads that are

longer than one line; it is effective to shorten or to lengthen each line uniformly after the first.

PERCENTAGE OF CITIZENS
WHO VOTED IN 1939

or

PERCENTAGE OF CITIZENS
WHO VOTED IN THE SPRING OF 1939

Chapter headings or titles are centered approximately 2 inches from the top of the page. Except for the question mark and the exclamation point, no punctuation is used with any head other than one cut into the paragraph. For it, the period is used, or a period and dash may be used.

Transportation. Two railroads serve the city. Statement of terms.—It was the purpose of this study, etc.

Chapter headings are written in solid capitals; the subhead for a division is centered in capitals and lower case three or four spaces (depending on whether the manuscript is single- or double-spaced) below the last line of the preceding material, as is also the underlined introductory heading in a paragraph.

Before one actually begins to write, it is always advisable to set up a style sheet for heads, because it makes for uniformity. For example, corresponding to the table of contents, one might have:

I. Capitals, centered (may be underlined)
  A. Capitals and lower case, underlined, centered
    1. Capitals and lower case, underlined sidehead set above paragraph.
      a. Capitals and lower case, cut into paragraph.

I. TRANSPORTATION

A. Railroads

1. Wabash

The Wabash River provided the name . . . .

a. Trackage.—After the first twenty-five years of its existence . . . .

To exemplify marginal heads, one might have:

I. TRANSPORTATION

A. RAILROADS _____

_____

1. Wabash _____

_____

a. Trackage _____

_____

The use of the numeral and letter designation is optional.

UNDERLINING

Words which normally appear in italics in print are underlined in typescript. These may be grouped into five general classifications:

1. Titles of books, music, works of art
2. Names of periodicals
3. Various reference abbreviations (see footnote references)
4. Unusual foreign expressions
5. Occasional emphasis.

Capital and lower-case heads may be, and frequently are, underlined, even when cut into the paragraph.

All these classifications are as a rule underlined by individual words although one school of thought maintains that, because titles of books, names of periodicals, etc., constitute a single unit, they may be underlined with an unbroken line.

Come in ten days.

QUOTATIONS

Quotations are the carefully checked, exact words of another author. Short prose quotations of less than four lines are enclosed in quotation marks. When quoting several paragraphs, one must insert quotation marks at the beginning of each paragraph; but only the final paragraph has quotation marks at the end. Longer quotations may be separated from the text, indented as is the paragraph, single-spaced, and have no quotation marks.

Quotations of more than one line of poetry are separated from the text, indented, single-spaced, and have no quotation marks.

In fact, all quoted and tabulated material in the body of the

manuscript is preferably indented five to ten spaces from both the left and the right margins. The first line should be further indented three spaces if the quotation begins with the first word of a sentence. Otherwise the first word is not capitalized and is set flush with the margin of the quotation.

A colon is used to introduce an indented quotation while a dash introduces a quotation beginning in the middle of a sentence. All quoted material is single-spaced, regardless of whether the text is single- or double-spaced. Double-space between paragraphs.

Three dots indicate an omission of a word or of words within a quoted passage; a space is left before and after the ellipsis. If the omission is at the end, an extra dot is added for the period, making four in all.

"I am finding that critical appreciation . . . is not lacking . . . in my own generation."

"There they live as one might expect them to live . . . ."

" . . . that taxes have doubled . . . ."

The omission of an entire paragraph or of one or more complete lines of poetry is indicated by a line of well-spaced dots which extends across the page.

Parentheses enclose incidental comment by the author of the passage; brackets indicate material supplied in a quotation by another or editorial comment upon the word or words immediately preceding. If your typewriter does not have brackets, write them in by hand. Punctuation that would normally follow the material so qualified is placed following the parentheses or brackets.

" . . . there will remain a margin of one inch (six line spaces)."

"The war occurred in the year 1932 [the correct date is 1923]."

If part of a quotation is in italics, underline it, and when a word which ordinarily would be italicized appears in an italicized section, write it in ordinary type.

For a quotation within a quotation, alternate double and single quotation marks.

Said the witness, "Ten minutes after the accident I met Jones who exclaimed, 'I heard the woman shout, "Help!" and saw her jump.'"

Even when a quotation is contained within an indented single-spaced quotation, use for it single quotation marks, just as if quotation marks were used at the beginning and end of the main quote.

SPACING AROUND PUNCTUATION

Because spacing after punctuation is a convention rather than a rule, it is standardized largely by usage. Some of the more commonly accepted conventions are listed below:

I. No space is left:

A. Before or after the hyphen.

Sons-in-law.

B. Between quotation marks and first word of quoted material.

That brings up the question of "real wages."

C. Between two punctuation marks used consecutively after a word.

"Soon," they answered.

D. Between parentheses and enclosed material.

Charleston (W. Va.) is my home.

E. Before, after, or between the two hyphen strokes which form a dash.

Easter Monday—April 10—ends her vacation.

F. After an apostrophe used within a word or expression.

3's, Mary's.

G. Before or after the diagonal or shilling bar.

And/or.

H. After either comma or period in number punctuation.

$1,756,847.52

I. After periods following lower-case letters in abbreviations which consist of two or more individual letters. (A single space

may be used if these abbreviations are designated by capital letters.)

```
c.o.d., p.m.; C. O. D., P. M.
```

J. After a colon in expressions of time.

```
10:15 p.m.
```

K. Between the figure and the per cent sign.

```
6%
```

L. When the question mark used within a sentence is followed by a dash.

```
Can that have happened?—well, we hope not.
```

II. One space is left:

A. After a comma.

```
Black, yellow, or blue.
```

B. After a semicolon

```
Often they come here; other times they go
to Mary's.
```

C. After an abbreviation period.

```
Gov. John Smith, D. D.
```

D. Before and after parentheses.

```
There are some (as usual) who prefer to stay
at home.
```

E. After an exclamation point used within a sentence.

```
Oh! there they are.
```

Exceptions: If the exclamation point is followed by a dash, no space is left.

```
Can that have happened!—well, we hope not.
```

F. Before and after the small letter *x* to indicate multiplication or times.

G. Before and after the hyphen to indicate subtraction or minus.

III. Two spaces are left:

A. After each complete sentence.

```
They left today.  They return Friday.
```

B. After a colon.

```
Its uses are three:  to designate . . . .
```

C. After a Roman numeral in an outline.

For general use the following spacing summary, from George T. Walker's *Correct Typewriting Style*, may be helpful.

Punctuation Mark	Number of Spaces
Hyphen	None
Dash	None
Diagonal	None
Comma	One
Semicolon	One
Period (in abbreviation)	One
Period (at end of sentence)	Two
Question mark	Two
Exclamation point	Two
Colon	Two

Often confusion arises concerning the correct sequence of punctuation. Here we treat only such cases as occur with most frequency.

1. The period and comma *always* come inside quotation marks.

```
He said, "I am going."

"If I were you," he said, "I would fly."

I gave him the "makings."
```

2. The colon and the semicolon are *always* placed outside the quotation marks.

```
I visited the "palace of horrors"; the
"horrors" were synthetic.
```

3. Interrogation or exclamation points are placed inside the quotation marks when they form part of the quotation; they are placed outside when they punctuate the entire sentence in which the quotation occurs.

```
He said, "Are you sincere?"

We were served such a delicious "brunch"!
```

4. If all the quotation is parenthetic, parentheses are placed outside the quotation marks.

She ("Miss Jones to you") is my partner.

5. If more than the parenthetic material is quoted, the parentheses are placed *inside* the quotation marks.

She said, "I do not believe that I 'flunked' (failed)."

6. Parentheses

a. Punctuation is placed *outside* the second parenthesis when it applies to the complete sentence and not to the parenthetic material.

The following policy is recommended (because of expediency).

b. Punctuation is placed *inside* the second parenthesis when it applies only to the material so enclosed.

Last week your cousin (what is his name?) mentioned your accident.

TABLE OF CONTENTS

Following the letter of transmittal comes the table of contents, which contains chapter or section headings, major and minor subdivisions, and page citations. Graduated indention and varied designations (Roman numerals, capital letters, Arabic numerals) indicate the relationship between parts. Naturally all headings in the table of contents should correspond exactly with the headings in the text of the manuscript.

All lines, including underhanging lines, are preferably double-spaced. No terminal punctuation is used in the table of contents.

Chapter or section titles are in full capital letters and are designated by Roman numerals. Sections are separated into divisions, which are indented two spaces and written in capitals and lower case; and into subdivisions, likewise indented two spaces and written in capitals and lower case. In any heading of more than one line, each line after the first may well be indented a few spaces. A leader line of periods begins about two

spaces after the topic and extends to within four spaces of the page number.

The appendix, bibliography, and index, if any, are main parts of the table of contents. They follow the sections, begin flush with the left-hand margin, are in full capital letters. Their page citations are aligned on the right. Appendices are designated by capital letters, as Appendix A, Appendix B, or Exhibit I, II, etc.

Next come separate lists of tables and lists of figures. Each list will be numbered consecutively throughout in Roman or Arabic numerals. Lists give with complete accuracy the exact title, the number, and the page of each item. Headings are usually spaced; second and succeeding lines of any heading are indented a few spaces.

TABLE OF CONTENTS

CHAPTER PAGE

I. INTRODUCTION 3

A. Purpose of Publication 3

B. Other Publications Issued by the School System 3

II. FORM OF BULLETIN 4

A. Cover 4

B. Title Page 5

C. Table of Contents 6

D. List of Tables 8

E. List of Figures 9

F. Text 10

APPENDIX 20

BIBLIOGRAPHY 23

LIST OF TABLES

TABLE PAGE

I. Analyses of Public School System in Illinois 26

II. Schedule of Tests 29

III. Results of Series I 45

IV. Results of Series II. 54

V. Results of Series III 60

VI. General Results of All Tests Made . . . 75

LIST OF FIGURES

FIGURE PAGE

1. Distribution of Expenditures in the Public School System in Illinois. . . . 8

2. Number of Pupils between the Ages of Six and Twelve. 15

3. Nationalities Represented in Various Cities. 50

4. Comparison of Intelligence Quotients of 357 Grammar-school Pupils. 62

CHART AND TABLE STYLE

It is important that tables and charts be neat, balanced, entirely clear. Give them complete and accurate titles, keys, and explanations and number them consecutively with Roman or Arabic numerals. Word the captions to show how the topic affects the main points. For instance, instead of "Iron Industry," it is preferable to use as a caption

Relation of Iron Industry to Automobile Production in 1939

The center headings are usually typed above the table in capitals and lower case and should be so divided into lines as to make a neat page.

Table 14

Results of Hybrid Tests in Illinois

When an explanatory subtitle is used, the main title should be underlined for contrast.

Table 14. Results of Hybrid Tests in Illinois

Showing resistance of roots, stalks, and ears to insect damage

All capitals may be used when the table fills an entire page, but remember that all capitals are harder to read than capitals and lower case.

Table headings, followed by the word "continued," in parentheses, are repeated, centered, on all necessary pages.

To avoid confusion with text references and with figures in tables, footnotes for tables should not be numbered, but should be indicated by some such signs as: *, †, ‡, etc. The footnotes are always placed two or three spaces beneath the tables.

Small tables, or sections of larger ones, may well be interspersed throughout the report close to, but not preceding, the discussion of their contents.

Tables or charts requiring more than 30 lines are given separate pages. A table requiring less than a full sheet should not be divided between two pages.

If possible, tables are placed vertically on the page. If it is necessary to run them lengthwise of the page, the bottom of the table may be in the valley of the binding. Large tables may be tipped in and folded, although this increases the cost of production. Drawings, charts, etc., should be in India ink.

In charts and tables one uses abbreviations, such as sq. ft., %, lb.

Boxing and Ruling Material

One of the most effective means of accentuating the importance of certain data is to "box," that is, to surround the material by plain lines or by a decorative border.

Ruled tables are easier to read than those merely lined up in columns. The following comparative table to emphasize the increase in number of customers is both useful and easy to read:

	1928	1927	1926	1925	1924
Electricity	268,303	250,834	232,029	205,214	182,521
Gas	142,105	131,729	121,783	105,877	95,695
Water	4,877	4,709	4,768	4,564	4,307
Heat	1,302	1,064	1,092	1,103	1,106
Total	416,587	388,336	359,672	316,758	283,629

Lines drawn between groups of items and between columns make the table easy to read. The latest and/or most favorable returns are put in the first column for psychological effect, and the number of items is limited.

Accounting paper has a blue rule every five lines to eliminate confusion. In long columns of figures, double-spacing every five or six lines will make for easier reading, whereas many black lines would make the page over-heavy.

Always follow the advertising principle of leaving plenty of white space. There should be more white space at the bottom than at the top of a page or the optical center will cause the page to be top-heavy.

WORD DIVISION

Avoid divided words because it is a disadvantage to the reader. Necessary division is infrequent, but when occasionally it occurs, be sure to divide the word between syllables.

Perhaps a few simple rules may be helpful:

1. Monosyllables cannot be divided.

thought

2. A four-letter word is not divided; preferably neither is a five- or six-letter word.

army, vowel

3. A word is not divided on one or two letters.

a-round, en-gage

4. Initials, names of persons, numbers, abbreviations, titles are not divided.

5. The last word in a paragraph or on the page is never divided.

6. Divided words should not occur at the end of three or more consecutive lines.

7. Compound words may be divided into their component parts.

basket-ball

8. Prefixes and suffixes are kept intact.

dis-appoint, replace-ment

PUNCTUATION IN LISTS

Indent lists from both margins; omit the period or the comma after lists of short items. The period is also omitted after Roman numerals unless they indicate a division of an outline.

Figures or letters used to enumerate items arranged in sentence form should be enclosed in parentheses:

(a) weight, (b) size, or (1) wire, (2) nails.

(Note that no periods are used with figures or letters.)

The semicolon separates clauses in a series introduced by a colon.

USE OF FIGURES, DOLLARS, ETC.

For the sake of quick reference, few definite numbers are written out in modern business. Use numerals for all dates, page numbers, figure numbers, listings, tabulations, dimensions, weights, measures, degrees.

Exceptions:

1. Write out a number at the beginning of a sentence. (It is often preferable to rearrange the sentence.)
2. Write out indefinite numbers.

Ten or twenty years ago.

3. Write out one number when two numbers occur together.

Four 6-inch frames.

4. Write out small numbers, from zero to ten inclusive.
5. Write out and hyphenate fractions except when they accompany a whole number. Then they appear in figures.

three-quarters; $8\frac{3}{4}$.

6. Write out numbers used as names of streets up to and including ten.
7. Words or figures may express the hour of the day. But use a.m. and p.m. only with figures.

He came at 8 a.m., not at eight a.m.

Numerals are used for all decimal quantities. With decimal numbers without units, place a cipher before the decimal points, as 0.32. When all the figures in a column are wholly decimal, it is necessary to place a zero only before the first number. The same is true of the dollar sign in columns. All digits are, of course, aligned on the right.

Definite dollar quantities are most often expressed by figures preceded by the dollar sign. Omit ciphers with an even amount of dollars: $56. Repeat the dollar sign in a series:

On those three days we cleared $25, $33, and $28 respectively.

Omit the dollar sign with cents alone: 75 cents or 75¢ (no space).

Percentages are expressed in figures. Use "per cent" or "per-cent," with no period following, for a definite amount, as 10 per cent, but say "a small percentage of the amount." In statistical material use the per cent sign (with no space).

In case of doubt about writing out numbers, consider economy and the appearance of the page.

In arranging Roman or Arabic numerals in outline form, the right-hand digits are aligned. Upon beginning a page, there-

fore, be careful to allow sufficient space for the larger numbers, such as XXXVIII.

ABBREVIATIONS

Follow the company's usage in firm names, with respect to writing Incorporated, &, Company, Brothers, Limited, etc.

FOOTNOTE REFERENCES

The four chief purposes of footnotes are to establish evidence, to acknowledge indebtedness, to amplify discussion by helpful comments, and to provide cross references to other parts of the manuscript.

A footnote reference figure (Arabic numeral) is placed one-half space above and immediately following the complete expression for which the footnote is provided. It is placed after the punctuation mark, if any, and no space is left between them. The reference figure has no period after it and is not enclosed in parentheses.

We have authoritative evidence that he was in Alaska.[2]

The numbering is consecutive throughout the page, chapter, or paper according to the amount of references necessary. Perhaps, when possible, continuous numbering throughout each separate chapter is preferred.

Footnotes are always single-spaced. They are placed two spaces below a ruled line at the bottom of the page which is two lines separated from the last line of text. The line may extend from left to right margin, from left margin to the center of the page, or merely 2 inches from the left margin. The footnote margin is, of course, the same as the margin of the text.

Footnote form is basically concerned only with clarity, conciseness, and consistency. Be sure that the source of each footnote appears in the bibliography.

According to the style used in the body of the report, footnotes may be in block form or the first line of each may be at the paragraph indention. In either case, a space is left after the reference figure, which is placed a half space above the typed line. Double-space between footnotes; do not carry a footnote from one page

to the next. In block style, begin the second line under the first word in the first line, not under the reference figure.

In typing for the printer, footnotes immediately follow their references in the body of the manuscript and are placed between lines.

The usual footnote style for a paper with a bibliography is: author's name, title, page reference. For example:

Reeder, How to Write a Thesis, p. 29.

When a paper does not have a bibliography, all necessary data concerning each individual work must appear in its first footnote reference. In that case all necessary data include in slightly altered form all the information of a bibliographical entry. For specific differences please refer to complete footnote form on page 396 and to bibliographical form on page 402. (Note in each case the order of the author's name, varying punctuation—especially that of the place, publisher, and date of book references—and the fact that footnote citations are specific pages while those of bibliography are inclusive.)

A complete footnote *book* reference when there is no bibliography includes: author's name, surname last; name of book, underlined; the edition; volume number, in Roman numerals; parenthesis, place of publication, colon; name of publisher, comma; date of publication, parenthesis, comma; page number, period. The streamlined style is the same except that the place of publication and name of publisher are reversed, and only commas separate the units. Titles of chapters of books are placed in quotation marks.

[1] W. K. Cunningham, Jr., and Ben M. Patrick, Typing Academic Papers: A Manual and a Model for the Typist and Author (Ann Arbor, Mich.: Edwards Brothers, Inc., 1937), Chap. II, "Format," pp. 10–19.

A magazine reference when there is no bibliography includes: author's name, surname last; name of article, enclosed in quotation marks; name of magazine, underlined; volume number, parenthesis, date of publication, including month, parenthesis, comma, page number, period. A colon may follow the volume number, then the page number, comma; date, period. The

streamlined style is different after the volume number, thus: 25:86–88, Jan. 5, 1940.

An unwieldy title which must be cited often may arbitrarily be condensed in its first citation and marked "hereafter cited as." For instance, *Typing Academic Papers: A Manual and a Model for the Typist and Author*, hereafter cited as *Typing Academic Papers.*

A work used only through a secondary source is so indicated in the reference.

[5] F. W. Hamilton, Printers' Manual of Style (Washington: United Typothetae of America, 1927), p. 20, citing Manual of Style, Tenth Edition, University of Chicago Press, p. 53.

In footnote references Roman numerals may indicate volume, book, part of a book, volume of a periodical. Small Roman numerals may indicate either pages so numbered in the book (preface) or scenes in a play. Arabic numerals indicate issues of periodicals or text pages of a book or of a magazine article (see below).

Here are some examples of correct footnote form; 1, 2, and 3 are for a book, 4 is for an article, and 5 for a newspaper.

[1] C. O. Sylvester Mawson, editor, Roget's International Thesaurus of English Words and Phrases (New York: The Thomas Y. Crowell Company, 1925), p. 25.

[2] John Smith, Marketing, Harper & Brothers, New York, 1934, p. 28.

[3] Charles Jones, Report Writing, p. 25. (When used with a bibliography.)

[4] Ben M. Patrick, "Typing Through College," The Gregg Writer, XXXVIII (October, 1935), p. 2.

or

38: 2, October, 1935.

[5] Editorial in the New York Times, October 10, 1937.

Standard reference expressions for footnotes:

p. (pp.)—page (pages)
l. (ll.)—line (lines)
v. (vv.)—verse (verses)
vol. (vols.)—volume (volumes)
f. (ff.)— and the following page, line, or verse (pages, lines, or verses)
ed.—edition, editor, or edited by
trans.—translation, translator, or translated by
ibid. (ibidem)—the same reference (as that immediately preceding). When the same page is indicated, ibid. may stand alone.
loc. cit. (loco citato)—in the place cited (used when reference is made to a passage previously cited, whether the two footnotes are on the same page or are separated by one or two pages. The author's name is repeated, followed by loc. cit.)
op. cit. (opere citato)—in the work but not to the page previously cited. Used when reference is made to a work by a given author, which is the only one by him previously cited. To be clear, the author's name must be repeated.
passim—at intervals throughout the pages or work cited.
idem—the same (usually, the same author)
i.e. (id est)—that is
e.g. (exempli gratia)—for example
cf. (confer)—compare
et seq. (et sequens, et sequentes, et sequentia) —and the following (lines, pages, sections)
MS. (MSS.)—manuscript (manuscripts)
q.v. (quod vide)—which see

sic—thus (even so), inserted in brackets to indicate in a quotation that what precedes it, often incorrect, actually appears in the original.
viz. (videlicet)—namely
circa or ca.—about, signifying approximation, and prefixed to questionable dates; e.g., "circa 1901."

Some illustrations of the abbreviations just listed are given below:

[6] Ward G. Reeder, How to Write a Thesis (Bloomington, Ill.: Public School Publishing Company, 1930), p. 27.

[7] Ibid. [This refers to p. 27 in the book by Reeder.]

[8] Ibid., p. 29.

[9] F. D. Halsey, Handbook of Style of the Princeton University Press, (Princeton, N. J.: Princeton University Press, 1930), p. 15.

[10] Reeder, loc. cit. [This abbreviation is used because reference is to p. 29. Citation of any other page would have made necessary the use of op. cit.]

.....

[19] Reeder, op. cit., p. 70.

[20] William Giles Campbell, A Form Book for Thesis Writing (Los Angeles: University of Southern California Press, 1934), p. 5, et passim.

BIBLIOGRAPHY

The bibliography, usually arranged alphabetically by the authors' surnames, occupies separate pages at the end of the paper, preceding the index. It provides the reader with a means of estimating the worth and impartiality of the manuscript and of following the subject further. The bibliography must include all sources cited in the footnotes, for its purpose is to provide a full description of all footnote references. It is often preceded by a division sheet bearing the one word, BIBLIOGRAPHY, in capital letters.

A work of considerable length divides the bibliography into separate classifications for (1) books and for (2) periodicals, newspapers, and miscellaneous documents. The form of entry must be consistent throughout.

The order is: (1) the author, surname first, (2) exact title, (3) facts of publication.

Perhaps the most conservative style is:

Smith, Charles. Writing the Report, 2 ed.,
Chicago: Jones Publishing Co., 1930. 411 pp.

A streamlined style, more frequently used in business and recommended by the authors, is:

Smith, Charles, Writing the Report, 2 ed.,
Jones Publishing Company, Chicago, 1930,
411 pp.

In case of more than one author, the surname precedes the given names of the first author only.

Cooper, Charles W., and Edmund J. Robins,
Marketing, etc.

If it is impossible to gain all desirable information for an entry, these abbreviations may be used: n.d. (no date); *n.v.* (*non vidimus*), (when referring to a work which you have not actually seen); n.p. (no place).

The reference is single-spaced in block form beginning on the left margin. The second and subsequent lines are indented some four spaces. Double-space between entries.

The bibliography may be plain or annotated, in which case brief comment as to its value and content follows each reference. The annotation is single-spaced and aligned with the four-space indention. Double-space between entry and annotation and, furthermore, between annotation and following entry.

Almack, John. Research and Thesis Writing. Boston: Houghton Mifflin Co., 1930. 211 pp. $2.40.

A good authority for the thesis writer. Contains much valuable information for the typist.

Campbell, William Giles. A Form Book for Thesis Writing, etc.

Titles of books and names of periodicals are underscored, usually by individual words. Titles of magazine articles or those published in a book of published essays are enclosed in quotation marks.

Eliot, George, The Mill on the Floss, etc.

Patrick, Ben, "Typing through College," etc.

Titles must appear in full in the bibliography. When a full title consists of title and subtitle, it is customary to separate them by a colon.

The Term Paper: A Manual and a Model.

Pages of an introduction are given in small Roman numerals both in the bibliography and in footnotes.

Eliot, Ray. The Miller. Vol. II, New York: E. P. Dutton & Company, 1938. vii–xiii. 492 pp.

Following are alternate recommended forms of a complete reference to an article in a journal:

Patrick, Ben M., "Typing through College," The Gregg Writer, 38: 2, October, 1935.

Patrick, Ben M., "Typing through College," The Gregg Writer, XXXVIII (October, 1935), 2.

The bibliographical entry for an article is identical with the form of the first footnote citing it except for the order of the author's name and for the fact that the bibliography cites inclusive pages while the footnote designates specific pages (see pages 396 and 398).

Encyclopedias and similar works may be alphabetized under the first important word in their titles. At the end of the entry, note the articles used. If the articles are signed, however, they may also be listed under the authors' names.

Cole, G. D. H. "Socialism: Principles and Outlook." The Encyclopaedia Britannica. 14th edition. XX: 888–895.

An anonymous article in a journal may be listed either under the first important word in the title or under "Anonymous."

Printed documents, reports of legislative bodies, etc., are generally alphabetized under their titles, which are italicized in the bibliography. When they have been collected and edited, they may be listed under the editor's name.

Annual Report of the Board of Regents of the Smithsonian Institution, 1935, Washington, D. C., United States Printing Office, 1936, 600 pp.

Edited work is generally listed under the author's name; but a compilation (such as a concordance) made by another person is properly listed under the editor's name.

When a bibliography contains two or more of one author's works, the author's name is not repeated. Instead a short unbroken line—ten hyphens followed by a period—is used in the second and subsequent entries.

Eliot, George, The Mill on the Floss, E. P. Dutton & Company, New York, 1908, 492 pp.

———, Romola, E. P. Dutton & Company, New York, 1914, 567 pp.

In case an author wrote alone some books included in the bibliography, and collaborated with other authors in others, list first those which he wrote alone, then the others, alphabetizing his collaborators.

Babenroth, A. C., Modern Business English (revised by P. T. Ward), Prentice-Hall, Inc., New York, 1933, 300 pp.

Babenroth, A. C., and H. T. Viets, Readings in Modern Business Literature, Prentice-Hall, Inc., New York, 1928, 250 pp.

Following are illustrations of correct bibliographical form; (1), (2), and (3) are for a book, and (4) and (5) for an article:

(1) Woolley, Edwin C. College Handbook of Composition. (Revised by Franklin W. Scott.) Boston: D. C. Heath and Company, 1939. 275 pp.

(2) Woods, Arthur R., Reporting, Harper & Brothers, New York, 1936, 395 pp.

(3) Mawson, C. O. Sylvester, editor, Roget's International Thesaurus of English Words and Phrases, New York: The Thomas Y. Crowell Company, 1925, 741 pp.

(4) Patrick, Ben, "Typing through College," The Gregg Writer, XXXVIII (October, 1935), 2.

(5) Jones, John, "Typing," Sunset Magazine, 15: 25-28, June, 1933.

APPENDIX I

SOME STATISTICAL TOOLS USED IN SAMPLING

I. Introduction—II. The Basis of Sampling Tests: *A*. The normal frequency distribution—III. Generalizing a Sample: Estimating the Limits of Variation: *A*. The standard error of measurement; *B*. The standard error of differences—IV. Testing a Sample for Reliability—V. Determining the Size of the Sample.

INTRODUCTION

Certain statistical tools are useful in the solution of those problems of market research which necessitate sampling to obtain quantitative information. The uses of these tools may be grouped in three divisions: first, estimating the limits of variation of the quantitative information gathered in a market survey; second, testing the data for its reliability or consistency; and, third, predetermining the number of cases to be included in the sample. Each of these divisions will be illustrated concretely in the following paragraphs.

The following situations are indicative of the problem of estimating the limits of variation. A market survey in Cleveland shows that 10.8 per cent of the families questioned preferred a particular brand of coffee. Can we say that 10.8 per cent of all the families in that city prefer this brand? Or would we get a different answer from another investigation? If we are likely to get a different answer, within what range around 10.8 per cent would it and the true per cent of users probably fall?

The same survey indicates that 14 per cent of those questioned preferred another brand of coffee. Is there actually a difference of about 3 per cent (14 minus 10.8) in the preferences for these two brands of coffee in the city as a whole? Or might this difference be due to uncontrollable factors in the sampling process? Reliable and consistent information is secured by gathering sufficient cases to give an undistorted reflection of the problem being studied. But how is one to know when he has secured enough cases to be sure of consistent and reliable infor-

mation? The most common method is visual analysis of stability charts, as illustrated on page 138. But such tests give us no measured statement of whether or not two answers secured are consistent within the limits of chance variation. (This term is discussed on pages 405–406.)

The problem of the number of cases to be included in a study is of considerable importance from the point of view of both expense and accuracy. By accuracy is meant the limits of variation of the conclusions which can be drawn from the sample. For example, a manufacturer of children's furniture wishes to determine the potential market for his product. He estimates that 35 per cent of the families in a given area who have children are potential customers. To check this estimate, a sample is to be taken. How many families should be interviewed to get an answer which will not vary more than 10 per cent on either side of 35 per cent? This illustration assumes 35 per cent to be the correct percentage of potential users and 10 per cent on either side to be the range within which uncontrollable factors in the sampling process may cause variation. The principle applied in solving such problems is that the smaller the allowable variation in the results, the greater the number of cases.

Since the function of this appendix is principally to give the reader an awareness of the help statistical tools can provide in market-research problems, the three phases of the subject will not be presented in complete detail. References are given for further study of special aspects.

Most marketing investigations deal with the counting of the consumers preferring particular products. Results of such surveys are stated in percentages—19 per cent of those interviewed prefer brand *C* coffee. Therefore the main emphasis will be given to studies of preferences.

Problems involving averages are of less frequent occurrence: average price charged by retailers for a certain product, average length of life of typewriters in use in a certain marketing area, etc. The procedures which apply to problems of this type will be presented only in broad outline.

The divisions of the subject will not be discussed in the order in which the problems arise in an actual investigation, but rather according to the ease with which the statistical tools may be

understood. Before any of the tests are discussed, the logical foundations of the methods will be indicated briefly.

The first group of uses—estimating the limits of variation—can be illustrated by using information secured from a survey of consumer preferences for various brands of tomato soup. Additional data from this study will be used to demonstrate certain other techniques.

Information of this sort is valuable to manufacturers and dealers for a number of reasons. As an example, if similar surveys in other areas are available, any one of the manufacturers concerned may compare his preference position in the various marketing areas. On this information advertising campaigns may be based.

Since the results provided by the survey are subject to certain chance errors in the sampling process, they are of slight use until the probable limits of error have been determined. Our problem is to estimate the limits within which there is a high probability of the true per cent of preference for any particular brand falling.

In the study we are using, brand 2 tomato soup was preferred by 6.5 per cent of the 3,250 consumers surveyed. Our objective is to estimate the range around 6.5 per cent within which uncontrollable factors in the sampling process might cause variation. This range is of considerable use because we know that, if other surveys are taken under the same conditions in this market, the per cent using brand 2 will probably fall within these limits of variation. The true or correct per cent using brand 2 is also probably within this range. The degree of probability will be taken up later.

THE BASIS OF SAMPLING TESTS

The basic assumption of sampling theory is that the approximate limits of variation of additional samples drawn from the same market can be determined. Since the data provided by sampling are approximations to the true values,[1] it is to be expected that the results obtained from each separate sample[2]

[1] True value is used in the sense of the actual number in the universe preferring the product in question. It can never be known exactly; we can only approximate it.

[2] Sample means a representative portion of a larger body of data. It does not refer to individual cases.

of that market will vary. Therefore the crux of the problem of sampling is to determine the limits of variation within which the results of a large number of samples would be apt to fall.

The reasonableness of this assumption is found in the principle of consistent behavior of large masses of data. Illustrations of the operation of this principle are given on page 43. Because of the stability of large numbers, we can expect samples drawn from the same population or universe[1] to vary within fairly definite limits.

The Normal Frequency Distribution

The method of determining the approximate limits of variation in sampling has been derived from the study of those

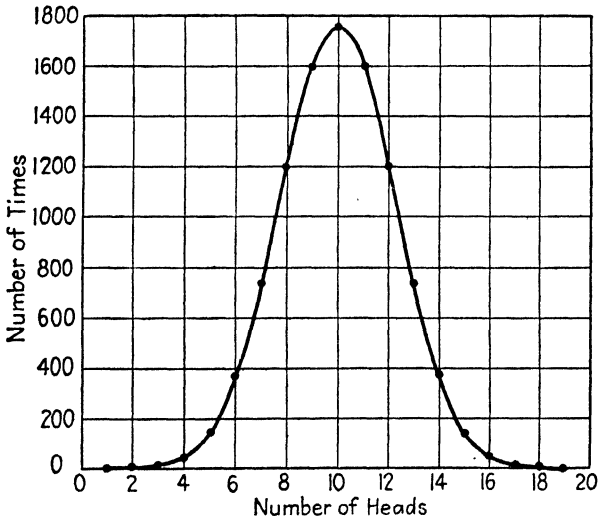


FIG. 18.—Number of heads expected to appear in ten thousand tosses of twenty coins.

frequency distributions[2] which are called "normal." A normal distribution is a chance distribution. The word "chance" is used to express the operation of unknown forces. Why, when we

[1] Population or universe means a group of items possessing certain common characteristics.

[2] A frequency distribution consists of a collection of data organized by putting into common classes all items the value of which falls within certain limits. Thus a store may have in a day 30 sales between 0 and 50 cents, 60 sales between 50 cents and $1, etc.

toss ten identical coins, do we not always get five heads and five tails? Chance, is all we can say. We believe there must be causes at work. What they are, we do not know.

Figure 18[1] is an illustration of a chance or normal distribution. The various possible combinations of heads are shown along the horizontal axis, and the number of occurrences at each combination can be read from the vertical axis. The normality of the distribution lies in the fact that the curve is symmetrical and possesses certain mathematical characteristics. A symmetrical curve is one which has corresponding points on both sides of its peak.

Normal curves are known to exist in problems involving the repeated measurement of the same object. A great number of measurements of the distance to some planet would be distributed in much the same manner as that of the coin-tossing experiment.

Normal-curve analysis is useful in sampling theory because a large number of separate representative samples drawn from the same universe will be distributed according to the pattern of the normal curve. For example, if a large number of similar samples were drawn from a market area to study the preferences of consumers for a particular brand of coffee, the different percentages obtained from the separate samples would approximate a normal frequency distribution. If this distribution of preferences is known or can be estimated, it is possible to establish limits within

[1] Based on the expansion of the binomial 10,000 $(\frac{1}{2} + \frac{1}{2})^{20}$. If the experiment were actually done, the distribution would closely approximate the curve.

TERMS OF THE BINOMIAL SERIES 10,000 $(\frac{1}{2} + \frac{1}{2})^{20}$
(Figures in nearest units)

No. of successes	Frequency of occurrence	No. of successes	Frequency of occurrence	No. of successes	Frequency of occurrence
0	...	7	739	14	370
1	...	8	1201	15	148
2	2	9	1602	16	46
3	11	10	1762	17	11
4	46	11	1602	18	2
5	148	12	1201	19	...
6	370	13	739	20	...

which nearly all samples drawn from the same universe may be expected to occur.

For sampling results[1] to be distributed normally or according to chance, all known causes of variation in the results must be eliminated. Representative sampling is the main factor in attaining this objective. Thus in the case of preferences for one brand of coffee, the sample must be fairly representative of the tastes of the city as a whole. No one group or area in the city should be given more weight in the sample than its importance in the city as a whole. Variations in the preferences indicated by the various separate samples will then be the result of chance. Since the entire structure of determining limits of variation or describing reliability rests on the study of chance distributions, it is essential that each sample be as representative as possible of the actual conditions in the universe.

The expense involved makes practically impossible the securing of a large number of representative samples from the same universe. But if we wish to generalize[2] the results of a survey which shows that 25 per cent of the consumers interviewed used a particular brand, we must be able to state the approximate limits within which there are given probabilities of the true percentage of users occurring. To satisfy this need, statisticians have devised ways of estimating the limits of variation when all that we have is one sample.

GENERALIZING A SAMPLE: ESTIMATING THE LIMITS OF VARIATION

The discussion in this section will center about the limits of variation of a single measure and the limits of variation of the difference between two measurements.

The Standard Error of Measurement

A widely used measure of variation is known as the "standard error." Under certain conditions this term is called "standard

[1] When using the phrase "sampling results" we are referring to the specific information which a sample provides. It may be quantitative in the form of percentages or averages. Results are frequently in terms of an opinion. Since the results are always estimates, the phrase "sampling estimates" will be used with the same meaning as "sampling results."

[2] Estimating the characteristics of an entire market from a small amount of data is called "generalizing the sample."

deviation."[1] Both terms are measures of dispersion about the arithmetic mean of the cases studied.[2]

Both of these measures may be defined as the square root of the mean of the sum of the squared deviations. For example, in a distribution of a group of people according to their heights, the mean was 63.95 inches and standard deviation 2.09 inches.[3] The mean plus and minus the standard deviation is then the range between 61.86–66.04 inches. This range includes approximately 68 per cent of all the persons measured. Any one person measured has about two chances out of three of being within the standard-deviation range. This is strictly true only when the distribution is normal.

Similarly, if we had a large number of samples, their standard deviation could be computed (such as the preferences for a particular product). The range of one standard deviation around the mean of all the samples would then include about 68 per cent of all the separate samples. Any one sample would have about two chances in three of being within the standard-deviation range. Since usually we have only one sample which we believe to be representative, we must estimate from this one sample the standard error of all the samples which might be drawn from this same universe under the same conditions of sampling.

From the study of normal distributions, it is known that other sample estimates have two chances out of three of falling within the range of one standard error around the value of the known sample. For example, a sample shows that 40 per cent of those interviewed preferred a particular product; the estimated standard error is 2 per cent. Other samples of the same size drawn at random from the same universe have two chances out of three of falling within the range of one standard error: 38 to 42 per cent. If the range is enlarged to include two standard errors, the chances are 95 out of 100: 36 to 44 per cent. In the range of three standard errors, the probabilities are about 364 out of 365: 34 to 46 per cent. The same probabilities apply for

[1] Standard error generally refers to an estimated standard deviation.

[2] Arithmetic mean and mean are used interchangeably.

[3] To compute it, square the difference between the mean and each height; add the squared deviations; divide the sum by the total number of persons measured; and extract the square root.

the true value in the universe being within the above ranges. We can be practically certain that within the range of 40 per cent plus or minus 6 per cent (34 to 46 per cent) will fall other estimates as well as the true per cent using the product.

In dealing with the distribution of sampling estimates, we are able to place considerable confidence in the standard-error analysis because it is known that samples are distributed normally although the universe from which they are drawn is not normal. For example, rents are not distributed normally, but a large number of representative estimates of the average rent in a given area will form a normal distribution. This assumes that the number of cases in each sample is the same and that random conditions of sampling are used.

In estimating the standard error of sampling estimates when the data is in the form of percentages, the following formula is used:

$$s = \sqrt{\frac{p \times q}{n}}$$

where s is the standard error of estimate, p is the per cent preferring the brand being studied, q indicates the per cent who do not use this brand (100 per cent minus p), and n is the number of interviews taken in the sample. In our problem, p is 6.5 per cent, q is 93.5 per cent, and n is 3,250. Substituting the values in the formula, we have

$$s = \sqrt{\frac{6.5 \times 93.5}{3{,}250}} = \sqrt{\frac{607.75}{3{,}250}} = \sqrt{0.187} = 0.43\%$$

When 0.43 per cent is added to and subtracted from 6.5 per cent, we have a range within which other samples of the same size, drawn from the same universe under conditions of random sampling, would occur two times in three. About 68 per cent of all such samples drawn would be within this range. If $3s$ (three times the standard error) is added to and subtracted from 6.5 per cent, we have the range of 5.2 to 7.8 per cent. The probabilities are 364 out of 365 that additional samples will fall within this range if the forces causing the variation are such as may be termed "chance." The probability is the same that the

true proportion existing in the marketing area is within this range.

For brand 1, we have

$$s = \sqrt{\frac{75 \times 25}{3{,}250}} = \sqrt{\frac{1{,}875}{3{,}250}} = \sqrt{0.578} = 0.76\%$$

In this case the range of $3s$ about 75 per cent is 72.6 to 77.3 per cent.

The effect on s of the number of cases in the sample is shown by using p as 6.5 per cent and n as 500.

$$s = \sqrt{\frac{6.5 \times 93.5}{500}} = \sqrt{\frac{607}{500}} = \sqrt{1.2} = 1.1\%$$

With n of only 500, the true value is probably between 3.2 and 9.8 per cent or $6.5 \pm 3.3(6.5 \pm 3s)$. Much less confidence can be placed in a conclusion which may vary between 3.2 and 9.8 per cent than in one of the limits of which are 5.2 and 7.8 per cent (comparing brand 2 with n of 500 and 3,250).

The increase in s with a decrease in n reflects the difficulty of getting a thoroughly representative sample with a rather small number of cases when random methods of sampling are used.

In considering the significance of these results, the reader must remember that the entire computation structure is based on the assumption that the universe will remain stable and the sampling will be done under random conditions. Given an approximation to these requirements, the limits of variation may be determined. Within these limits, the forces causing variation are assumed to be chance factors.

The following formula is used to estimate the standard error of data in the form of averages:

$$s = \sqrt{\frac{S.D.}{n}}$$

where s is the standard error of the mean, $S.D.$ is the standard deviation, and n is the number of cases used in computing the mean. The method of computing the standard deviation can be found in any elementary statistics text. References to several

of the standard texts in use at the present time are listed below.[1]

In using the standard error of the mean, one uses the same probabilities that are involved in the case of data in the form of percentages: the mean plus and minus $3s$ is the range within which 364 out of 365 estimates will fall when the variation is due to chance. The same probabilities apply to the true mean's being located within this range.

The Standard Error of Differences

The basic problem in drawing conclusions concerning the difference between two measurements is in determining whether or not the difference might have resulted from chance variation in the sampling process. If a large number of samples were taken in the same market area, the preferences for brands as expressed in percentages would vary. Thus any difference between two brands is the result of the combined operation of buying habits and chance factors of sampling. Before we can determine whether a given difference in preferences is significant, we must know if it is greater than the difference which might be due to chance.[2]

For illustration, data from the survey on tomato-soup preferences is used.

TOMATO SOUP—BRAND PREFERENCE*

Brand	1	2	3	4
Per cent of preference	75	6.5	4.6	2.8
Number of cases	3,250			

* Consumers were not limited in their choice to only four brands. They were asked to name their favorite brand. For problems of limited choice see T. H. Brown, *The Use of Statistical Techniques in Certain Problems of Market Research*, p. 5.

It is known that differences caused by chance are distributed normally; thus, it is possible to estimate their standard deviation (standard error). The standard error of the difference (S_D) is an estimate of the amount two percentages may differ because of

[1] F. C. MILLS, *Statistical Methods*, p. 145; F. E. CROXTON and D. J. COWDEN, *Practical Business Statistics*, p. 208; J. R. RIGGLEMAN and I. N. FRISBEE, *Business Statistics*, p. 219.

[2] The term "significant difference" will be used in the sense that the difference is not due to chance but to some basic differentiating factor.

chance. Differences as large as three standard deviations may result from chance forces in sampling. Thus a difference between two percentages must exceed three standard deviations to be considered significant.

The formula used to estimate the standard error of the difference is $S_D = \sqrt{s^2_x + s^2_y}$ where s^2_x and s^2_y are the squared standard errors of the two percentages as given by pq/n. The formula used is based on the proposition that the standard error of the difference is a function[1] of the standard errors of the two percentages whose difference is being tested.

The difference between brands 2 and 3 is 1.9 per cent. Let us test the hypothesis that this difference is not significant, or that it is the result of chance errors of sampling. The steps involved in the test are: (1) determine the standard error squared of each brand; (2) compute the standard error of their difference from the formula $\sqrt{s^2_x + s^2_y}$; (3) multiply the standard error of their difference by three; and (4) compare with the actual per cent of difference to test the hypothesis of non-significance.

Step 1:

Brand	2	3
p	6.5	4.6
q	93.5	95.4
n	3,250	3,250

$$s^2_x = \frac{pq}{n} = \frac{6.5 \times 93.5}{3{,}250} = \frac{607.75}{3{,}250} = 0.187$$

$$s^2_y = \frac{pq}{n} = \frac{4.6 \times 95.4}{3{,}250} = \frac{438.84}{3{,}250} = 0.135$$

Step 2:

$$S_D = \sqrt{s^2_x + s^2_y} = \sqrt{0.187 + 0.135} = \sqrt{0.322} = 0.57\%$$

Step 3:

$$3 \times s = 3 \times 0.57 = 0.71\%$$

Step 4:

The actual difference between brands 2 and 3 is 1.9 per cent. For this difference to be considered significant, it should be equal to at least three times the standard error of the difference

[1] Function means that the standard error of the difference is determined by the standard errors. The S_D varies with changes in the standard errors.

between the brands. In this case the difference is larger than $3S_D$. There is a high probability that a significant difference in buying habits exists in the actual universe.

For brands 1 and 2 the S_D is 0.92 and $3S_D$ is 2.76. The absolute difference between the two brands is 68.5 per cent. We can be certain in this case that random errors in the sampling process have not been responsible for a difference of this magnitude. The probable true value of the difference lies between 65.7 − 71.3 per cent (68.5 ± 2.8).

The influence of a smaller value for n is illustrated by assuming that only 500 cases were gathered and then testing the difference between brands 2 and 3. The same percentages as in the case of n of 3,250 are used. The value of $3S_D$ in this case is 5.1 per cent. With an absolute difference between brands 2 and 3 of only 1.9 per cent, we must conclude that there is a very high probability that the difference was the result of chance errors in the sampling process.

Testing for significant differences in problems of measurement, such as average prices, is similar to that of counts of consumer preferences. The formula is the same

$$S_D = \sqrt{s^2{}_x + s^2{}_y}$$

where $s^2{}_x$ and $s^2{}_y$ are the squared standard errors of the two means. The standard error of the mean is computed from

$$s^2 = \frac{S.D.}{n}$$

where the numerator is the standard deviation.[1] Preferences for the various brands of tomato soup were also classified according to three levels of income: 1, 2, and 3. Brand 1 was preferred by 93 per cent of the consumers in income group 1, by 78 per cent of those in group 2, and by 75 per cent of those in group 3. May we conclude that there is a significant difference between each of the income groups in their preferences for brand 1? Or could these differences result from chance errors of sampling? It may be said that we are asking if variation in income creates significantly different universes of preference.

[1] See the references listed on p. 412 for computation.

The method of determining the standard error of the difference where the results may have been derived from different universes of data is given by the formula

$$S^2_D = p_0 q_0 \left(\frac{1}{n_1} + \frac{1}{n_2}\right)$$

Testing first the difference between groups 1 and 2, n_1 is the number of consumers questioned in 1, and n_2 the number in 2; q_0 is the difference between 100 per cent and p_0; p_0 is given by the formula

$$p_0 = \frac{n_1 p_1 + n_2 p_2}{n_1 + n_2}$$

where the subscripts 1 and 2 refer to groups 1 and 2, respectively. From the survey we get the following information:

Group I		Group II	
p_1	83%	p_2	78%
n_1	605	n_2	1,991

Substituting the necessary values in the formula for p_0, we have

$$p_0 = \frac{(605 \times 83) + (1{,}991 \times 78)}{605 + 1{,}991} = \frac{50{,}215 + 155{,}298}{2{,}596}$$

$$= \frac{205{,}513}{2{,}596} = 79.2$$

$$q_0 = 100 - 79.2 = 20.8$$

Then introducing the computed values above and n_1 and n_2 into the standard error formula, we have:

$$S^2_D = 79.2 \times 20.8 \left(\frac{1}{605} + \frac{1}{1{,}991}\right)$$

$$= 1{,}647.36(0.001652 + 0.0005023)$$

$$= 1{,}647.36(0.002154)$$

$$= 3.5484$$

$$S_D = \sqrt{3.5484} = 1.88$$

To determine the limits within which the difference assignable to chance is probably located, we must determine the magnitude of $3S_D$:

$$3S_D = 3 \times 1.88 = 5.64$$

The absolute difference between the preferences of groups 1 and 2 is 5 per cent (83 − 78). Since this difference is less than $3S_D$, income variations have probably not created significant differences in preference for brand 2 tomato soup.

TESTING A SAMPLE FOR RELIABILITY

The principal reason for reliability tests is to discover whether or not the various measurements of whatever is being studied are consistent within the limits of chance variation. For the information to be of any practical use, the results must be consistent.

In terms of an actual problem, the per cent preferring a particular product must have reached a point of stability, where there are only minor chance variations between the gross and subsamples. The gross sample refers to the total number of interviews, and the subsample is any smaller portion of this total.[1]

The principal methods of studying reliability are cumulative charts, discussed on page 138, and the group-rotation system. The standard-error-of-difference analysis is useful also though not so simple as the cumulation and rotation methods.

Fundamentally, the group-rotation scheme is nothing but the standard error of estimate: two portions of the gross sample are consistent if the difference between them is no greater than three times the standard error of that portion showing the smallest per cent of preference.

The steps in applying the test will be shown as follows, but no attempt will be made to illustrate the method in detail. The reference below gives a detailed presentation.[2]

[1] An investigation may have included 5,000 cases, which may be broken into portions of 100 each. If the results are stable as a whole, the difference between the preference in the gross sample and any subsample will be such as might have resulted from random errors in the sampling process.

[2] L. O. BROWN, *Market Research and Analysis*, pp. 319–323.

1. Thoroughly mix the questionnaires or replies.

2. Separate the total number of questionnaires into ten groups of equal size.

3. Count the number of favorable replies in each of the ten groups (for example, the number in each group using a particular product).

4. Total the preferences in groups 1 through 5, and 6 through 10. Determine the difference in the number of favorable replies between the totals of groups 1 to 5 and 6 to 10.

5. Rotate the groups so that the totals of groups 2 to 6 and 7 to 1 can be computed. Continue rotating in this manner until the circle has been completed and the order is back to 1 to 5 and 6 to 10. Determine the differences in number of favorable replies between each pair of five groups.

6. Compute the standard error of estimate in each pair of five of that group which has the smallest total number of favorable replies. Use the formula $s = \sqrt{pq/n}$, where p is the per cent of favorable replies of the total of the five groups being considered, n is the total number of questionnaires in the group of five.

Two pairs of five are considered consistent if the difference between them is less than three times the standard error of the group of five having the smallest number of favorable replies. Each of the pairs of five must be tested in the same manner. If the difference between any pair is greater than three times the standard error, the entire sample is not yet consistent or reliable. Additional questionnaires should be secured until the group-rotation test is met.

As an investigation proceeds, there may be times when it is doubtful if a certain group of questionnaires has been drawn from the same universe as the others. For example, if the per cent of the cumulated replies preferring a product is 35 and a batch of 200 comes in with a per cent of 55, it is time to ask if the results are consistent. The reliability can be tested by computing the standard error of their difference, as illustrated on pages 412–414. If the difference of 20 per cent is greater than three times the standard error of their difference, it is evident that the proportionality in the group of 200 is not the same as that of the total. The causes of this variation should then be determined.

DETERMINING THE SIZE OF THE SAMPLE

When dealing with a count of consumer preferences, the method of determining the number in the sample is based on the principles involved in the formula for the standard error:

$$s = \sqrt{\frac{pq}{n}}$$

In this formula the standard error is inversely related to the number of cases in the sample. As the number of cases increases, the standard error decreases.

The formula can be applied to the problem of the number of cases in the following manner: First, a decision must be reached as to the range within which the sampling estimate may vary.[1] The variation permissible is that which may arise from chance factors in sampling. Thus the estimated range should be at least three times the standard error, since the probabilities are 364 out of 365 that variations due to chance will occur within this range. In applying this method the per cent of allowable error will be assumed to be equal to three times the standard error.

The next step is to estimate what part of the consumers in the given market area use the particular brand in question.

We shall assume that our permissible error is 5 per cent ($3s$), that the estimated per cent using the particular brand is 30, and the per cent not using it is 70. Substituting in the formula as above

$$5\% = 3\sqrt{\frac{30 \times 70}{n}}$$

Squaring both sides of the equation to remove the square root sign, we have:

$$25 = \frac{9(30 \times 70)}{n}$$

Multiplying and solving for n

$$n = \frac{9(2{,}100)}{25} = \frac{18{,}900}{25} = 756$$

The formula thus suggests a sample of at least 756 cases.

[1] The type of factors to be considered in such a decision is illustrated on p. 419.

The table on pages 420 and 421[1] furnishes a method for quickly determining the number of cases necessary for a desired degree of accuracy. The values in the table have been determined by the method described above. To use the table, locate the proper column for p and q; then in this column, on the line opposite the allowable variation, read the number of cases. Thus for an estimated per cent usage of 35 per cent $\begin{Bmatrix}35\\65\end{Bmatrix}$ and an allowable variation of 3 per cent, n is 2,275.

The correctness of the number of cases as suggested by the table depends mainly on the accuracy with which the per cent using the particular product is estimated. Usually one expects the per cent of preference to differ from the unchecked estimates. If this were not true, there would be no need for sampling. Sampling results must be checked to determine their consistency or reliability. Only in this way can one know when an adequate number of cases has been gathered. It should be remembered that these tests are not a check on the representativeness of the results, but they are helpful in deciding if certain subsamples have been drawn from the same universe.

Estimating the per cent of error allowable in marketing investigations cannot be reduced to a formula applicable to every problem. A few illustrations will indicate some of the factors that must be considered.

If the analyst believes that the preferences for two brands are of the order of 50 per cent and 10 per cent, considerable variation is permissible without significantly affecting the conclusions. Little error is allowable, however, when the preferences are believed to be about 17 per cent and 14 per cent, without affecting the conclusions significantly.

The use to which the results are to be put must also be considered. If large expenditures are going to be based on the conclusions, the allowable variation must necessarily be small.

The basis of estimating the proportion of users of a given brand is likewise not subject to set rules. Small-scale preliminary surveys are frequently used. Estimates usually can be obtained from those intimately connected with the marketing of the product.

[1] Adapted from T. H. Brown, *The Use of Statistical Techniques in Certain Problems of Market Research*, pp. 12–13.

In determining the number of cases in a survey of consumer preferences for competing brands, we must deal with several allowable errors and preference estimates. The problem is hardly so simple as in the case of the preference for one product. The final number of cases can be built up by totaling the number needed for each brand included in the study. In each case the same method as illustrated on pages 418–419 can be used. When

SIZE OF SAMPLE NECESSARY TO BE PRACTICALLY SURE OF ACCURACY
(*i.e.*, on the Basis of $\pm 3\bar{\sigma}$)
WITHIN PREDETERMINED LIMITS[1]

Formula: $n = \frac{9pq}{(3\bar{\sigma})^2}$

Limits $\pm 3\bar{\sigma}$ (in %)	20 80	25 75	30 70	35 65	40 60	45 55	50 50
0.1	1,440,000	1,687,500	1,890,000	2,047,500	2,160,000	2,227,500	2,250,000
0.2	360,000	421,875	472,500	511,875	540,000	556,875	562,500
0.3	160,000	187,500	210,000	227,500	240,000	247,500	250,000
0.4	90,000	105,469	118,125	127,969	135,000	139,219	140,625
0.5	57,600	67,500	75,600	81,900	86,400	89,100	90,000
0.6	40,000	46,875	52,500	56,875	60,000	61,875	62,500
0.7	29,388	34,439	38,571	41,786	44,082	45,459	45,918
0.8	22,500	26,367	29,531	31,992	33,750	34,805	35,156
0.9	17,778	20,833	23,333	25,278	26,667	27,500	27,778
1.0	14,400	16,875	18,900	20,475	21,600	22,275	22,500
1.5	6,400	7,500	8,400	9,100	9,600	9,900	10,000
2.0	3,600	4,219	4,725	5,119	5,400	5,569	5,625
2.5	2,304	2,700	3,024	3,276	3,456	3,564	3,600
3.0	1,600	1,875	2,100	2,275	2,400	2,475	2,500
3.5	1,176	1,378	1,543	1,671	1,763	1,818	1,837
4.0	900	1,055	1,181	1,280	1,350	1,392	1,406
4.5	711	833	933	1,011	1,067	1,100	1,111
5.0	576	675	756	819	864	891	900
6.0	400	469	525	569	600	619	625
7.0	294	344	386	418	441	455	459
8.0	225	264	295	320	338	348	352
9.0	178	208	233	253	267	275	278
10.0	144	169	189	205	216	223	225
15.0	64	75	84	91	96	99	100
20.0	36	42	47	51	54	56	56
25.0	23	27	30	33	35	36	36
30.0	16	19	21	23	24	25	25
35.0	12	14	15	17	18	18	18
40.0	9	11	12	13	14	14	14

[1] Table copyrighted, 1932, by the President and Fellows of Harvard College.

FIG. 19.

there is a large number of brands, the problems of estimating the per cent preferring each brand are difficult. However, it is likely that a limited number of brands are noticeably preferred. The cases needed for each of these can be determined by reference to Fig. 19. The total percentage estimated to prefer these brands subtracted from 100 per cent then provides a basis for estimating the remaining number of cases.

SIZE OF SAMPLE NECESSARY TO BE PRACTICALLY SURE OF ACCURACY (*i.e.*, on the Basis of $\pm 3\bar{\sigma}$) WITHIN PREDETERMINED LIMITS[1]

Formula: $n = \frac{9pq}{(3\bar{\sigma})^2}$

Limits $\pm 3\bar{\sigma}$ (in %)	1 99	2 98	3 97	4 96	5 95	10 90	15 85
0.1	89,100	176,400	261,900	345,600	427,500	810,000	1,147,500
0.2	22,275	44,100	65,475	86,400	106,875	202,500	286,875
0.3	9,900	19,600	29,100	38,400	47,500	90,000	127,500
0.4	5,569	11,025	16,369	21,600	26,719	50,625	71,719
0.5	3,564	7,056	10,476	13,824	17,100	32,400	45,900
0.6	2,475	4,900	7,275	9,600	11,875	22,500	31,875
0.7	1,818	3,600	5,345	7,053	8,724	16,531	23,418
0.8	1,392	2,756	4,092	5,400	6,680	12,656	17,930
0.9	1,100	2,178	3,233	4,267	5,278	10,000	14,167
1.0	891	1,764	2,619	3,456	4,275	8,100	11,475
1.5	396	784	1,164	1,536	1,900	3,600	5,100
2.0	223	441	655	864	1,069	2,025	2,869
2.5	143	282	419	553	684	1,296	1,836
3.0	99	196	291	384	475	900	1,275
3.5	73	144	214	282	349	661	937
4.0	56	110	164	216	267	506	717
4.5	44	87	129	171	211	400	567
5.0	36	71	105	138	171	324	459
6.0	25	49	73	96	119	225	319
7.0	18	36	53	71	87	165	234
8.0	14	28	41	54	67	127	179
9.0	11	22	32	43	53	100	142
10.0	9	18	26	35	43	81	115
15.0	4	8	12	15	19	36	51
20.0	2	4	7	9	11	20	29
25.0	1	3	4	6	7	13	18
30.0	1	2	3	4	5	9	13
35.0	.7	1	2	3	3	7	9
40.0	.6	1	2	2	3	5	7

Table copyrighted, 1932, by the President and Fellows of Harvard College.

FIG. 19.—(*Continued*)

To determine the number of cases when the results will be in the form of averages, the formula for the standard error of the mean has some value:

$$s = \sqrt{\frac{\text{S.D.}}{n}}$$

To use this formula both the standard error (s) and the standard deviation must be estimated. Considerable difficulty may be encountered in deciding on the value of the standard deviation. If this can be done the steps in solution and interpretation are the same as for percentage data. A substitute method which overcomes the problem of estimating the standard deviation is given in the reference listed below.[1]

[1] R. VERNON, "Predetermining the Necessary Size of a Sample in Marketing Studies," *Journal of Marketing*, 2: 9, July, 1937.

APPENDIX II

TYPICAL OUTLINES

These typical outlines will be suggestive of the extent to which business demands complete handling of a problem. For others, see Chap. VIII.

The following is a skeleton outline prepared by the General Electric Company, Schenectady, N. Y., to guide those who prepare technical reports for them:

General Outline for Reports of the General Electric Company

The following general outline should be used as a guide when writing a report. The writer should follow the order of the main headings while working out that outline which applies to his particular subject.

- INTRODUCTION
  - *Object* (State briefly what was done and why.)
  - *Identification* (Is it a comparison, description of new phenomenon, or development of a theory? What is its structure? Utility or connection with the art?)
  - *Definition of Problems* (Detailed features of investigation and how far carried.)
  - *Related Facts* (References to earlier recorded work, etc.)
- PLAN
  - *Attainment of Objective* (Was a series of experiments performed; were existing data collected; or was a plan of calculation carried out?)
  - *Basis of Comparison* (How and with what will the observed results be compared?)
- WORK
  - *Survey of Situation* (Testing equipment and arrangement described or theory and assumptions discussed.)
  - *Procedure* (Tests described or calculations performed.)
  - *Results* (Summarized data in comparative form. Show graphically when feasible. Answer questions likely to arise.)
- REVIEW
  - *Accuracy of Results Outlined* (If possible give percentage range of accuracy for various results.)
  - *Comparison of Results* (Old *versus* new, etc.; do they meet expectations?)
  - *Analysis of Final Situation* (Completeness, effect on design, costs, production, etc. Are methods and results satisfactory?)
  - *Future Work*

Business Research Corporation Store Service Survey
Instructions for Observer

The purpose of this survey is to get a picture of service conditions including:

1. Number of customers using the store
2. Number of customer contacts by classes
3. Distribution of contacts through the day
4. Number of customers waiting for service throughout the day
5. Personnel on duty
6. Percentage of available employees' time actually utilized on contact work
7. Average time required for contacts of different kinds

Forms

The forms used in the survey and report are:

A. Personnel and Contacts
B. Customer Count
C. Time Study of Contacts
D. Analysis of Time
E. Chart of Contacts and Personnel

Instructions

1. List all store personnel on the back of form *A*, giving for each employee the following:
   a. Code number
   b. Name
   c. Title of position
2. Determine names for the actual store positions, such as: Cashier, Sales and Service Clerk, Lamp Clerk, and fill in these names at the top of form *A*.
3. Observe the actual occupations of the personnel. Every half-hour enter the code numbers of employees on form *A* under the titles of positions which they actually filled during most of the past half-hour period. Omit periods of temporary relief.
4. Count all persons entering the store and tally them by half-hour periods on form *A*.
5. Observe the movement of customers and tally the contacts made by class of contacts on form *A*. Omit simple, passing remarks but tally every definite business contact and every transaction. If one customer makes several contacts, count each one separately.
6. At the beginning of every 10-minute period, make a census of customers and employees in the store. Count the total number in the store. Also, count the number of customers actually waiting to be served and tally these by location, such as cashier's cage, sales floor. Use form *B*.
7. As opportunity permits, make time studies of the various kinds of contacts and plot a distribution of these studies by time intervals on form *C*.

8. Describe any unusual condition of business or weather or personnel on the back of form *A*.

9. Analyze the time available and time used on contact work by classes of contacts on form *D*. Use average times for contacts as determined by time study.

10. Chart the history of the day's work on form *E*, showing the number of contacts of each class by half-hour periods and the number of employees on duty.

Outline of Consumer Buying Habits

1. Summary of findings concerning buying habits
2. Divisions of information on buying habits
   - *a.* What consumers pay, in each of the income classes
   - *b.* Units of purchase in each of the income classes
   - *c.* Where they buy
   - *d.* Items of furniture bought according to income
   - *e.* How to buy
   - *f.* Buying habits of dealers
   - *g.* Number and distribution of dealers

Usually the fundamental factors which investigators consider in computing the potential market for a given product in a given territory are

1. Population, number, and density
2. Buying power
3. Buying habits
4. Literacy
5. Economic stability
6. Nationality
7. Special conditions
8. Future possibilities

Information necessary for determining potential sales of a store, according to C. F. Hansen of the W. T. Grant Company:[1]

1. Population
2. White population
3. Trading area population
4. Rate of growth in population
5. Number of wage earners
6. Factory pay roll
7. Value of products
8. Bank debits
9. Per capita revenue receipts
10. Per capita of assessed valuation of property
11. Building operations
12. Number of retail establishments

Outline of Method of Presenting a Plant Transportation Survey

1. Investigation: why the report is submitted
2. Recommendation: short and to the point

[1] American Management Association, Sales Executive Series 24.

3. Anticipated results: short and to the point
4. Savings: in detail for each department
5. Expenditures: itemized and detailed
6. Length: two or three typewritten pages
7. Placement: first part of the report content; complete discussion and an example of present and proposed method for future reference and for plant managers to give the board of directors if requested
8. Supplementary material
   a. Test of routes and clearances
   b. Consolidation and delivery boys
   c. Some detail of operation
   d. Tentative program for operating department to follow after the equipment is purchased

Outline of Informal Intraorganization Report

I. Outline of an intraorganization report suggesting a new method in office routine
   A. Summary containing recommendations
   B. Statement of present conditions
   C. Definite suggestions as to changes together with reasons
   D. Forms and written instructions
II. Outline of an intraorganization report on branch divisions sales policy
   A. History of commission and procedure, discussed with Mr. _____
   B. General situation
   C. Past plan of operation—all branches separately
   D. Trouble with it
   E. Future result
   F. Solution suggested
   G. Offers man to fit suggested job
   H. Recommendations
   I. Summary—sentence each

Branch Banking in Illinois

I. Introduction
   A. Preface to this study
   B. Brief history of banking in the United States
   C. Geographical concentration of branch banking
   D. Foreign and domestic influence on branch banking
II. Illinois and branch banking
   A. The case for limited branch banking in Illinois
   B. Opposition to limited branch banking in Illinois
III. Conclusion
   A. Bibliography

Financial Prospectus

Exclusive of the balance sheets, profit-and-loss statements, and other financial statements and schedules, the prospectus discusses such heads as:

History and business	Legal opinions
Property and leases	Pending litigation
Regulation and rates	Underwriting terms
Franchises	Dividends
Purpose of issue	Capitalization
Description of issue	Description of stock issues
Supervision	Retirement reserve policy
Directors and officers	Comparative operation results

Report on Apparatus[1]

I. Object
  A. Reason for the work
  B. Ground to be covered
  C. Authority
II. Summary
  A. Results obtained (no discussion)
III. Apparatus
  A. List of apparatus and instruments
  B. Full description of them
  C. Pictures and sketches to permit duplication
    1. In order to judge appropriateness
    2. Identify instruments
    3. Replace setup to check results
IV. Method
  A. Of taking readings
  B. Sequence of readings
  C. Description in full
V. Computations
  A. State formulas
  B. Explain symbols
  C. Source of formulas
  D. Units in which computations are expressed
  E. Clear as to course, etc.
VI. Graph of result
  A. Don't use scales not commensurate with probable accuracy
  B. Scale easily subdivided
  C. Keep curves separated
  D. Indicate scale drawn to
  E. Label curves in full
  F. Give full title on each curve sheet
  G. In general, use only one ink
VII. Discussion of results
  A. Complete survey
  B. Factors influencing
  C. Reliability and comparisons

[1] C. W. ANDREA, "Report Writing," *Sibley Journal of Engineering*, 39: 386, October, 1925.

VIII. Recommendations
  A. As to changes in the future
  B. Pursue associated idea
IX. Original data
  A. Include original or careful copy
X. Graph data
  A. Steadiness of conditions
  B. Interrelation
  C. Establishing contacts
XI. Bibliography

Special Financial Report

I. Title page
II. Letter of transmittal (or formal introduction)
III. Table of contents
IV. Synopsis
V. Introduction
  A. Authorization
  B. Scope
  C. Purpose
VI. General information
  A. Market conditions and trends
    1. Business
    2. Territory
    3. Summaries of financial conditions
    4. Results as reflected
  B. History of general industry
    1. Past and present conditions
    2. Policies
  C. History of company under investigation
    1. Type of business
      a. Products sold
      b. Range of adaptability
      c. Capacity of plant
    2. Location
      a. Land or building—construction, occupancy, condition
      b. Appraisals
      c. Title
      d. Transportation
      e. Seasonal aspects
    3. When and where incorporated
    4. Holdings of the company
      a. Amount of production
      b. By-products, if any
      c. Extent
    5. Organization facts
    6. Other investments
    7. Patent
    8. Tax exemption

VII. Limitations
- *A.* Indenture
  1. Rights, conversions, privileges, etc.
  2. Agreements

VIII. Financial
- *A.* Purpose of the issue
  1. Reason for further financing
  2. Why this method was selected
- *B.* Valuation
- *C.* Capital structure
  1. Type of bonds, due, rate, amount
  2. Preferred stock, par, rate, amount
  3. Common stock, par, amount
  4. Debentures, etc.
- *D.* Dividend payments on all stocks and bonds
  1. Past
  2. Present
  3. Future (estimated)
- *E.* Earnings
  1. Net income
     - *a.* Amount per share
     - *b.* Comparative with other years
     - *c.* Reasons—past, present, future
- *F.* Balance sheet
  1. Assets and liabilities
  2. Book value
- *G.* Depreciation and depletion
- *H.* Good will
- *I.* Sinking fund

IX. Situation in field affecting the investigation
- *A.* General—such as recent improvements
- *B.* Consumption
  1. Reasons
  2. Results
  3. Present contracts of this company
  4. Present contracts, if known, in the field
- *C.* Exports and imports
  1. Conditions abroad
  2. Conditions at home
- *D.* Price of product
- *E.* Incidental factors
  1. Measures to aid situation
     - *a.* Curb over-production, etc.
  2. Mergers
  3. Rate regulation
  4. Marketing
  5. Competition
  6. Special features

X. Personnel of management—age, history, character, ability, past record
XI. Summary
  A. Conclusions
  B. Recommendations
XII. Signature
XIII. Appendix
  A. Financial statement of company
  B. Statement of subsidiaries and associated companies
  C. Schedules
  D. Maps, etc.

Suggested Outline of Study on Problems of the Retailer[1]

I. Store arrangement
  A. Location of departments
  B. Type of equipment
II. Stock Display
  A. Counter and window
  B. Lighting, decoration, and color
  C. Price tags
III. Personnel
  A. Selection
  B. Training and education
  C. Store checks on selling ability and honesty
  D. Compensation
IV. Inventory and stock control
  A. Store records
  B. Inventory methods and frequency of taking
  C. Pricing
V. Inventory and stock control (*continued*)
  A. Turnover
VI. Costs of doing business
  A. Analysis of
    1. Salaries
    2. Rent
    3. Power, heat, light
    4. Telephone
    5. Depreciation
    6. Interest
    7. Miscellaneous
VII. Credits and collections
  A. Capital requirements
  B. Operations of credit department
  C. Use of credit bureaus

[1] U. S. Department of Commerce, *Domestic Commerce News*, No. 32–7. (This outline may easily be revised to suit the needs of specific organizations.)

VIII. Credits and collections (*continued*)
- *A.* Credit terms
- *B.* Credit losses
- *C.* Collection policies
- *D.* Returned merchandise

IX. Delivery
- *A.* Analysis of costs
- *B.* Equipment
- *C.* Maintenance
- *D.* Other problems such as zones, frequency of delivery, handling of orders

X. Sales promotion
- *A.* Review display, store arrangement, and personnel training
- *B.* Analysis of trading area from standpoint of population, purchasing power, and buying habits
- *C.* Sales appeal from standpoint of price and quality
- *D.* Methods of increasing customers and units of sale
- *E.* Special sales
- *F.* Telephone selling

XI. Advertising
- *A.* Importance of and truth in
- *B.* Cost and its relation to gross sales (advertising budget)
- *C.* Co-operative

XII. Advertising
- *A.* Media
  1. Catalogues, directories, programs, streetcar, stunt, house-organs, coupons, prizes
  2. Direct mail
  3. Magazine
  4. Newspaper
  5. Outdoor
  6. Radio
  7. Review stock display, lighting, etc., as an advertising feature

The following outline was made from an elaborate market survey report of Outdoor Advertising, Inc.[1] The indication of source material for different sections should be helpful to the new investigator.

Urban Markets and Retail Sales

Cover
Title page
Why this study was made
Table of contents
Acknowledgments

[1] Outdoor Advertising, Inc., 60 East 42 Street, New York, 1940.

Retail sales figures as a guide to market evaluation
Method of establishing urban market areas
The new urban markets
  Retail sales map of 1901 different urban markets
  Retail sales and outlets by states
  Retail sales and outlets by class of market
Urban market boundaries (each discussed)
  Characteristics of minor civil division
  Population density figures
  Principles of market construction
  Variations from regular procedure
  Market divisions
Presentation of market statistics by states and cities
Information given for each city (in columnar form)

Retail sales record for 19—	
Total retail sales	
Total retail stores	(Census of Retail Distribution)
Food-store sales	
Food stores	
Drugstore sales	
Drugstores	
Automotive sales	
Automotive stores	
Filling-station sales	
Filling stations	
Per cent of total United States sales	
National ranking in sales volume	
Total stores per square mile	
The people	(Census of Population)
Families	
Population	
Over 21 years old	
Dominant occupational activities	(percentage in each activity)
Foreign-born white	
Percentage of total population	
Dominant nationalities	
Negro—percentage of total population	
National ranking in population	
Population density per square mile	
The standard of living	
Scale of living index	(Telephone list
Passenger autos owned	Auto registration from state highway
Homes owned	offices and Reuben H. Donnelly
Homes rented	Co.

Domestic electric meters	Income-tax returns listed in Department of Commerce Market Data Handbook)
The climate	
First freezing weather	(Department of Agriculture maps as part of the Atlas of American Agriculture)
Average daily temperature below 35°	
Temperature continuously below 32° (days)	
Minimum temperature below 32°	
Average temperature: Dec., Jan., Feb., June, July, Aug.	
Reative humidity	
The college markets	
Number of colleges	(Publications from the Office of Education of the U. S. Department of Interior)
Student enrollment	
Further facts	
Dun and Bradstreet region number	(Map)
Area in square miles	(Maps, Bureau of Census)
Motion-picture theaters	(Film Daily Year Book)
Motor trucks and buses	
Hardness of water	(U. S. Department of Interior and state water-surveys census of municipal water-softening plants)
Peak months of agricultural income	(County agricultural agents, U. S. Department of Agriculture)

Appendix

Sources of Information (plus those already listed)

Location of county seats—U. S. Postal Guide

Navy yards—Navy Directory, Bureau of Navigation, Department of the Navy

Prisoners—Census Bureau

Other races—Census Bureau

Income tax—"Individual Income Tax Returns," U. S. Treasury Department

Dun and Bradstreet Regional Trade Barometers

Many students think that advertising is chiefly a matter of writing a little copy. They fail to realize how much research is necessary in planning and preparing the entire sales program, of which copy is only a small part.

The following outline submitted to a client by an advertising agency will indicate the extent of study and preparation necessary before any sales program is even started. This information is

first secured in an interview with the client, and then taken to the office for analysis, after which a report is prepared embracing a tentative sales plan and later submitted in another interview with the client.

Confidential Questionnaire[1]

Data supplied by: _____ Date: _____

I. History
   1. Brief history of business. (Please outline in a few paragraphs the history and development of your company.)
   2. Member of what trade associations? Please give headquarters' address, name of executive secretary, etc.
   3. What is the fiscal year of your company?

II. Products
   1. What products do you manufacture?
   2. Are there any specific types you desire to feature? Why?
   3. Under what brands or labels are you now selling your products?
   4. What mark, in addition to your label, identifies your products?
   5. What are the exclusive, patented, or distinctive points to be found in your products?
   6. What manufacturing methods or materials are confined exclusively to your products?
   7. What are the principal sales points of each of your products?
   8. What are their principal points of appeal to the buyer?
   9. What guarantee do you place on your products?
   10. Give the results of any tests to which your products have been subjected.
      a. Routine tests made in the normal course of production
      b. Special tests made for promotional purposes, etc.
   11. What size of your product is in greatest demand?
   12. Do any of your products carry the approval of such bureaus as *Good Housekeeping*, or any testing laboratories, private or public?

III. Prices and discounts
   1. What are your prices and discounts to each type of customer?
      a. Jobbers
      b. Department stores
      c. Buying groups
      d. Chains and mail order
   2. What are your shipping terms?
   3. What price differentials are there on the Pacific Coast or other remote territories?
   4. How does your price and discount setup compare with competition?

[1] By permission of Howard H. Monk and Associates, Rockford, Ill.

5. Do you attempt to maintain resale prices? If so, what plan of price maintenance do you follow?
6. What is the margin of profit for retailers and wholesalers on your products?
   a. Based on full schedules resale prices
   b. Based on actual competitive resale prices

IV. Production

1. Where are your plants located and what is their comparative size?
2. Is your present manufacturing capacity capable of handling a larger volume of business?
3. Approximately what proportions of your capacity production were sold during the past year?
4. What is your prediction concerning the probable volume of your business in each general class of product during the next six months?
5. What is your average gross profit for each class of your product? (If fairly constant, state what figures.)
6. What percentage of your product cost is involved in
   a. Labor
   b. Material
   c. Plant and equipment overhead
7. Have you any advantages in manufacturing which show up in the price or quality of your products?
8. What laboratory facilities have you and what tests do you now make in the control of quality or are you equipped to make as proof of quality?

V. Market

1. What is the extent of the ultimate territory which exists for the sale of your products?
2. Do you find the sales possibilities greater in small towns, cities, or metropolitan centers? And do you think this situation will change in the next year or so?
3. What are the most active selling months for each class of your products?
   a. To wholesalers
   b. Chains
   c. Mail-order houses
   d. Retailers
   e. Consumers
4. Approximately what are the total sales in this country of products such as you manufacture?

VI. Distribution

1. Approximately how many accounts have you at the present time?
2. How are they divided by types of business; that is, hardware jobbers, grocery jobbers, paper jobbers, tobacco and candy jobbers, grocery chains, drug chains, retailers, industrial, etc.?
3. How are they divided by size of business or by rating?

4. Under what plan have you built up your system of distribution?
5. Do you make minimum freight drop shipments from mill to retailers on jobber orders? And, if so, is freight allowed to destination?
6. Where do you maintain branch sales offices, and how many salesmen headquarter in each of these offices?
7. What warehousing facilities have you in your sales territories?
8. In what sections is your distribution
   a. Excellent
   b. Satisfactory
   c. Poor
9. In what types of retail outlets is your distribution
   a. Excellent
   b. Satisfactory
   c. Poor

   (Independent grocers, chain grocers, independent druggists, chain druggists, syndicate chains, grain and feed stores, hardware stores, etc.)
10. How do you explain the variation between the distribution attained in
    a. Different sections of your territory
    b. Different types of outlets
11. What territorial advantage or limitation do you anticipate in this year's business?
12. What is your system of distribution outside the continental limits of the United States?
13. What part of your production is being sold either unbranded or under private brands?

VII. Sales

1. What were your total gross sales for each of the past three years?
2. How were your gross sales divided as to products for the past three years?
3. Approximately how were your gross sales divided as to the different classes of customers for the past three years? (*i.e.*, large, medium, and small)
4. What are the totals of your foreign sales?
5. If the information is available, what are your gross sales figures for each section of your territory and how do these sales correspond with your ideas of the potential volume for each territory?
6. What sales quota has been set for the current fiscal year?
7. What is the average yearly purchase of each class of your customers?
8. What is your percentage of
   a. Direct sales expense
   b. Total selling expense

VIII. Sales promotion

1. How many salesmen do you employ?
   a. Are they full-time men or do they carry other lines?

2. Upon what class of trade do your salesmen call?
3. To what extent do you propose to increase your sales force?
4. Upon what basis of compensation do your salesmen operate?
5. What is your system of salesmen's quotas?
6. Do you have advance route lists showing where your salesmen are each day?
7. What reports do you receive daily or weekly from your salesmen? (sales reports, route lists, mailing list changes, etc.)
8. How are these reports used when received?
9. How often do you hold meetings or conventions of your sales force?
10. What territories does each of your salesmen cover? (Please indicate on attached map.)
11. In what sections or territories do you contemplate using the greatest sales effort during the next year?
12. Do you maintain a system of mailings in advance of your salesmen's visits?
13. In what way do you follow up customers after purchasing?
14. How often do your salesmen call on their trade?
15. Will you please furnish us with a typical sales portfolio which your salesmen carry? Also a complete set of all other materials used by the men in their sales work.
16. How often is this selling material revised and brought up to date?
17. How do you handle inquiries from prospective buyers?
18. What system do you maintain for insuring salesmen's reports on prospects?
19. How large a mailing list do you maintain, and how is it classified?
20. How often is each classification circularized?
21. What system do you have for revising your mailing list so as to keep it up to date?
22. What are the sources of names on your present mailing list?
23. In what physical form is the list kept?
24. Have you facilities for handling mailings from your office (mimeographing, multigraphing, addressographing, personnel, etc.)?
25. What dealer helps do you supply, such as display racks, window streamers, counter cards, etc.?
26. List special deals which have been employed over the past several years with a brief notation as to purpose and results obtained.
27. What special deals are you now offering on various products?
28. Does your sales organization do any "crew work" or "specialty work" in connection with placing special deals, arranging store displays, broadening distribution, etc.? Please give full details of this operation as now handled, reasons for present plan, etc.
29. If no such work is now done, has it been done in the past? What plans were successful? Unsuccessful? Why?
30. What has been your experience sampling your products
    a. To consumer
    b. To the trade?
31. What is your sales-promotion budget for the current fiscal year?

IX. Competition
1. What promotional literature of competitors do you have available for study?
2. What percentage of the total possible business do you have in each class of products?
3. How does your distributing organization (branch offices, manufacturers' agents, jobbers, etc.) compare with those of your competitors?
4. How do the average prices of your products to the user compare with those of competitive products?
5. What firms make products similar to yours?
6. What is the probable sales volume of each of your principal competitors?
7. At what point does shipping distance enter as a strong competitive factor?
8. Upon what particular sales points do you find competition hardest to overcome?

X. Advertising
1. What has been the extent of your advertising to date?
   a. Trade advertising
   b. Consumer advertising
2. What advertising agencies have you employed in the past?
3. What has been your practice, prior to our appointment, of handling layouts, copy, and mechanical production or printed literature, etc.?
4. What has been your yearly advertising budget for the past five years?
5. How was your last year's budget subdivided?
   a. Territorially
   b. By products
6. What is the amount of your advertising budget for the current fiscal year? (Does this amount include all types of sales promotion?)
7. On what basis is your advertising budget calculated?
8. To what classes of trade was your advertising directed?
9. What advertising do you do directly for your distributors? (chains, jobbers, etc.)
10. What was the principal purpose of your advertising during the past year?
11. What sort of a plan did you set up and execute?
12. What were the results accomplished by your advertising last year?
13. What do you want your advertising to accomplish during the next year?
14. What forms of advertising have you used in the past?
15. What publications have carried your advertising?
16. Please supply us with samples of your present advertising material, including mailing pieces, catalogues, circulars, publication advertisements, display material, educational material, contest

announcements, house organs, form letters, novelties, or any other similar materials used by you.

17. What shows or exhibits did you enter this year?
18. What shows or exhibits will you enter next year?
19. What forms of advertising has your experience proved most resultful?

APPENDIX III

SUGGESTED OUTLINE FOR A REPORT-WRITING COURSE

The two methods most used in teaching report writing are: (1) to assign about three long reports requiring much investigation during the semester, with small sections written and turned in frequently; (2) to graduate the assignments from short to long reports and from reports for which the data are furnished to those for which the writer collects everything.

The following course outline of the second method may prove at least suggestive. If there are too many assignments, several may easily be dropped.

1. Detailed study of mechanics.
2. Letter to the instructor telling student's background and indicating two or three possible subjects in his field of interest for later reports.
3. Letter report, requiring sideheads, from garbled data supplied by the instructor.
4. Dun and Bradstreet type of credit report. Garbled data furnished. Object: organization, concise writing, mechanics.
5. Letter of authorization for a report on "How to Write Reports in _____ (student's) Field." Assume that this letter is written by an executive who is interested in making his company's reports more uniform and effective. Students should find interesting the time spent in studying reports in their own fields.
6. Write a brief, specific paragraph on each basic source listed on pages 60–61. This introduction to the library will be useful in later research.
7. Abstract a report in your field. See problem 38, page 450.
8. Analyze section "I" (or some section having about 100 names) of the student directory. This emphasis is on analysis, organization, and presentation, since the data are easily available.
9. Submit a bibliography for the report authorized in 5. This should be complete in form and content. There may not be time later to read all the references, but this does not detract from the training of preparing a complete bibliography.
10. Analyze a table of figures, such as the figures on a department store's suit sales for a year. Make recommendations that will help the management and the buyer. Again, the emphasis in on analysis, organization, and presentation.

11. Write a specification report for something such as building a walk, buying some office equipment, etc.

12. Submit a report based on 5 and 9. This reading report is fairly long, demanding most of the units of a complete, formal report and requiring perfect use of display, heads, footnotes, and bibliography.

13. On reserve are placed 50 to 100 annual company reports. The subjects for analyzing such reports, found on page 312, are assigned best to fit each student, *e.g.*, subjects bearing on accounting may be given accountancy students.

14. The same general assignment using the subjects on pages 312 and 318 may be made. These are based on municipal reports on reserve.

15. Prepare a report on a local campus subject. The plan, questionnaire, etc., will be done as a co-operative class enterprise. The final data will be pooled, but the interpretation and presentation will be done individually. This illustrates the many ways of handling the same basic material.

16. Prepare a report based on an investigation embodying considerable original work. Subjects for which raw data may be collected locally are best. Each student is encouraged to take a subject in his field of interest, at least so far as possible. Sections of this report—preliminary analysis and working plan, questionnaire, possibly the introduction—should be submitted as the work progresses.

APPENDIX IV

SUGGESTIVE LIST OF REPORT SUBJECTS

"What report subject shall I choose?" Report writing is universal. Every possible field offers many subjects. But sometimes it is difficult for the novice to see the forest because of the trees. As an aid in such a dilemma, the following list of report subjects is intended to be suggestive rather than final. Many of them may need to be limited because of time or available data. Others may fit into the writer's background better if the business or the point of view is changed.

Most of these subjects are designed for original work, although there are a few reading reports included for use early in the course. However, as a true test of a student's ability to collect, organize, and present material in a long piece of writing, the authors recommend a report that demands at least partial collection of original data rather than the "term-paper" type, which is chiefly a rehash of what has already been organized by someone else.

1. An analysis of secretarial work in Blankville
   Qualifications, nature of work, salaries
2. Study of the arrangement of two department stores
3. Use of direct mail in Blankville
4. Permanent forms of direct advertising
   Calendars, blotters, games, etc.
5. Compilation of mailing lists by local companies
6. How charge accounts are developed
7. An analysis of local advertising
   Amount of space, appeals, time, etc.
8. How many people actually read direct mail
9. Use of the dramatic in direct mail
10. Training of local salespeople
11. Analysis of use appeals *vs.* mechanical features
12. Analysis of house magazines
13. How the mailing list is selected for certain articles
14. Study of "hooks" in trade paper copy
    Type and phraseology, as "may send," "ask your jobber or write us."

15. Study of the complete advertising program of some store advertising to students
16. Study of gaze motion, color, appeals, illustrations in certain magazines
17. Analysis of local radio-station listeners
18. Comparison of the direct-mail advertising per volume and per dollar spent each month by local stores with the total advertising appropriation
19. Feasibility of establishing a faculty credit union
20. Locating a factory in Blankville
21. Locating a store or filling station at *X* or *Y* sites
22. Establishing a new letter shop in Blankville
23. Buying a 200-acre farm in Blank county
24. Opening a new golf course
25. Local industries that failed
26. Increase or decrease of women workers
27. Analysis of the personnel department of a local company
28. Air-conditioning an office
29. Wage policies in a local company
30. Analysis of student buying habits
31. Marketing a new mailer type of laundry bag
32. Methods of preparing marketing reports
33. Marketing plan for cotton gloves
34. Comparison and analysis of cost of handling certain convenience, specialty, and shopping goods
35. Changing age composition of population and its effect on local markets
36. What do women like most about their grocery store?
37. Analysis of radio programs
38. Study of the returned-goods problem in two local stores
39. Relation of size of business to accounting methods
40. Relation of machinery or equipment to accounting methods
41. Installing a simple accounting system in a certain small business
42. Report on some stock for a prospective purchaser
43. Report to fraternity alumni association on a life-insurance plan to aid their endowment
44. Keeping a budget
45. Installing a cost-accounting system in a small store
46. Analysis of local bank statements
47. Analysis of initiation rules and fees of campus honoraries
48. How students spend their time
49. Changing a college regulation
50. Student manager system
51. Relationship of student expenditures and quality of work done
52. Fraternity co-operative buying
53. Campus co-operative bookstore
54. Analysis of the cost of new and used books

    Purchase price minus resale price; compare net cost with luxury expenses

55. Report on condition of a house for the purpose of getting repairs or equipment additions
56. Qualifications needed by a student to work his way effectively through college
57. Establishing a co-operative restaurant
58. Methods of finishing floors, installing insulation, selecting a washing machine or a radio for a specific purpose
59. Printing costs of a proposed publication
60. Methods of teaching in business schools
61. A detailed study of possible positions for home-economics graduates
62. Changing diction in advertising
63. Analysis of correspondence supervision in certain local companies
64. Duplicating methods, such as multigraphing, lithoprinting
65. Preparing a sales manual
66. Methods of training salesmen

APPENDIX V

REPORT-WRITING PROBLEMS

These problems are in no particular order, although the short forms—letter or memorandum—are usually indicated. They cover a variety of business fields, often with several problems of the same general type in each, so that the teacher will have some choice from one semester to the next.

Many of these problems may be changed easily to fit some peculiar aptitude of a student. They may be handled in whole or in part. Preparing only the plan or outline for some subjects will constitute good report-writing training.

With a very few exceptions, no special problems are given for the individual elements, such as table of contents, letters of authorization or transmittal, synopsis, etc. These may be written as units of each report.

It is assumed that the teacher will specify or that the student will take a definite point of view for each problem. Detailed facts are often left to the imagination or collection of the writer. In short, these problems are suggestive rather than definitive, and should be adapted so as best to fit the aptitude, background, and knowledge of the student.

1. Prepare a title page from the following material: John Smith, office manager, Jones Co., Chicago, writes a report for W. R. Brown, general manager, on May 5, 19—, on what seems to be a successful method of handling mail to save time and money, not to mention space and confusion.

2. Outline a report in your field. Lead with the central idea in one comprehensive sentence.

3. Try briefing the outline in 2, and see if it hangs together.

4. On pages 60–61 is a list of basic sources. Write a concise paragraph explaining each. Remember that the purpose, limitations, etc., of a book are to be found in the preface. Add to this list, if necessary, the specific basic sources in your own field.

5. You are ordered to a foreign country. You want to assemble a good working library and to subscribe for certain magazines in your field. Prepare your list.

6. How do reference books differ from textbooks? What publishers specialize in business books? In business magazines? List the leading

magazines in each specialized branch of business, as credit, advertising, management, accountancy, sales production, etc.

7. Prepare an exhaustive bibliography on some subject in your field of interest, such as locating a store, wage or pension plans, etc. Don't be surprised if your instructor sends it back for additions. The third revamping should force you into valuable sources that the first two attempts missed.

8. You want to send a questionnaire to 20 per cent of the student body. How would you break down your mailing list to get what Mr. Gallup would call a fair sample?

9. You have a client who is interested in buying some *XYZ* stock. Select your own company and send him a one- or two-page letter or memorandum report analyzing the stock and making a recommendation.

10. Submit a memorandum report of an important conversation or conference.

11. In your audit of Blank Company's books, you find that for several years the net profit has been added to surplus. The client in an informal conference asks that this be repeated, carrying surplus as a single item without qualification. Later you find a bond agreement which specifies that a sinking-fund reserve of 3 per cent of the par value of the bonds must be set up annually out of surplus. Write your client a letter explaining why you cannot show surplus in a single item without qualification. You may supply any actual figures needed.

12. You represent a mortgage company. Customers are always more or less skeptical of what you do to earn your fees. Send them a voluntary letter report explaining your services, covering such heads as checking taxes, liens, titles, insurance, borrower's credit; collecting rents, interest, principal; meeting dodges of dishonest owner; management, maintenance; competitive situation; past record; future prospects.

13. A fraternity alumni association is interested in some life-insurance plan that will help them to build their endowment fund. Submit a plan.

14. Your advertising manager has asked you to investigate the postal ruling on including swatches in newspaper advertising. Give him a memorandum report so that he can answer the local advertiser who is considering the idea.

15. Prepare a memorandum report on the advertising of certain stores over a given period, showing amount, time of insertion, and percentage of total linage.

16. A new business (choose your own) is entering town. The management wants a report on local banks so as to decide which to use.

17. Your boss is a busy man. The title of a certain long report has attracted his attention. He asks you to read it and write him a page synopsis of it.

18. For a new business that contemplates coming to your town, write a report on the tax structure or on weather conditions.

19. Get letters from four men applying for the same position. Analyze the letters and write a memorandum report recommending one man.

Have each man write a sales letter and judge them on the basis of the letters. Before evaluating the letters, draw up your fundamental bases or criteria of judgment.

20. Your client is interested in buying a farm (or city building). In view of his specific needs and instructions, submit your report. This may include a choice between two possibilities.

21. The advertising manager of your newspaper instructs you to select two cities of approximately the same size as your town and compare the volume of advertising of their leading newspapers with yours. He will doubtless be interested in breakdowns such as classification of businesses—shoes, department stores, groceries, etc.—volume, and percentage of volume by days of the week, to see if other papers have leveled out the peak periods of the week better than you have, and the percentage of volume for each classification. He may even want some of the general store advertisements broken down into departments, such as shoes, hosiery, sportswear, dresses, radios, floor coverings, etc. If one paper carries 100,000 inches of shoe copy and you carry 50,000 inches, the manager can use that information in building his sale of shoe advertising.

22. Rewrite the following facts as a synopsis or letter of transmittal to accompany your annual report:

Expenditures for new addition, $50,000; new pension plan established; taxes increased 11 per cent; poor sales in southern district; new employee magazine started; profits last year $85,000, this year $38,000; sales increased 8 per cent; heavy advertising expense, especially for a new product which did not sell well; regular line sold well; started a new apprentice training course; have a new sales manager; 75 more men employed, partly because of government rules; training course started; expenses increased 6 per cent; small labor turnover; prospects look good for next year; recommend fewer salesmen in some districts; selling cost up 10 per cent.

You may supply minor details consistent with these given.

23. Reorganize the following garbled data, supplying hypothetical facts and figures when necessary for specificness and transition:

Your company holds a $50,000 first mortgage against a fifty-year-old 200-acre orchard in southern Illinois. You are sent to make an investigation to determine if you have any equity. You find the orchard located partly in a creek bottom that overflows. The water often takes out bridges and makes it hard to reach. At present the road to it goes through another farm. You take pictures of the few shacks, all of which are ready to fall down, and of the best portion of the orchard, showing trees twenty years old, dwarfed so that they seem to be five to six years old.

Investigation shows lack of care, insects of all kinds, etc. Pasture land in the neighborhood has been selling at $10 to $12 per acre. To remove the trees would cost $15 per acre. You value it at $1 per acre. The courthouse records show the assessed valuation to be $10,000, which is supposed to be 50 per cent. Back taxes amount to $1,000. Interviews with the county farm agent, university horticultural experts, and real-estate men guide you. A bank has a second mortgage. There is a mechanic's lien judgment against the owner. There are no fruit yields that amount to anything. The orchard has had no attention. The owner has taken bankruptcy. The ground has washed considerably.

24. Write the following credit report for an automobile service station:

As a representative of Dun & Bradstreet you investigate an automobile servicing station in Chicago at 6509 South Homeworth Park Boulevard, operated by Clarence F. Smith and Edward V. Jones. Both partners are industrious, live conservatively, and try hard to make their station a progressive one. Old debts have been paid, and they are satisfied to be able again to provide their families with a living. The firm was started on Jan. 16, 1934, succeeding the business established by C. Austin. Their capital has been acquired from savings. Nationally known petroleum products are sold. An automobile service including greasing and washing is operated. A few windshield wipers, light bulbs, and batteries are carried. Station is on a corner lot, 75 by 100 feet, on an outlying business street. An enclosed greasing and washing pit accommodates two cars. They have a progressive business and are reported to be prompt in pay. Smith, a native of Colby, Kan., is of Irish descent. He was graduated from high school, worked as a glazer in a woodworking factory in Colby, soon became a teacher in public schools. He worked in a filling station near the site of the Century of Progress Exposition in 1933 and was unemployed from the end of the exposition until starting this partnership when the station was discontinued. Jones is of German descent and is a native of Iowa, came to Chicago as a youth, was employed by a large manufacturer of electrical equipment in 1924, but lost his job in 1933 when the number of employees was reduced. The meeting of the two men was accidental and a partnership was formed. Title to the real estate is held jointly by Jones and his wife and is not subject to execution under Illinois laws. No bank account is kept and no fires have occurred. Gasoline capacity is 2,000 gallons and oil is 450 gallons. Station has five pumps. The one-story brick station house which may be approached from driveways on two sides is rented and is in good condition. They spend much time with the business and have built a steady trade in the community. Another one-story building on the west is in normal condition and is occupied by a fruit market. A residence is on the north. Surrounding property is orderly and no unusual exposures to fire are present. In 1934, 100,000 gallons of gasoline were pumped; 128,000 gallons in 1935. Rent will have increased to about $125 a month by July, 1936, since it is on a graduated basis. Pumps are provided by their main supplier by arrangement. No rent is paid on them. Scrip, held by the partners, is considered as cash because it represents a community project put on by the businessmen. It is in the form of a trade coupon. Another station is diagonally across the street but is not so progressive. Purchases are made directly from supplier on regular terms. The partners work on alternate shifts and no attendants are employed. Both men are married. Smith is thirty, and Jones is thirty-one.

25. Write the following credit report for a retail grocery business:

Representing Dun and Bradstreet, you investigate a community grocery store in Chicago operated by John Brown at 5430 Parkway Ave. It is in a brick building, 20 by 50 feet, located in a semibusiness street on the northwest side of the city. The store is neat, with attractive display windows. No fires have occurred. Equipment is new and serviceable. Standard brands of groceries, canned goods, vegetables, and smoked meats are sold

on a cash basis. Prices are moderate. Purchases are made for cash or 30 days' time. Most purchases are small and accounts are promptly paid. Merchandise on hand is fresh. The owner, John Brown, declines to discuss his financial affairs, but it is learned that merchandise and equipment are worth $2,000 and fixtures $1,000. Brown is thirty-nine. Name legally changed from Lympheropolis. Assisted in business by wife. Moved to Chicago in 1929, coming from Kansas City. Had been in several lines of work including grocery business. Profits are small, but has made an established business in five years. While his financial condition cannot be definitely ascertained, most purchases are for small amounts, and these accounts are paid promptly. The store is on the ground floor of a two-story building. A confectionery is in rear of the building. People living on second floor. Surrounding premises are orderly, offering only usual exposures to fires. Brown verbally acknowledged ownership. A trade-style registration is not required in Illinois. Nationality Greek, being a naturalized citizen. He operates under the name of Brown Tea Stores Co. During the five years he has been in business, apparently he has made headway and has built up a good trade. Leading store in vicinity. He rents the building. A barbershop is on the east. No record of any encumbrances on fixtures and equipment. Three suppliers report him prompt pay. He is not known to have other means of consequence.

26. Write a specification report in letter or memorandum form for the construction of a certain fence. Consider the following: removal of obstructions; workmanship; concrete bases for posts; material for line, corner, angle, and gate posts; fittings; braces and rails; gates; type, design, and quality of fence; basis of payment; time; etc.

27. Write a specification report for some excavation work—depth, extent, disposal, grade, define rock excavation, use, etc.; or for new desks for a big office—style, material, size, special equipment, etc.

28. In the last decade there has been considerable change in accountants' certificates. Prepare a report for your chief showing changes and trends.

29. Your accounting firm is preparing an office manual to aid in uniformity in writing reports. Prepare a section for this manual on some phase of accounting in which you are interested—audit, cost, graphic presentation, etc.

30. Prepare a report on "How to Write Reports in Your Field." This will involve reading books and magazine articles and in analyzing and outlining actual reports. Later, when you are asked to investigate a specific problem, you will have the method well in mind.

31. On page 312 is a list of general subjects covered in annual company reports. Take one subject, study 20 annual company reports, and report on your findings. (This may also be used for municipal reports.)

32. You have suggested the need for a cost-accounting system. Your new president is no accountant but he is willing to listen to facts, if you will make them simple and clear. He has asked you to submit a report on the matter.

33. Illustrate good and bad writing with sentences taken from actual reports. You may well find examples of ambiguity, redundancy, long

sentences and paragraphs, hackneyed expression, jargon, bad grammar, punctuation, and diction.

34. Your client is considering buying or building a new house and is puzzled concerning the procedure, especially that of financing. Prepare a report on the various methods that he might use.

35. For many years your company has bought space in college yearbooks. Your new president is skeptical of the idea and wants you to prove to him that the expenditure is justified. Your survey of one college conducted among seniors, and possibly juniors, might be designed to discover the industries and products that they know best, on the theory that they will remember them favorably when they are out in the world. What industries do they think have the best advertising, labor relations, public service, value received, research, pension plan, etc.? What companies are the leading manufacturers of certain specific products (including yours), such as stainless steel, hoists, insulation, roofing, drawing instruments, etc.? For business products it might be well to stay in the college of commerce rather than to include engineers, etc.

36. You use three automobiles in your business. You are ready to trade them for new ones. Get prices and trade-in figures on three different cars in the same price range. Report results to your chief, with a recommendation.

37. Before leaving for a plant inspection trip, you are asked to prepare a report on your plans, so that you will look at things in an organized way and be ready to write an intelligent report of your visit when you return. Probably you will be interested in such points as the location, raw material, power, plant, organization of company, products, transportation, production, processes, and many subheads under each.

38. Prepare an abstract of some good report in your field. Make the problem clear, identify methods and sources of data, and give selected findings. This will be a good introduction to reports and is good practice in concise writing.

39. There is no faculty credit union at your school. A group of interested faculty has asked you to make a report on the advisability of starting such an organization.

You will probably find material published by CUNA (Credit Union National Association), pamphlets containing your state law governing such unions, various magazine articles on teachers' credit unions, and a vast amount of material on industrial credit unions, which you will want to know about when you are in business.

Such questions as these, and more, will need consideration: Size, income, stability, characteristics of the faculty group? Enough potential investors and borrowers? Need of lending and borrowing? Peak loads? Local borrowing facilities and interest rates? Liability and capability of management? Faculty knowledge and attitude?

40. A salaried man with life insurance of $15,000 and an investment portfolio of $30,000 has $5,000 to reinvest. He asks you about the advisability of putting it in U. S. Steel, probably in common stock. You make an analysis of the financial structure and give him a report containing definite recommendations. (You may change the company if you wish, and you

may assume any specific facts concerning the man that might reasonably be implied in the data given.)

41. It has been proposed to send the 100-piece college band on a 1,000-mile trip. Submit a report covering routes, schedules, time, accommodations, cost, etc., for the consideration of the board, whose verdict is final.

42. Your old gym is inadequate. A big, new field house is being considered. Prepare a report for the board of trustees showing the need and proposed solution. You may omit cost and drawings.

43. Your campus paper needs facts to give the salesmen for both subscriptions and advertising. Make a survey to determine who reads the paper, why, what, and when. Your results may also be used by the editorial staff to improve the paper's content. Study methods of conducting reading habit surveys before preparing your questionnaire or general plan. For instance, will you ask direct questions about one issue? Or show a paper and ask the prospect to point out what he read? Or what?

44. Is there any relationship between the amount of money a student spends and the grades that he receives? A guess on this will probably be wrong. What are the facts? In preparing your questionnaire you will have to make definite decisions on various divisions such as: number of hours that constitute working, time of work, as summer or winter, estimating remuneration, inclusion of extracurricular activities, breakdowns into colleges, sex, fraternal organizations, class, kind of work, etc.

45. At the end of a semester of letter writing you had written at least 20 letters. Analyze your grades. This should not be merely a recital of the number of times you received each grade. Decide on the criteria that will make the most effective organization. An analysis of comments, progressive changes, playing up good criticism, relation to other courses or work, advancement may well be considered. Line graphs will help.

46. Your office, like Topsy, has just grown up until now it sprawls over many square feet of space. But the lack of organization leads to confusion and noise. Study the situation and make a recommendation for reorganization. Include diagrams, with action arrows, of the old and the proposed arrangements.

47. Analyze the contents of a local newspaper for a week. You will find such heads as foreign, national, state, local, sports, business and finance, pictures, education, amusements, cartoons, display ads, classified ads, etc.

48. You are considering marketing a certain product by direct mail. Make a market survey to see whether the idea is practicable. What factors determine whether a product is best suited for direct-mail selling? Are there any factors which automatically eliminate a product from a chance for success in direct-mail selling? What types of products have been most successful? Is there a general price range within which products are most successfully sold by direct mail? Approximately what percentage of the selling price should be allocated to the selling cost? What steps should be taken before actually making up and sending out a mailing? Where will you get your mailing list? To what section of the country or type of people will you mail?

49. You work for a small radio station that has never done any market-survey work. To satisfy advertisers it is now necessary to produce facts regarding your coverage. Make the investigation and submit your report. Before starting, make a thorough study of the different methods of conducting radio surveys, such as the Clark-Hooper coincidental telephone calls, etc.

50. A certain company, with which you are familiar, is considering moving to or locating a branch in your town. The management has asked you for a report on the advisability of such a move. Since much money is involved, it wants facts. (If this subject is too broad, you may handle an assigned portion of it, such as transportation and labor.)

51. Prepare a report for the management of a fraternity house or an apartment house on its physical operation during the last year, its present condition, adding suggestions for repair and replacements for next year.

52. A small businessman, whose business you know well, has operated with nothing much but a day book. With new tax complexities, etc., he needs a better accounting system. Prepare one for him. Remember that it must be simple and clear or he will not adopt your suggestions. Show the need clearly and make the advantages sound attractive but not overdone or difficult.

53. Your company is interested in starting a house magazine. Submit a report on (*a*) the need for it, or (*b*) the plans for the actual magazine.

54. Your company library has a limited amount of money to spend for periodicals. Submit a report on the technical magazines in your field, recommending which to buy. These heads, not of equal value, may be suggestive: footnotes, quotations, tabulations, illustrations, graphs showing distribution of copy and advertisements, format, circulation, contents, authors, treatment.

55. A local store authorizes you to make a study of its trading area and the economic status of its customers. This will include population analysis. To establish the limits of its trading area you may want at certain intervals to check the license tags in its private parking lot and later to spot these on a map.

56. Some local store wants to know why people like or dislike trading there. Make the investigation. Before preparing your questionnaire for interview use, study thoroughly the problems involved. Read some good market-research books.

While you will not suggest answers to your interviewers, you will probably find some of the following factors mentioned most frequently: courtesy, quality, service, displays, prices, visibility of price tags, dependability, clean and complete stock, adjustment and credit policies, parking space, lighting.

57. Are you getting out of college what you came for? Are you dividing your time properly among your objectives? First define your objectives. Then analyze the way you spend your time over a two-week period. Perhaps a record of 15-minute intervals will be sufficient. Set up your major heads of study, recreation, social life, eating, sleeping, talk fests, etc.

58. You have often heard it said that certain courses take more time than others. Time studies are being advocated as a scientific approach

to the study of educational problems relating to such questions as amount of work assigned to students; standards maintained in various courses and colleges; whether students are given too much or too little work; amount of energy or time left for general reading or extracurricular activities.

Keep a record and make an analysis of the time spent on two or three different courses by a considerable number of students. Perhaps you had better get the general grade average of each student as well as his rating in the course. Time records should be reduced to number of words per minute basis, although the people participating will probably give you results per minutes per page.

59. Your local theater guild is interested in producing plays that will be of most interest to theatergoers. Co-operate with the guild in a survey to determine next year's program and incidentally to find out why more people do not attend your plays. A check list of plays given last year and those proposed for next year should help, with a space to write in other choices. The names should furnish a good mailing list later. Better test your questionnaire and breakdowns in advance.

60. High-school pupils ask, "How can I work my way through college most effectively?" The answer really should tell them how to qualify themselves for college jobs. Make a survey of your campus and draw conclusions that will enable you to make recommendations to your high-school inquirers. Break down into such classifications as men and women, remuneration, hours worked, necessary training, etc.

61. The only way to learn to write is by practice and self-analysis. As a start, let's pass over words for the time being, and analyze your sentence structure. Take your last three reports and analyze the sentences for rhetorical structure (simple, loose, periodic, etc.), the order of elements (normal, transposed, inverted), types of sentences (declarative, etc.), and length. Notice the use of *and* sentences.

Make recommendations based on your findings.

62. Your father is interested in your correspondence and report-writing courses. He sends you a sheaf of his letters for your analysis and criticism. This will use both your courses. Send him a report with recommendations.

Hang your report on basic criteria that run through the whole list; don't bore your father with a discussion of one letter after another. If you do, he'll have to "audit your audit."

63. You believe that your filling-station operators can increase their business if they will send more follow-up direct mail to their customers. A card reminder of the time to grease and change oil is especially effective, but such mail must go out on a definite schedule.

You have developed a follow-up filing system which has been effective. This shows date of last service, job ticket number, speedometer reading, type of work done, with weekly spaces to check when the next notice should be sent. The top of the card has spaces for 31 days so that colored tickler tabs may be attached.

Prepare the card and the accompanying report, which explains its operation to employees.

BIBLIOGRAPHY

Books

American Marketing Association, Ferdinand C. Wheeler, editor, *The Technique of Marketing Research*, McGraw-Hill Book Company, Inc., New York, 1937, 432 pp.

Baker, Ray Palmer, and Almonte C. Howell: *The Preparation of Reports*, The Ronald Press Company, New York, 1938, 578 pp.

Bell, William H.: *Accountants' Reports*, 3d rev. ed., The Ronald Press Company, New York, 1934, 397 pp.

Bingham, Walter Van Dyke, and Bruce V. Moore: *How to Interview*, Harper & Brothers, New York, 1931, 320 pp.

Borden, N. H., and C. A. Glover: *Suggestions on Report Writing*, Harvard University, Graduate School of Business Administration, Cambridge, Mass., 1925, 83 pp.

Brown, Lyndon O.: *Market Research and Analysis*, The Ronald Press Company, New York, 1937, 487 pp.

Brown, Theodore H.: *The Use of Statistical Techniques in Certain Problems of Market Research*, Harvard Business School, Division of Research, Business Research Studies, No. 12, Boston, 1935, 24 pp.

Campbell, William Giles: *A Form Book for Thesis Writing*, Houghton Mifflin Company, Boston, 1939, 123 pp.

Carroll, Jean F.: *Standards of Research*, Meredith Publishing Company, New York, 1929, 87 pp.

Cole, Arthur H., and K. Bigelow: *A Manual of Thesis-writing for Graduates and Undergraduates*, John Wiley & Sons, Inc., New York, 1934, 48 pp.

Converse, Paul D.: *The Elements of Marketing*, Prentice-Hall, Inc., New York, 1935, 985 pp.

———: *Selling Policies*, Prentice-Hall, Inc., New York, 1927, 706 pp.

Coutant, Frank R., and J. Russell Doubman: *Simplified Market Research*, Walther Printing House, Philadelphia, 1935, 152 pp.

Croxton, F. E., and D. J. Cowden: *Practical Business Statistics*, Prentice-Hall, Inc., New York, 1934, 529 pp.

Cunningham, W. K., and Ben B. Patrick: *Typing Academic Papers*, Durham, N. C., 1937, 118 pp.

Cutforth, A. E.: *Report Writing*, 2d ed., Gee and Co., Ltd., London, 1934, 71 pp.

Eigelberner, J.: *The Investigation of Business Problems*, McGraw-Hill Book Company, Inc., New York, 1926, 335 pp.

Fitting, R. U.: *Report Writing*, The Ronald Press Company, New York, 1924, 100 pp.

HENDERSON, CHARLES HANFORD: *What Is It to Be Educated?* Houghton Mifflin Company, Boston, 1914, 462 pp.

HINKLE, GEORGE, and FRANCIS R. JOHNSON: *The Form for the Term or Research Paper*, Stanford University Press, Stanford University, Calif., 1937, 15 pp.

HUTCHINS, MARGARET, A. S. JOHNSON, and M. S. WILLIAMS: *Guide to the Use of Libraries*, 5th ed., The H. W. Wilson Company, New York, 1936, 252 pp.

HUTCHINSON, LOIS IRENE: *Standard Handbook for Secretaries*, McGraw-Hill Book Company, Inc., New York, 1936, 616 pp.

JENKINS, JOHN G.: *Psychology in Business and Industry*, John Wiley & Sons, Inc., New York, 1935, 388 pp.

JEVONS, WILLIAM STANLEY: *The Principles of Science*, The Macmillan Company, London, 1924, 786 pp.

LAIRD, DONALD A.: *What Makes People Buy*, McGraw-Hill Book Company, Inc., 1935, 237 pp.

LESTER, BERNARD: *Marketing Industrial Equipment*, McGraw-Hill Book Company, Inc., 1935, 307 pp.

LINK, HENRY: *New Psychology of Selling and Advertising*, The Macmillan Company, New York, 1932, 293 pp.

MANLY, J. M., and J. A. POWELL: *Better Business English*, Frederick I. Drake and Co., Chicago, 1921, 217 pp.

A Manual of Style, 9th ed., University of Chicago Press, Chicago, 1937.

MARCOUX, HARVEY LEE: *College Guide to Business English*, D. Van Nostrand, Company, Inc., New York, 1939, 591 pp.

MAWSON, C. O. SYLVESTER: *The Secretary's Guide to Correct Modern Usage*, The Thomas Y. Crowell, Company, New York, 1930, 213 pp.

MILLS, FREDERICK C.: *Statistical Methods*, 2d ed., Henry Holt & Company, Inc., New York, 1938, 746 pp.

NELSON, J. RALEIGH: *Writing the Technical Report*, McGraw-Hill Book Company, Inc., 1940, 373 pp.

NEWSOM, N. W., and G. E. WAEK: *Standards for Thesis Writing*, International Textbook Company, Scranton, Pa., 1936, 31 pp.

PICKEN, J. H.: *Principles of Selling by Mail*, McGraw-Hill Book Company, Inc., New York, 1927, 374 pp.

PITKIN, WALTER B.: *The Art of Rapid Reading*, McGraw-Hill Book Company, Inc., New York, 1929, 233 pp.

REILLY, W. J.: *Marketing Investigations*, The Ronald Press Company, New York, 1929, 245 pp.

RIGGLEMAN, JOHN R., and IRA N. FRISBEE: *Business Statistics*, McGraw-Hill Book Company, Inc., New York, 1938, 790 pp.

SCHLUTER, W. C.: *How to Do Research Work*, Prentice-Hall, Inc., New York, 1926, 137 pp.

SECRIST, HORACE: *An Introduction to Statistical Methods*, The Macmillan Company, New York, 1917, 482 pp.

SELVAGE, JAMES P., and MORRIS M. LEE: *Making the Annual Report Speak for Industry*, compiled by the National Association of Manufacturers, McGraw-Hill Book Company, Inc., New York, 1938, 187 pp.

SPAHR, WALTER E., and JOHN R. SWENSON: *Methods and Status of Scientific Research*, Harper & Brothers, New York, 1930, 533 pp.

STOCKTON, JOHN R.: *Introduction to Business Statistics*, D. C. Heath & Company, Boston, 1938, 378 pp.

Style Manual, rev. ed., Government Printing Office, Washington, D. C., 1939, 346 pp.

WALKER, GEORGE THOMAS: *Correct Typewriting Style*, The Ronald Press Company, New York, 1938, 90 pp.

WHITE, PERCIVAL: *Market Analysis*, McGraw-Hill Book Company, Inc., New York, 1925, 438 pp.

———: *Marketing Research Technique*, Harper & Brothers, New York, 1931, 236 pp.

WILLIAMS, CECIL B., and ALLAN H. STEVENSON: *A Research Manual*, Harper & Brothers, New York, 1940, 264 pp.

WOOLLEY, E. C., and FRANKLIN W. SCOTT: *College Handbook of Composition*, 3d ed., D. C. Heath & Company, Boston, 1937, 450 pp.

WREN, JAMES H.: *Accountants' Certificates*, The Ronald Press Company, New York, 1937, 181 pp.

MAGAZINES

ALBERT, A. L.: "Preparation of Laboratory Reports," *Journal of Engineering Education*, 19: 849–851, March, 1929.

———: "Standards for Laboratory Reports," *Journal of Engineering Education*, 25: 297–302, December, 1934.

ANDERSEN, ARTHUR: "Financial and Industrial Investigation," *Management and Administration*, 11: 17–22, 113–118, 201–206, 277–280, 351–354, 441–444, January–June, 1926.

———: "Present Day Problems Affecting the Presentation and Interpretation of Financial Statements," *Journal of Accountancy*, 60: 5: 330–344, November, 1935.

ANDERSON, A. G.: "Solving a Factory Location Problem," *Industrial Management*, 70: 21, July, 1925.

Anonymous: "Techniques of Municipal Reporting," *Public Management*, 17: 365–368, December, 1935.

BINDER, B. H.: "Report Writing," *Accountants' Journal*, 49: 505–513, November, 1931.

BLACKWELL, P. H.: "How to Present Information," *Accountant*, 88: 493–504, April 15, 1933.

BLOUGH, CARMAN G.: "Accountants' Certificates," *Journal of Accountancy*, 65: 106–118, February, 1938.

BOER, A. E.: "Mortality Costs in Retail Trades," *The Journal of Marketing*, 2: 52, July, 1937.

BRATCHER, AUSTIN A.: "A Method of Delineating Retail Trade Zones," *The Journal of Marketing*, 3: 262, January, 1939.

BROAD, SAMUEL J.: "The Accountant's Report and Certificate," *Journal of Accountancy*, 68: 17–22, July, 1939.

BROWN, THEODORE H.: "A Mathematically Accurate Method for Estimating the Proper Size of Mailing List Tests," *Members' Bulletin*, Direct

Mail Advertising Association, Inc., New York, 19: 12: 9–10, November, 1939.

BUCK, A. E.: "Two Types of City Reports," *American City*, 42: 179, January, 1930.

COLLITON, R. A.: "First Things First; Credit Interchange Reports and Financial Statements," *Credit and Financial Management*, 35: 18–19, May, 1933.

CONVERSE, PAUL D.: "Time Studies in the University," *Journal of Higher Education*, 2: 5: 259–263, May, 1931.

DOANE, RONALD D.: "The Role of Marketing Research in Launching a New Product," *Industrial Marketing*, April, 1940.

EASTON, W. H.: "Interesting Your Reader," *Electric Journal*, 27: 645–646, November, 1930.

EDWARDS, W. B.: "A Modern Cato Mounts the Rostrum," *Printers' Ink*, 142: 7: 113, February 16, 1928.

FREDERICK, J. GEORGE: "New Uses for Marketing Research," *The Journal of Marketing*, 2: 2: 132, October, 1937.

GERACI, F. V., "Simplified Monthly Reports," *The Publishers' Weekly*, 119: 1692–1693, March 28, 1931.

GLIM, AESOP: "Purpose and Scope in a Market Survey," *Printers' Ink*, December 5, 1925, p. 155.

———: "The Swivel-chair Research Man," *Printers' Ink*, 181: 5: 45, December 19, 1929.

GRACEY, R. D.: "High Standards," *The Canadian Chartered Accountant*, 32: 372, May, 1938.

HENDERSON, DONALD E. V.: "Opportunities for Statistical Workers," *Science Research Associates*, 1938.

HOLMES, H. A.: "Transmission of Intelligence," *Sibley Journal of Engineering*, 46: 69–71, March, 1932.

HOUSER, J. DAVID: "Measurement of Vital Statistics," *The Journal of Marketing*, 2: 184, January, 1938.

HOVDE, H. T.: "Recent Trends in Development of Market Research," *American Marketing Journal*, January, 1936. (Present name, *The Journal of Marketing.*)

KEEFER, C. E.: "Preparing Reports and Technical Papers," *Municipal Sanitation*, 7: 89–91, March, 1936.

KETTERING, C. F.: "The Importance of English to the Engineer in Industry," *Journal of Engineering Education*, 27: 442–444, January, 1937.

KILPATRICK, WYLIE: "The Preparation of Public Reports-I," *American City*, 44: 125, April, 1935.

KIMBALL, CHARLES C.: "Accountants' Reports from a Banker's Viewpoint," *Journal of Accountancy*, April, 1937, pp. 267–278.

LARRABEE, C. B., and H. W. MARKS: "How to Make Check Lists," *Printers' Ink*, 181: 45, November 4, 1937.

LAZARSFELD, PAUL F.: "The Use of Detailed Interviews in Market Research," *The Journal of Marketing*, 2: 1: 3, July, 1937.

LINDERHOLM, N. W.: "Reports I've Seen; Annual Reports of Some 80 Social Agencies," *Survey*, 73: 312–314, October, 1937.

MALEDON, WILLIAM J.: "Research in Retail Distribution," *The Journal of Marketing*, 4: 3: 247, January, 1940.

MATHUS, K. H.: "Annual Report Reads Easier in Newspaper Form, Conn. Mutual Life Insurance Co.," *Printers' Ink*, 165: 11–12, October 12, 1933.

O'MALLEY, J. J.: "Profiles," *The New Yorker*, 16: 20, March 2, 1940.

PALMER, W. K.: "The Writing of Engineering Reports," *Engineering News*, 85: 1103, December 2, 1920.

PALMER, W. W.: "Importance of English to an Engineer," *Electric Journal*, 34: 81–82, February, 1937.

PEEBLES, J. C.: "Us Engineers Don't Need No English," *Journal of Engineering Education*, 19: 562, February, 1929.

PETER, D. B.: "The Accountant's Report," *Journal of Accountancy*, 62: 282–289, October, 1936.

PHELPS, KATHERINE: "A Flexible Method of Hand Tabulation," *The Journal of Marketing*, 3: 3: 265, January, 1939.

PLATTS, H. C.: "Points on Technical Composition," *Surveyor*, 90: 455–456, October 23, 1936.

REES, ROBERT I.: "The Young Engineer and His English," *Journal of Engineering Education*, 23: 479, February, 1933.

REILLY, W. J.: "Checking up Data Secured by Mail Questionnaires," *Printers' Ink*, 137: 71–72, December 23, 1926.

REITELL, CHARLES: "Humanizing Cost Findings," *National Association of Cost Accountants Bulletin*, April 1, 1929.

RICH, WILLISTON: "The Human Yardstick," *The Saturday Evening Post*, 211: 8, 62, January 21, 1939.

RIDLEY, C. E.: "Annual Appraisal of Municipal Reports," *National Municipal Review*, 26: 1: 1–5, January, 1937.

ROBINSON, DWIGHT P.: "Accountant's Report from an Investment Analyst's Viewpoint," *Journal of Accountancy*, 67: 77–84, February, 1939.

RUSHMORE, ELSIE M.: "How to Get Results in Mail Questionnaires," *Printers' Ink*, 166: 17, 20–21, March 22, 1934.

SCHUYLER, P.: "How to Write a Technical Article," *Professional Engineer*, 14: 15–18, 30, September, 1929.

SLOSSON, E. E.: "Don'ts for Would-be Writers of Scientific Articles for the Public Press," *Journal of Industrial and Engineering Chemistry*, 11: 71–72, January, 1919.

SMITH, E. DILLON: "Market Sampling," *The Journal of Marketing*, 4: 1: 45, July, 1939.

STETSON, G. A.: "Art of Technical Writing," *Journal of Engineering Education*, 23: 491–498, February, 1933.

VERNON, RAYMOND: "Predetermining the Necessary Size of a Sample in Marketing Studies," *The Journal of Marketing*, 2: 1: 9, July, 1937.

WEAVER, H. G.: "Consumer Research Technique," *The American Marketing Journal*, 1: 116, July, 1934. (Now *The Journal of Marketing.*)

WEICK, ARTHUR C.: "The Technique of Building a Market," *Central Manufacturing District Magazine*, May, 1938.

WITTNER, H. S.: "New Arrangement of Elements of Financial Report Suggested," *American Accountant*, pp. 262–264, September, 1931.

WITTY, RICHARD A.: "Report Writing," *The Incorporated Accountants' Journal*, September, 1934, pp. 432–436.

WOOLPERT, E. D.: "Annual Municipal Reports—1936 Models," *Public Management*, 18: 297–300, February, 1937.

MISCELLANEOUS

BARTLETT, R. W., and W. F. CASKEY: "Milk Transportation Problems in the St. Louis Milkshed," University of Illinois, Agricultural Experiment Station, *Bulletin* 430, 1937.

"A Case Study of Super-Markets—Essex County, New Jersey," *The Progressive Grocer*, New York, 1939.

CLARKE, GEORGE B.: "Marketing Fruits and Vegetables in Connecticut," Connecticut State College, Agricultural Experiment Station, *Bulletin* 205, 1935.

Consumer Income in the United States, National Resources Committee, Washington, D. C., August, 1938.

"Consumer Preferences for Cheese," University of Wisconsin, Agricultural Experiment Station, *Bulletin* 128, 1935.

Experiences in Shopping for Dresses in Pittsburgh, Research Bureau for Retail Training, University of Pittsburgh, 1935.

FREY, HAROLD A.: *A Study of Customer-opinion of the Advertising Practices of Toledo Retail Merchants*, University of Toledo, 1932.

HENSLEY, HARRY C., and NEIL H. BORDEN: "Market Policies of the California Walnut Growers Association," Farm Credit Administration, *Bulletin* 10, March, 1937.

HOVDE, HOWARD T.: *Payroll Policies in Philadelphia*, University of Pennsylvania, 1937.

"Indexing," New York State Library School, *Bulletin* 50.

JOHNSON, A. REX: *Survey of Consumer Buying Practices*, Brigham Young University, Provo, Utah, 1933.

LARSEN, SPENCER A.: *Student Expenditures at the University of North Dakota*, 1932–1933, University of North Dakota.

LEWIS, CHARLES W.: "Price Maintenance in Knoxville, Tennessee, under the Tennessee Fair Trade Act of 1937," *University of Tennessee Record*, 42: 64, November, 1939.

Marketing Research Activities of Manufacturers, Series 21, U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, April, 1939.

Preparation of Manuscripts, Engineering Experiment Station, University of Illinois, Urbana.

Preparation of Manuscripts: Suggestions to Authors, American Institute of Electrical Engineers, 1938, 24 pp.

Report of the Central Statistical Board on Returns Made by the Public to the Federal Government, Washington, D. C., 1939.

RIDLEY, CLARENCE E., and HERBERT A. SIMON: *Specifications for the Annual Municipal Report*, The International City Managers' Association, Chicago, 1939, 60 pp.

SMITH, GEORGE C.: *An Outline for Market Surveys*, Industrial Club of St. Louis, 1930, 85 pp.

———: *Industrial Surveys*, Industrial Club of St. Louis, 1930, 60 pp.

SWAYZEE, CLEON OLIPHANT: *Eight Years of Unemployment in Lincoln, Nebraska*, 1932–1939, University of Nebraska, Studies in Business, No. 45, 33 pp.

U. S. Department of Commerce: *An Aid for Analyzing Markets in Illinois* (one of a series), Washington, D. C., 1933.

Suggestions for Use in Making a City Survey, Washington, D. C., 1938, 56 pp.

INDEX

A

Abbreviations, 394
Abstract, 229
Acceptance, letter of, 194
Accuracy, 292
Acknowledgment, 200, 216
  (*See also* Transmittal, letter of)
Adaptation, 302, 307
  imagination in, 303
  to subject matter, 304
Advertising-report outline, 431, 434
Analogy, 296
Analytical reports, 18, 21–24
Annual reports, 308–312
Appendix, arrangement of, 268
  contents of, 267
  numbering of, 388
Approval, letter of, 208
Authority, presenting, 293
Authorization, 230
  letter of, 190–194
Averages, in research, 404
  simple, 346
  as statistical tools, 341

B

Bar charts, 353
Bibliographical research, 57
  applicability of, 64
  basic sources of, 59
  importance of, 57
  procedure of, 58
  reliability of, 65
  taking notes in, 66
Bibliography, 32, 39, 455
  making final, 67
  preparing, 62
  style of, 399–402
Binding, report, 379
Blue-print reproduction, 369
Body of report, 227
  divisions of, 227
"Boxing" material, 390
Brackets, use of, 383
Briefing, 179

C

Charts, 268
  advantages of, 348
  preparation of, 340
  purpose of, 348
  reproduction of, 368
  style of, 389
  table of, 214, 390
  types of, 350
    (*See also* Graphs; Tables)
Chronological order, 174
Circle charts, 356
Classification of reports, 14
  by function, 15
  by subject matter, 15
Clearness, in writing, 278
    (*See also* Introduction; Contents; Title; Writing)
Coded tabulation, 146
Coherence, 276, 286
    (*See also* Organization)
Collecting data, 27, 48, 57, 68, 72, 83
Completeness, 278, 292
    (*See also* Body of report; Contents; Title)
Conclusions, drawing statistical, 152
  originating, 162
  tentative, 164
  testing, 166
  writing, 199, 264
Contents, of report, 183
  table of (*see* Table of contents)

Copyright, placement, 190
securing, 380
Cover, typed and printed, 184
Covering letter, 87, 104
check list for, 106
Credit reports, 337
Criteria, basic, 258
Cross references (*see* Indexing)

D

Data, classification of, 123, 125, 342
editing, and examining, 132
interpreting, 28, 152, 157
methods of collecting, 48, 55
bibliographical research, 57
interview, 72
observation, 68
questionnaire, 83
organizing, 27, 123, 172
presenting, 28
qualitative, 155, 161, 165
quantitative, 131, 161, 164
recording, 127
tabulating, 141
Deviation, statistical (*see* Standard deviation)

E

Editing data (*see* Data, editing, and examining)
Elements, of problem, 33
of report, 183
Emphasis, 277, 287
Engineering-report outline, 427
English, importance of, 1, 254
(*See also* Writing, style in)
Entry word (*see* Indexing)
Epitome (*see* Synopsis)
Error (*see* Standard error)
Evidence, adequate, 292
errors in, 294
logic in, 293
presenting, 291–299
(*See also* Data)
Examination reports, 16
Exhibits (*see* Appendix)
Expression, in reports, 3, 254
(*See also* Writing, style in)

F

Fallacies, 297
(*See also* Evidence, errors in)
Figures, writing, 392
Financial-report outlines, 426, 428
Footnotes, 394
for books, 395
for magazines, 395–396
standard references to, 397
style of, 395–398
for tables, 390
Foreword, 215
(*See also* Synopsis; Transmittal, letter of)
Frequency distribution, 357
normal, 406, 409

G

Generalities, 297
Generalization (*see* Hasty generalization)
Graphic methods, 348, 370
(*See also* Charts)
Graphs, advantages of, 362
charting, 361
Group-rotation testing, 416

H

Hasty generalization, 295
Headings, 260
capitalizing, 381
chart and table, 389
marginal, 382
position of, 381
spacing around, 380
style sheet for, 381
Hectograph, reproduction by, 368
Hollerith card, 149
Humanizing the report, 307

I

Ibid., 397
Impersonal style, 289

Importance of reports, 5
Improvement report, 17
Indexing, 268
  alphabetizing, 273
  cross references, 270
  entry word, 271
  forms of, 270
  mechanics of, 272
  modification words, 272
  subheads, 272
  tables, 345
  types of, 269
Information reports, 15, 18
Interest, gaining, 300
  holding, 290
Interpreting data (*see* Data, interpreting)
Interpreting report, for reader, 300–319
Interview, 72
  advantages, 76
  disadvantages, 76
  technique of, 81
  types of, 73
  when used, 73
Interviewer, requisites of, 78
  training of, 80
Introduction to report, 228, 232
  contents of, 229
  examples of, 244–253
Investigation, planning, 25
  (*See also* Organization; Outline)

J

Jargon, 284, 286
Judicial qualities, 291

L

Legends, for tables, 389
Letter, of acceptance (*see* Acceptance, letter of)
  of approval (*see* Approval, letter of)
  of authorization (*see* Authorization, letter of)
Letter, with questionnaire (*see* Covering letter)
  of transmittal (*see* Transmittal, letter of)
Letter report, 325
Limitations, 40, 197, 238
Limits of variation (*see* Variation, estimating limits of)
Loc. cit., 397
Location of problem, 244
Logic in evidence, 293
Logical arrangement, 173

M

Machine tabulation, 146
Mail surveys, danger of, 114
Mailing list, for questionnaires, 109
  sources of, 110
Manuscript, typing, 378–402
Maps, use of, 352
Marginal heads, 382
Market research, 425, 430
  statistical, tools in, 404
Materials used, 243
Mean, 154, 346
Mechanics, of questionnaire, 106
  for typed work, 378–402
Median, 154, 346
Memorandum report, 322
Method and scope, 234
Mills' rules for tables, 344
Mimeograph, reproduction by, 368
Mode, 154, 347
Modification words (*see* Indexing)
Municipal reports, 312–319

N

Normal curves, 407
Normal distribution (*see* Frequency distribution)
Note taking, 66
Numbers, stability of, 406

O

Objective, phrasing, 39
  of report, 4, 196, 231, 274–275

Observation, of data, 68
advantages and disadvantages, 71
experiment, 72
types of, 68
Op. cit., 397
Organization, for presentation, 256
(*See also* Data, organizing)
Outline, 28, 50, 171
arrangement of material in, 172
briefing, 179
contents of, 174
elements of, 183
form of, 175
guides in, 176
preliminary, 50
for report course, 440
(*See also* Organization)
Outlines, for report-writing course, 440
typical, 423

P

Pagination, 380
Paragraph indention, 379
Paragraph structure, 259
Periodic reports, 15
Personality, in reports, 275, 312
Persuasion, in covering letter, 105
in reports, 305
Photographic reproduction, 368
Photostatic reproduction, 369
Pictorial presentation, 268, 316, 319, 350
(*See also* Charts; Graphs)
Pie charts (*see* Circle charts)
Planographic reproduction, 369
Point of view, establishing, 289
Precision in statement, 292
Preface, 215
(*See also* Synopsis; Transmittal, letter of)
Preliminary survey, 28
Presentation, effective, 303
planning, 262
(*See also* English; Organization; Outline; Writing, style in)
Printed reproductions, 370
Problems, analyzing, 33
class, for reports, 445
history of, 239
location of, 244
Progress report, 17
Psychological arrangement, 173
Punctuation, in lists, 392
spacing around, 384
Purpose, stating, 4, 196, 231, 275

Q

Questionnaire, check list, 101
checking results, 112
copy of, 244
covering letter with, 87, 104
dangers of, 114
editing, 132
elements of, 86
follow-up, 112
grouping questions in, 94
inducements to answer, 88
limitations of, 85
mailing list for, 109
number of, 107
phrasing questions in, 95
pretesting the, 111
salesmanship in, 104–107
subject matter of, 90
type of questions in, 92
Quotation marks, use of, 386
Quotations, 382
omissions in, 383
punctuating, 383

R

Ratio chart, 364
Recapitulation sheet, 129
Recommendation report, 16
Recommendations, writing, 170, 199, 264
Report subjects, suggestive list of, 442
Report writer, requisites of, 12, 159
training, 12–13, 159
Report writing, 4

Report writing, extent of, 5
outline of course in, 440
problems in, 445
Research agencies, 10
Research procedure, 25
Research reports, 10, 18–21
Rhetorical qualities, 276

S

Salesmanship, in covering letter, 104
(*See also* Persuasion)
Sample, adequacy of, 46, 112
determining size of, 418
generalizing, 408
selecting, 44
testing, by group-rotation, 416
for proportionality, 137
for reliability, 134, 416
Sampling, directed, 45
extent of, 404
law of, 42
principles of, 42–44
random, 44
representative, 408
statistical tools of, 403
tests of, 405
Scattergram chart, 361
Scope of reports, 7, 41, 157, 196, 234
See also (*see* Indexing, cross references)
Sentence structure, 259
Short report, 329
Sic, 398
Spacing, around punctuation, 384
single vs. double, 379
Special reports, 16
Stability of numbers, 406
Standard deviation, 409
Standard error, of differences, 412
formula for, 413
formula for, 410
of measurement, 408, 418, 422
Statistics in reports (*see* Charts; Data; Graphs)
Stockholders' reports, 308–312
Subheads, display of, 260
Submittal, letter of (*see* Transmittal, letter of)
Subject matter, range of, 8
Subjects for reports, 442
Summary, of report (*see* Synopsis)
Surveying the problem, 26
Synopsis, 198, 218–226
(*See also* Transmittal, letter of)

T

Table of contents, 210–214, 387
Table of charts and illustrations (*see* Charts, table of)
Tables, legends for, 389
preparation of, 340
ruling of, 391
statistical, rules for, 344
style of, 390
(*See also* Charts)
Tabulating data, 141, 342
Technical reports, 18–21
Testing conclusions (*see* Conclusions, testing)
Testing the sample (*see* Sample, testing)
Text of report, 254
Title, phrasing of, 186–189, 229
Title page, back of, 190
preparation of, 186
Tone, 289
Town reports (*see* Municipal reports)
Transitions, use of, 259, 285
Transmittal, letter of, 194–208, 308, 314, 315
qualities of, 201
tone of, 203
(*See also* Foreword; Preface; Synopsis)
Trite diction, 283, 289
Types of reports, 8
(*See also* Classification)
Typing the report, 378–402

U

Underlining words, 380, 382, 383
Unity, 276, 287

V

Variation, estimating limits of, 405, 408

W

Word division, 391
Wordiness, 286
Words, 283
(*See also* Writing, style in)
Working plan, 35
testing, 49
Writers, qualities of, 12, 159
Writing, check list of, 319
clearness in, 278
importance of, 1, 2, 254
style in, 274–321
technique of, 289
weakness of, 285