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PSYCHOLOGY of PERSONNEL in BUSINESS and INDUSTRY

ROGER M. BELLOWS, Ph.D.

PSYCHOLOGY of PERSONNEL in Business and Industry

SECOND EDITION

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Dedicated to

LAWRENCE H. *and* DAISY O. BELLOWS

Preface

THE AIM of this book is to provide a link between research and the application of research results to personnel problems in business and industry. Some of my colleagues do not always agree that this link should be established. Some feel that personnel psychology is not a pure science. Nonetheless, the facts, methods, and results included in this revision were selected with one criterion in mind: their estimated usefulness to managing executives and to those interested in personnel methods. I have given less space to historical and theoretical considerations. Some procedures, such as those for rejecting accident-prone applicants, likewise have been given less emphasis because of the contradictory aspect of research results that have appeared in recent years.

The point of view of the revision is the same as that of the first edition: personnel research is the development and evaluation of tools designed to increase production and employee satisfaction. Successful personnel managers use tools that have been tried and proved by personnel research. To use these tools, managers will necessarily know both their values and their limitations. Such knowledge can be achieved by reading the available evidence and by participating in research activity.

Business managers are interested now in these applications. Their viewpoint has changed. In the 1920's, they wanted law school courses in *the law of master and servant.* Then, under the influence of the Wagner Act, came interest in *labor relations.* Now, as Leo Cherne says, "The specialist in 'labor relations' is being replaced in corporate practice by the technician in personnel management—the practitioner of the combined disciplines of applied psychology, psychiatry, sociology, and anthropology."

Employees may be treated as individuals or as members of dynamic groups. A few years ago, industrial psychology was primarily concerned with the efficiency of the individual employee, without much regard for the dynamics of the environment in which he worked. I believe that now, more than ever, there is evidence for placing main effort on the forces which influence the employee's work satisfaction as well as his efficiency. I have therefore written two new chapters—one on employee dynamics and one on leadership and social organization—and have intensively revised and rewritten other chapters to include new research results. In the bibliographical lists, there are more than 300 sources listed with publication dates later than 1949.

The contribution of business managers, with whom my associates and I have participated in helping solve personnel problems, has had more impact than any other source in moulding the outlines of this book. The business managers who have had most influence are those in firms we have served as consultants. The Burroughs Corporation, Ernst and Ernst, Ford Motor Company, Gar-Wood Industries, Federal-Mogul Corporation, Grand River Chevrolet Company, Great Lakes Mutual Life Insurance Company, The J. L. Hudson Company, National Bank of Detroit, The Timken Silent Automatic Division and Rockwell Spring and Axle Company, Parke-Davis and Company, Price Waterhouse and Company, Touche, Niven, Bailey and Smart, Winkelman Brothers Apparel, Inc., Wolverine Tube Division and The Calumet and Hecla Consolidated Copper Corporation.

I am indebted for the suggestions of those who, having used the first edition, constructively criticized it and made many worthwhile suggestions. Those who helped are teachers, students, reviewers, personnel men, and other managers in business and industry, too numerous to list here. I also gratefully acknowledge the assistance of those who have worked on sources of research reports, prepared tables and figures, and criticized drafts of the manuscript. Carol S. Bellows participated in planning the organization of the revision and has read and criticized the entire manuscript; C. G. Browne has constructively criticized the chapter "Leadership and Social Organization"; Allan M. Kershner and Earl A. Waller worked over the chapter, "Readability of Training Media"; Charles E. Scholl, Jr. has supplied original studies and supervised several aspects of production of the manuscript; Dolores Welsh Kayganich checked reading reference lists and footnotes and worked on tables and figures;

Dorothy Brooks, Eleanor Hamilton, and Carolyn Palmer typed the manuscript; M. Frances Estep and Doris Weigle Kennedy procured source materials, abstracted materials, and worked on bibliographies; and Dennis Gagnon read the final draft of the manuscript with the student's eye for clarity of meaning.

ROGER M. BELLOWS

Detroit
January, 1954

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Part One

Introduction

1 Personnel Men and Jobs

THE HERITAGE that now comprises industrial psychology may be divided into two research areas: worker and job analysis, and analysis of group dynamics. Historically, measurement of the characteristics of the individual, which led into worker analysis, was first. This, plus job analysis, made possible such practical tools as selection, placement, and employee evaluation methods. Program research [1] psychology in human measurement might be said to have begun during World War I; such research on job analysis methods began with the activation of the Occupational Research Program, U.S. Employment Service, in 1934.

Then came program research on employee-management relations —group dynamics. Such research was begun by several research agencies after the close of World War II. On the end linings of this book, there appears a list of events which have led to our present heritage of worker and job analysis methods and techniques for measuring group dynamics in business and industrial situations.

The amount of work done and the number of articles published in the field of industrial psychology will surprise many readers. Figure 1.1 shows the increase in the number of articles on industrial and personnel problems that have appeared in the psychological literature since 1919. Not all of these articles are on personnel research; rather each has been judged to contribute to the total her-

[1] Program research may be defined arbitrarily as carefully designed and closely coordinated analytical studies performed by an organization of qualified staff that expends, over a period of several years, a budget of one million dollars on data collection, statistical analysis, and reporting.

itage of available facts, methods, and results. A very sharp rise is noted in the curve after the World War II period. When the percentage of articles on industrial psychology was compared with the total number of articles on all fields of psychology, no increase was revealed after 1946.

Personnel research is defined as the development and evaluation of methods for managing employees and related problems. Personnel management is the art of application of existing knowledge and

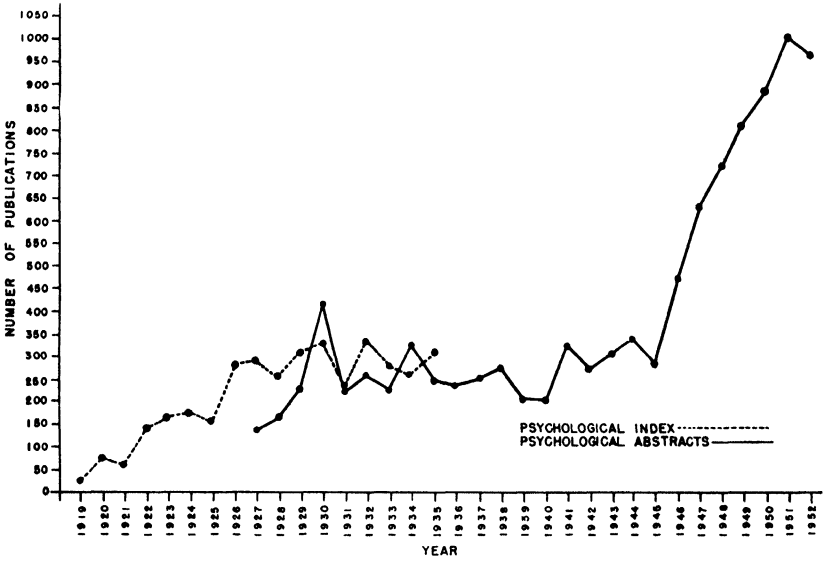


Fig. 1.1. Trends in research on industrial and personnel problems.

techniques to personnel problems, with a view both to maximum production and employee satisfaction. Thus the goal of personnel research and personnel management is the same—productive, satisfied workers.

On the basis of a survey by Bursk and Clark,[2] it can be inferred that business and industrial managers are becoming more interested in learning about personnel. The reading habits of 1600 business executives were studied, yielding a mention of 237 specific titles of business books. The area of industrial and personnel management was top on the list with 32 mentions, economics was second with 25, marketing was third with 19, labor was eighth with 11 mentions,

[2] Edward C. Bursk and Donald T. Clark, "Reading Habits of Business Executives," *Harvard Business Review*, XXVII (1949), pp. 330–45.

and all the rest had fewer than 10 mentions. It is significant that business executives are reading in areas in which industrial and personnel psychologists are working.

TRAINING FOR PERSONNEL LEADERS

Almost everywhere groups of men work together: in churches, in schools and universities, in public enterprises, as well as in business and industry. When men work together in sizable groups, personnel problems emerge, creating a need for a dozen more or less systematized functions such as leadership and organization, selection, placement, job analysis and evaluation, employee evaluation, employee communications, and counseling. Such functions are performed by personnel managers. It makes no difference whether the enterprise is a business firm or a social or political organization, some personnel management is needed.

Prerequisite for a good job of handling worker problems is the selection and training of personnel managers. With improvement in selection and training of these key men, the future of our industrial society can be better than the past.

Most students who come to universities bring with them a surprising number of misconceptions. One of the problems of the university in training young people for personnel jobs is to dispel misconceptions regarding human nature. Valentine gathered information by questionnaire on common misconceptions held by students.[3] A group of 773 male and 665 female students enrolled in general psychology at a large university was given a questionnaire containing 87 items, of which 71 were false. The questions were loosely classified as pertaining to superstitions, misconceptions regarding the relation of physical and mental traits, and economic and social misconceptions.

Some interesting results found by Valentine are shown in Table 1.1. It is noteworthy that about 70 per cent of the students believed that the study of mathematics gives a person a logical mind, while 23 per cent of the male students and 36 per cent of the female students believed that shifty-eyed people are dishonest. One out of 4 students thought that fast workers make more mistakes than slow workers. About the same proportion believed that it is possible to estimate intelligence by looking at the face of a person. One out of

[3] W. L. Valentine, "Common Misconceptions of College Students," *Journal of Applied Psychology*, XX (1936), pp. 633–58.

5 of the students believed that palmistry can foretell the future! Misconceptions such as these delay acceptance of sound procedures for handling people. It is undetermined how widespread within industry are misconceptions about people.

It is not known today exactly what the best training for a personnel leader should be. Business managements have sought aid for training from schools of business administration and departments of psychology. Universities have developed programs in the hope

TABLE 1.1

Common Misconceptions of 773 Male and 665 Female Students in the Beginning Course of General Psychology at Ohio State University*

Misconception	Per Cent Incorrect Responses	
	Male	Female
Mathematics gives a logical mind	70	73
Shifty-eyed-person is dishonest	23	36
Fast workers make more mistakes than slow workers	26	26
Can estimate intelligence by looking at face	23	29
Men are created equal in capacity	21	24
Females are inferior to males in intelligence	11	8
Receding chin indicates lack of will power	20	22
Palmistry can foretell the future	20	21

* Source: W. L. Valentine, "Common Misconceptions of College Students," *Journal of Applied Psychology,* American Psychological Association, Inc., XX (1936), 633–58.

that they may be able to contribute to the establishment of the field of personnel management as a technology and as a profession. Observers believe that psychology, engineering, sociology, economics, accounting, law, and statistics all contribute in some degree to personnel management. Some colleges and universities provide internship training; others sponsor cooperative programs with unions and industry for developing training courses; others have established libraries and published summaries of studies in personnel methods. Basic personnel research has been conducted to train graduate students in personnel research methodology and to advance knowledge in the personnel management field. Some of the courses offered by universities are listed below.

Survey of Personnel Management
Survey of Occupations
Supervisor-Employee Relations
Job Analysis
Recruitment and Labor Market Analysis
Interviewing Techniques
Selection Techniques—Testing

Job Evaluation
Merit Rating
Wage Administration
Employee Counseling
Personnel Training
Employee Motives and Incentives
Employee Communications
Safety Administration
Attitude and Opinion Surveys
Motion and Time Study
Employment Stabilization Plans
Personnel Management and the Labor Contract
Legal Aspects of Labor Relations
Current Research Publications
Minor Problems in Personnel Research
Research in Personnel Management
Personnel Managerial Records and Controls
Personnel Research Seminar
Survey of Retail Personnel Practices
Criteria of Employee and Supervisory Efficiency
Techniques of Personnel Program Evaluation
Experimental Design for Statistical Analysis

In addition to these, other related courses are desirable as part of the academic training of the professional personnel man. These are:

General Psychology
Personnel Psychology
Measurements of Human Capacities and Characteristics
Psychological Statistics
Industrial Psychology
Social Psychology
Public Opinion and Propaganda (psychology or sociology)
Accounting
Cost Accounting
Business Statistics
Labor Problems (economics)
History of the American Labor Movement (economics)
Collective Bargaining (economics)
Employment and Social Security (economics)

The development by university educators of such arrays of courses seems to have come about as a result of two influences: first, educators were aware of the social need for trained people, and second, such training courses have been requested by business and labor leaders. Dudycha has prepared a 115-item bibliography which contains 15 items on careers in personnel work in business and industry.[4] He refers to studies on job specifications for personnel men, their training qualifications and duties, colleges offering courses in personnel, and ethical problems.

The Personnel Manager

In considering the characteristics that make for success in the job of personnel manager and the training that he must have, the

[4] G J. Dudycha, "Recent Literature on Careers in Psychology," *Occupations,* XXVIII (1950), pp. 455–61.

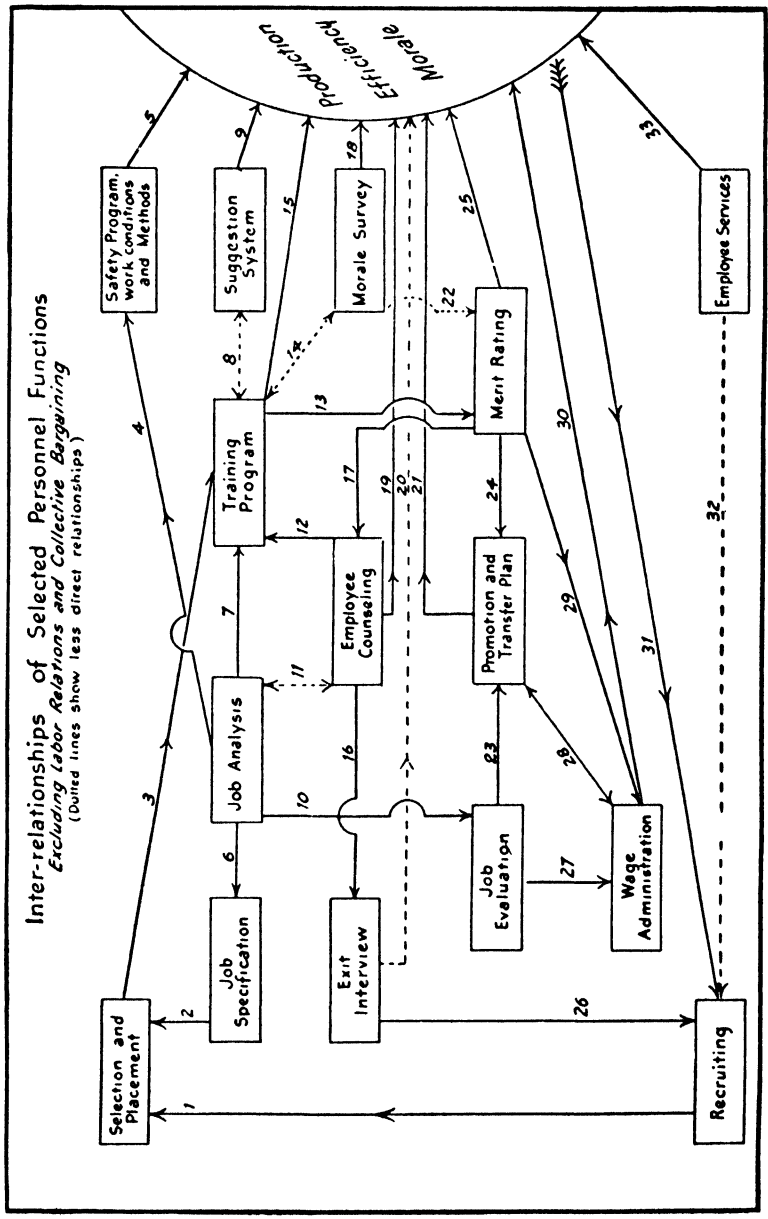
job title is of some significance. A series of personnel conferences were attended by people with titles of a strong personnel flavor. Evans listed titles of some of the personnel men attending the meetings:

Vice President in Charge of Industrial Relations
Industrial Relations Director
Director of Employee Services
Executive Director of Personnel
Director, Department of Public and Industrial Relations
Director of Industrial Relations
Director of Industrial and Public Relations
Personnel Director
Director of Employee Contacts
Director of Relations
Director of Personnel
Director of Public Relations
Director of Personnel Relations
Director of Education
Director of Labor Relations
Manager, Department of Public and Industrial Relations
Labor Relations Manager
Personnel Manager
Industrial Relations Manager
Personnel Relations Manager
Manager of Industrial and Public Relations
Manager of Industrial Relations
Manager, Labor Relations
Manager, Personnel Administration
Supervisory Relations Council
Labor Relations Adviser
Employee Relations Representative
Head, Industrial Relations Department
Supervisor of Employee Relations
Supervisor of Industrial Relations
Supervisor Trainer [5]

Evans rightly points out that few of these titles suggest what the incumbent does. The length of the list suggests that there is not much uniformity between companies in the matter of personnel manager titles. Evans prefers the title of personnel manager and has chosen to call his function "personnel management."

Let us consider just what a personnel manager does. If a personnel man were to present an outline of a functioning personnel department, his chart might look something like Figure 1.2. A variety

[5] From *A Program for Personnel Administration*, by J. J. Evans, 1945, pp. 16–23. Courtesy of McGraw-Hill Book Co., Inc. See also William R. Spriegel and Joseph W. Towle, *Retail Personnel Management* (New York: McGraw-Hill Book Co., Inc., 1951), p. 360.



Source: Elmer R. John, "Inter-relationships of Selected Personnel Functions," *Journal of Applied Psychology*, XXXII (1948), p. 147.

Fig. 1.2.

of duties is shown, inter-related to other phases of the personnel functions.

The National Industrial Conference Board has conducted several surveys of personnel activities, beginning in 1927. The latest one available includes 3498 firms ranging in size from small (under 250 employees) to large (over 5000 employees). The following description of the duties of personnel manager considered as an occupation is highly generalized and is condensed from the personnel activities of firms surveyed by the National Industrial Conference Board, Inc.[6]

Occupational description.[7] The personnel manager organizes and maintains an organization for the administration of personnel functions including employment, placement, safety, medical services, labor relations, wage and salary administration, employee information, personnel training, employee benefits, and personnel research. He supervises the activities of director or supervisor of training, establishes broad policies with respect to training programs dealing with the induction and on-the-job training of rank-and-file workers, and supervisory training; he conducts employee communications activities of the company, keeping employees informed concerning management policies, personnel changes, and news.

In the area of wage administration he conducts job evaluation, works out financial incentives, suggestion systems, and employee merit rating programs. He develops company medical and health services, safety activities, and lunchroom facilities. He works out and maintains programs in insurance protection, pension and profit-sharing plans, employment security, and thrift and financial systems.

He conducts the dealings of management with the union, the processes of individual and collective bargaining, and the negotiation of union contracts with reference to pay rates, security provisions, seniority provisions, services, working conditions, and other matters.

He may conduct or supervise morale surveys, exit interviews, and employment tests and render miscellaneous service to top management, as necessary. He may organize, select, and supervise a staff

[6] National Industrial Conference Board, Inc., "Personnel Activities in American Business," *Studies in Personnel Policies No. 86,* November 1947, pp. 1–36.

[7] A reference in which duties, qualifications, and other information pertaining to 27 personnel and related jobs are described is Philip H. Kriedt and Margaret Bentson, *Jobs in Industrial Relations, Bulletin 3,* January, 1947, Industrial Relations Center, University of Minnesota, p. 57.

for the conduct of personnel research for development and evaluation of personnel tools, determine personnel research policy, and supervise in a general way the activities of personnel technicians. He may be called upon to make speeches before public groups and businessmen's associations, to attend national conferences, and to participate in meetings dealing with personnel management problems. He may be responsible for relations with the public and liaison with government bodies.

Specifications. In discussing occupational requirements or written specifications for the personnel manager, it is well to remember that this is a relatively new field. We should not expect a great deal of agreement or consistency from one company to another in requirements. One company might look upon training in the F. B. I. as highly desirable. In another, the president might simply say, "The main thing about a personnel man is that he must like people."

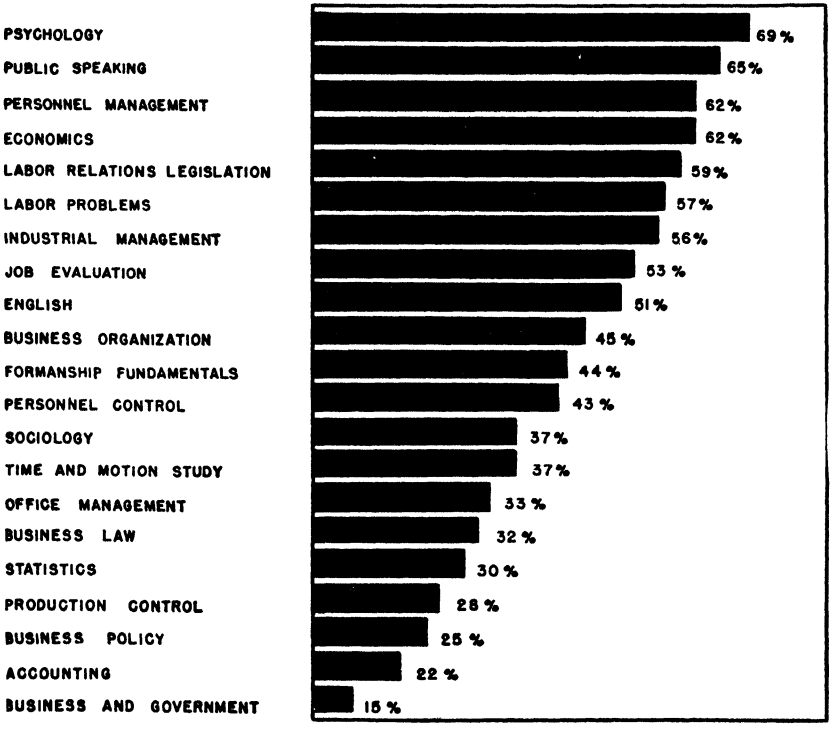
Parks reported an interesting survey.[8] By a questionnaire that was designed to determine the qualifications of personnel executives, he surveyed executives from 84 companies. He also sought to find out what types of education were considered desirable for students aspiring to positions in the personnel field. His report revealed what every observer of this field would expect: that there exists a tremendous variety of requirements. The personnel executives now employed in the 84 companies surveyed appear to have had quite a variety of previous experience themselves. Most of them, at least from the larger companies, were college graduates.

Most companies indicated that they preferred men with previous work experience. Furthermore recent graduates from colleges are usually given training in the plant operations before being taken into the personnel department. Some companies indicated a preference for a liberal arts or a science background followed by specialized graduate training, or the acquisition of such specialized knowledge and technique while working. Figure 1.3 shows that the five training subjects most frequently indicated as desirable by the executives were: psychology, public speaking, personnel management, economics, and labor relations legislation.

Virtually the same results were obtained independently by two other men who asked 397 persons in industrial personnel positions what courses they considered worthwhile preparation for their pres-

[8] Donald S. Parks, "Survey of the Training and Qualifications of Personnel Executives," *Personnel Journal*, XXVI, No. 7 (1948), pp. 256–66.

ent work.[9] There were discrepancies between the courses they felt were worthwhile and those they actually had taken. Most of the individuals in the survey had majored in business administration, although psychology, engineering, and law were reported for some positions. Sixteen per cent of the people reported an M.A. or a Ph.D. degree, indicating some trend toward professionalization in



PREFERENCES FOR A PERSONNEL MANAGEMENT CURRICULUM

Source: Donald S. Parks, "Survey of the Training and Qualifications of Personnel Executives," *Personnel Journal*, XXVI, No. 7 (1948), p. 263.

Fig. 1.3. Courses recommended by industrialists for personnel management.

the field. A survey of the help-wanted ads in nine newspapers showed considerable advertising for personnel workers but lack of uniformity in titles of the jobs, education required, and salaries to be expected. Thirty-five different job titles were used to recruit applicants in 171 different advertisements. Men and women were specified about equally. Salaries ranged from $1560 a year for an

[9] Philip H. Kriedt and C. Harold Stone, "College Courses for Personnel Work—Union and Management Preferences," *Personal Journal*, XXVII (1948), pp. 247–50.

assistant interviewer to a rare $35,000 a year for a labor relations and personnel manager. The next highest salary offered was $12,000.[10]

Functions. A tendency toward a higher degree of centralization of personnel functions is noted. The National Industrial Conference Board made a survey of the organization of 10 different companies.[11] In the Armstrong Cork Company, for example, a general personnel department is headed by a general personnel manager. The ten sections with their functions are listed below:

I. Employment
   A. Source relations
   B. Recruiting
   C. Interviewing
   D. Selection and placement
   E. Initial induction
   F. Transfers
   G. Termination interviews
II. Training
   A. Analysis of training needs
   B. Program development
   C. Staff assistance on program operation
   D. Operation of general programs
   E. Management notes
   F. Liaison contact--plant personnel operations
   G. Liaison contact—educational agencies
   H. Attitude surveys
III. Employee information
   A. *Armstrong Reporter*
   B. Report on operations to employees
   C. Publicity
   D. Editorial, layout, artwork, and production
   E. Service on special projects
IV. Personnel research
   A. Personnel policy and program development and interpretation
   B. Legislation and regulations
   C. Special studies
V. General section
   A. Service programs
   B. Salary personnel roster
   C. Salary personnel folders
   D. Group insurance program
VI. Medical
   A. Development and appraisal of standards and procedures
   B. Administration of floor and closure dispensaries

[10] Sol L. Warren, "Help Wanted—Personnel Director," *Personnel Journal,* XXVI (1948), pp. 336–39.

[11] National Industrial Conference Board, Inc., "Organization of Personnel Administration," *Studies in Personnel Policy No. 73,* 1946, p. 5.

VII. Safety
  A. Accident prevention
  B. Plant surveys and programs
VIII. Functional control of plant personnel procedure
IX. Functional activities
  A. Labor relations in cooperation with labor relations department
  B. Public relations in cooperation with advertising and promotion department
X. Company library

Note that personnel research is listed as a function in the Armstrong Cork Company.

The Owens-Illinois Glass Company has several sections within its industrial relations division including the following nine:

I. Coordination of industrial publicity
  A. Communications devices
    1. Plant publications
    2. Bulletin boards
    3. Personnel news and notes
    4. Plant town publicity and liaison
II. Labor relations counseling function
  A. Handles matters pertaining to union negotiations
III. Labor legislation coordinating function
  A. Analysis of legislation and rulings affecting general personnel programs
  B. Wage and cost of living statistics
  C. Union contract analysis
  D. Budgeting of the industrial relations division
IV. Supervision of women's activities
V. Coordination of employee benefits
  A. Group insurance
  B. Health program
  C. Workmen's compensation
  D. Credit union
  E. Social security
  F. Patent agreements
VI. Safety program
  A. Coordination of work of plant safety men regarding
    1. Safety
    2. Good housekeeping
    3. Sanitation
    4. Fire prevention
    5. Plant visitor policies and practices
VII. Promotion program
  A. Personnel movies
  B. Service awards
  C. Special assignments
VIII. Food service
IX. Personnel research
  A. Development of procedures for
    1. Employment
    2. Merit ratings

3. Classification tests
4. Suggestion system
5. Opinion surveys

B. Analysis of statistical reports

It is interesting to note that the Owens-Illinois Glass Company also includes a personnel research section. Listed as the central aim of personnel research is the scientific attempt to get at basic personnel facts.

> Activities are considered to be in the personnel research department as long as they are in the experimental or fact-finding stage; but when a program of action develops therefrom, it will fall under the proper one of the other . . . divisions.[12]

Labor turnover analysis and measuring personnel accomplishment are also included in the personnel research function. Without coordination of the various personnel functions, the products of personnel research could not be fully realized.

It must be kept in mind that many companies have organized their personnel departments as recently as the past decade or two and that job specifications and training requirements have not yet been well thought out or agreed upon by top managements in business and industrial firms. It is not unusual to find that personnel managers have acquired their positions by transfer from some other department. For example, in one company of 25,000 employees the personnel manager (called *the director of industrial relations*) was transferred directly from the position of assistant sales manager to his present position. The lines of promotion are rather common from personnel clerk or interviewer to the training department, to personnel manager. Some top managers stress that training and experience in job analysis, job evaluation, development of merit-rating programs, and personnel communications activities are excellent training for the top job of personnel manager.

The Training Director

The training director generally occupies a level just below the personnel manager and normally reports to him. In a survey of training directors by Guyon, 31 per cent said they reported directly to the president. An additional 13 per cent said they were two steps removed from the president, and 43 per cent more said they were

[12] National Industrial Conference Board, Inc., "Organization of Personnel Administration." *Studies in Personnel Policy No. 73,* 1946, p. 64.

three steps from him. In all, 87 per cent of the training directors were three steps or less removed from the president.[13]

As with the personnel manager, the training director might perform a variety of functions. When 113 training directors were asked to check the duties which they performed in their present job, over 70 per cent checked these five: (1) spot training needs and recommend training programs; (2) write training manuals and course outlines; (3) coordinate total training effort throughout the company; (4) contact educational and government agencies in the personnel field; and (5) sell values of education to workers, management, and public. Sixty-nine per cent added these: select and train instructors and issue reports on progress achieved.[14] One of the more important aspects of the training director's job is keeping management informed, either through the personnel manager or directly to top management. In this way he contributes to the necessary two-way communication.

In considering his description of duties below, it is again appropriate to point out that this is an occupational rather than a job description. It is highly generalized and typical of the duties performed by the training director in a hypothetical company of, say, 5,000 personnel or larger.

Occupational description. The training director reports to the personnel manager. He develops training programs as needed in the several different training areas. He plans and supervises training, including pre-induction, induction, apprentice, on-the-job training, internship training, and supervisory training. He supervises closely a staff of instructors. He has responsibility for the selection, training, and supervision of the personnel in the training department. He supervises the maintenance of training records, including development of central examinations for acquiring achievement test and performance test records on trainees. He may supervise the collection of cumulative records on trainees; he may also develop and apply plant-wide skill inventories designed for the transfer and promotion of individuals in the working force.

He may be responsible for the development and conduct of all aspects of communications and, in some instances, for public relations. He is required to maintain close liaison with educational in-

[13] Richard Guyon, "Survey of the Training Director," Part II, *Journal of Industrial Training*, IV, No. 2 (1950), p. 11.

[14] Richard Guyon, "Survey of the Training Director," Part I *Journal of Industrial Training*, IV, No. 1 (1950), p. 17.

stitutions, especially trade schools, specialized schools, and colleges and universities. The training director may be expected to aid in the recruiting of professional engineering and other specialized technical, scientific, and mechanical personnel.

He operates the company library, supervising the librarian and specialists. He also maintains a file of films, visual aids, and other materials that are in demand by the several levels of management and for training workers. In the area of executive training, the training director develops or fosters development of courses in job relations training, program development training, and job methods training. He develops understudy plans for junior executives and management conferences. He may conduct management conferences himself.

He is required to maintain cost records, prepare reports on evaluation of training programs, and is frequently called in by the top management to justify the expenses of training. He attends national meetings of management groups and professional and specialized training groups and associations interested in furthering industrial training. He meets and makes speeches before various public audiences and may be called upon to write articles for popular, trade, and technical journals.

Normally he does not indulge in contract negotiations or legal aspects of labor relations. He may, however, develop courses or draw in legally trained experts for training others in this function. He may also develop courses in negotiated union contract interpretation for the rank-and-file and supervisory workers.

Specifications. The training and experience of the training director may be somewhat more concise than that of personnel manager, inasmuch as his job duties are usually more clearly defined. In spite of the variety of activities indicated in his occupational description his duties are in fact somewhat narrower than those of the personnel manager.

Directors of training are often drawn from the public schools. These are men who have had experience in the administration of public educational programs or in industrial education. In more recent years, the training director has been recruited directly out of college and may undergo an executive training program. During this time he gets experience in the production or sales phases of the organization.

Fifty-two per cent of the 113 training directors who participated in Guyon's survey stated that they found personnel a helpful kind

of work experience for their present job; 43 per cent indicated shop or factory experience helpful; 36 per cent listed education; and 27 per cent mentioned executive work.[15]

Certain specific educational requirements similar to those for public educators might be set up for the industrial training director. In public education, professional requirements are fairly rigid, carefully stated, and virtually country-wide. For example, every teacher and school administrator is required to have had one or more courses in educational psychology.

Public education is much older historically than training in industry. For that reason there is less uniformity in training and experience requirements in industry than in public education. There was considerable variation in the attained education of the 113 training directors surveyed. Seventy-six per cent had at least one college degree; some had more than one. Five of the training directors had a Ph.D.[16] A future trend in professionalizing some of the occupations dealing with personnel, such as that of training director, can be expected.

We would expect, on the basis of occupational descriptions, that the training director might have had training not only in personnel methods and educational psychology but also in public speaking, in English and report writing, in economics, sociology, industrial management, cost accounting, and statistics. His experience might include either understudy or junior executive training that would enable him to be familiar with the needs of the industrial situation.

The Personnel Psychologist

There are numerous job titles by which the personnel psychologist is known in industry. These include: personnel technician, personnel relations technician, industrial psychologist, human engineer, chief classification (or job classification) analyst, personnel research specialist, personnel analyst.

Under the general direction and supervision of the personnel manager (or in some cases, the training director), the personnel psychologist performs personnel research. In many cases he administers or directs programs for the construction of tools of a psychological nature. He may conduct long range programs in research.

The duties performed by the top level personnel psychologist are

[15] Richard Guyon, "Survey of the Training Director," Part I, *Journal of Industrial Training*, IV, No. 1 (1950), p. 22.

[16] *Ibid.*, p. 21

most interesting and will be considered here. In a large plant he would report to the personnel manager. Most likely he would be at the same organizational level as training director. He would normally supervise several technicians of lesser responsibility and lower level of training and experience.

Occupational description.[17] The personnel psychologist, supervising a staff of personnel analysts, acts with some independence in planning projects and development of methods and procedures for the conduct of personnel research programs. He receives policy statements and direction concerning the administrative phases of the work from the personnel manager. His work is reviewed for conformance to policy and general goals of management but not necessarily reviewed as to strict technical accuracy. The personnel psychologist at the top of the program exercises administrative supervision and technical direction over subordinate technicians. He makes final decisions with respect to difficult and unusual technical procedural problems that arise in the conduct of research programs.

Work performed under his direct supervision includes: analysis of jobs; flow of work; functional organization; training curricula and standards; evaluation of qualifications and performance of workers, both at the rank-and-file and supervisory level; conferences and interviews with employees, supervisory, and administrative officers, and members of the staff and line organizations in planning and developing personnel research programs. He supervises collection of data for programs including job analysis and evaluation, evaluation of training programs, suggestion systems, and communications. He develops selection and placement techniques and evaluates them; supervises statistical analyses of such evaluations; supervises the preparation of manuals for installation of methods and their use by operating departments. He conducts follow-up studies of testing and other quantitative-measure programs to improve worker satisfaction and employee output and to recommend changes or the development of standards in the use of measuring devices.

He may conduct research in interviewing or questionnaire attitude-surveying programs; develop and apply statistical procedures for assessing the validity of trial procedures and for interpretation

[17] Modified after Carroll L. Shartle, "Occupations in Psychology," *The American Psychologist*, I, No. 12 (1946), pp. 559–83.

of results; prepare or supervise the preparation of technical and non-technical reports; and meet with the personnel manager and with top management in interpreting the results of studies, advising on improvements in personnel methods for increased production and job satisfaction of employees.

Specifications. The personnel psychologist's training includes one or more college degrees with major emphasis on personnel methods, industrial psychology, economics, and business administration. The personnel psychologist who heads the program in medium size and large companies should have had from six to ten years of personnel research and practical application of personnel research findings. His experience may include understudy or executive training. It is usual for personnel psychologists to come into the plant with considerably more academic training than that afforded by a bachelor's degree with a major in industrial psychology or personnel management. Normally, graduate work is considered, year for year, the equivalent of practical or personnel research experience.

The Personnel Consultant

The place occupied by the personnel consultant in management is a peculiar one. Generally he is brought in from the outside for a period of time to advise on personnel methods. His duties are analogous to those of the engineering specialist who specifies and designs equipment and suggests to the firm how to get the most out of it. The aim of the personnel consultant is to take guesswork out of the personnel procedures, policies, and actions in so far as that is possible. His general goal is the same as that of the personnel manager. Because of his training and experience in similar situations, he is sometimes able to take short cuts that will facilitate the development and installation of personnel tools.

Instruments for personnel management sometimes may be obtained ready-made. But careful research is always necessary to determine the best set of devices for a particular company situation. Tools must be redesigned and adapted; in other cases they must be constructed, evaluated, and installed. The personnel research consultant often has as his main duty the training of company personnel technicians so that when tools are installed, he may leave the company with some assurance that the tools so developed or adapted will be properly used.

Since industrial conditions may, at times, be favorable to the

personnel charlatan who is adept at selling himself but whose competence in personnel research is questionable, managers and students of personnel management should know the characteristics of the legitimate personnel consultant.[18]

Occupational description. As his first duty, the consultant makes a survey of the company to find out what he can accomplish. He estimates in a general way what effect a program that he may devise will have on the hiring, training, upgrading, transfer, wage and salary scales, employee efficiency, worker satisfaction, communications, and relations of workers to management. He estimates the time, the personnel, and money required for such a program. On the basis of such estimates he advises and helps policy officials, usually comprising the personnel manager and top management of the company who are thoroughly familiar with the company's needs and policies, to set up the program that seems most practicable. He also aids them in setting budget and time schedules.

The personnel consultant, in an advisory relationship to the personnel manager or top management, makes studies or sets up programs for improvement of personnel procedures. In a typical engagement, these may entail situation surveys, development and evaluation of selection techniques, and job analysis programs for the purpose of developing job descriptions, specifications, and basic information leading to selection test development or other personnel methods.

His concern is validity—or evaluation—of the devices. He attempts to identify the characteristics of successful employees. He measures performance of employees on the job, developing criteria for the reliability and workability of the measures used. He may construct experimental tests by adapting items from tests already available or by constructing new items. He conducts item analyses to determine which items are effective. He makes a preliminary experiment of the trial items developed and selects and compiles the surviving items. After setting up the tests in a revised form, a final trial run is conducted for the purpose of developing a meaningful scale to gage the performance of employees and applicants. He develops procedural manuals and trains personnel in the company to administer and operate the program.

[18] The criteria for bona fide industrial psychological consultants are a topic for much discussion in professional publications. See, for example, an article on the marks of an ethical consultant by Donald G. Paterson, "Buying Psychological Services," *Personnel Psychology*, I (1948), pp. 479–83.

He develops tools for conducting attitude surveys, evaluates, and installs them. He attends conferences and makes verbal and written reports concerning the interpretation of results of devices that are developed by his advice or under his supervision. He may make recommendations concerning identity and number of workers to be shifted to different jobs, recommendations concerning the revision of training programs, upgrading policies, wage methods, communications, and the like. He may assist in the development of useful records for managerial control and in the collection of statistical data for management's information. He recommends procedures and programs for continuous checks and controls on personnel methods.

Specifications. The personnel consultant presumably has greater knowledge and competence in the technical and specialized areas of personnel methods than does management. His duties are similar to those of the specialist who is brought in to advise, for example, on production or quality control.

His academic training in general may be a Ph.D. degree in personnel, industrial psychology, or personnel management from a university that offers the specialized training required. In addition to the academic qualifications, seven or more years of intensive experience in personnel research programs is desirable. Such background experience includes the direction of programs and functions discussed in the occupational description above. Professional psychologists are not necessarily utilized for consultation in collective bargaining activities, but their qualifications may include similar training and experience in other fields including legal aspects of labor relations and labor economics.

One of the earmarks of the competent personnel consultant is membership in certain organizations that are set up for qualifying or certifying the specialists in this area. Most of the competent personnel consultants have published articles in the professional and technical journals.

With the development of professional activity in psychology, clarification of the definition of a psychologist has become increasingly necessary. Such classification is a protective measure for both the public and the profession. In answer to this need, the American Board of Examiners in Professional Psychology, sponsored by the American Psychological Association, was incorporated on April 23, 1947. This non-profit corporation was established to examine and

certify psychologists engaged in clinical, industrial, and counseling work.

The board has set standards that specify a doctoral degree in psychology from a university of recognized standing and five years of professional experience. Such standards are high, but they compare favorably with the requirements set by other professional specialty boards and make possible the acceptance of industrial psychologists on the basis of rigid professional requirements.

The Psychologist in Industry

A questionnaire survey [19] conducted by Canter, in 1947, was concerned with the job functions and duties of psychologists in industry and sought to identify the trends, the professional status, and the desired educational and training requirements for psychologists planning to enter industrial work. The questionnaire was filled out by 103 psychologists who were employed full-time in business or industry and who were members of the American Psychological Association.

The psychologists surveyed were classified into three broad areas of employment: (1) business and industry group (56 respondents); (2) consulting group (37 respondents); and (3) advertising group (10 respondents). One fourth of the respondents had "psychologist" as part of their job title. The titles of 65 per cent of the business and industry group denoted technical, personnel, and top executive functions. The remainder of that group had job titles such as testing administrator, personnel research assistant, personnel statistician, and employment psychologist. Their most important work functions were in this order: duties involving personnel functions; scientific, research, and development functions; policy and management functions; labor relations functions; and education and training functions.

The psychologists of the business and industry group indicated the minimum educational requirements for their jobs. Forty-three per cent felt the A.B. degree to be minimum, 24 per cent designated

[19] Ralph R. Canter, Jr., "Psychologists in Industry," *Personnel Psychology*, I (1948), pp. 145–61. Another study conducted earlier was of situations in which some 600 psychologists are employed. This study was conducted for the Emergency Committee of the National Research Council and for the Committee on Graduate and Professional Training of Psychologists of the American Psychological Association. The results of this study, presenting descriptions and specifications for 28 psychological occupations, are reported in an article by Carroll L. Shartle, "Occupations in Psychology," *The American Psychologist*, I (1946), pp. 559–83.

the M.A. degree, and 33 per cent said the Ph.D. degree was minimum.

Resistance to Change

In some areas, there is considerable resistance to personnel research projects. Resistance of this kind has almost disappeared in the field of material design and production design and the technology of machinery and equipment. The development of research along the lines of so-called human engineering and human understanding often takes longer. Some leaders in responsible positions fear change.

McMurry [20] discusses some of the fears on the part of people in industry. The bases of such fears are not logical but rather highly emotional in character. Therefore, as McMurry points out, the logical and direct presentation of the merits of such developments "is often futile." He says:

> The resistance of workers, supervisors, and executives to change is irritating and often frustrating. This is especially true when the improvements are designed specifically to help them and the company as a whole. However, if it is recognized that it is their basic anxieties and insecurities which underlie and stimulate their lack of cooperation, not sheer stubbornness, selfishness and stupidity, a more understanding and sympathetic view can be taken of the problem. These resistances will probably never be totally overcome, but through the awareness of the basic fears . . . a course of action can be taken to insure the acceptance and continued use of the new procedures and policies, even though they may incorporate a number of radical innovations.[21]

Such resistance to change is present in personnel other than business and industry personnel areas. Shartle, for example, points out that pressure groups restrict personnel research in the government and that it is difficult to get research studies cleared for publication.[22]

The answer to this problem, if any answer is available, must be found in communications and in participation in research by management. The need for communications between top and bottom management and between unions, management, and the research

[20] R. N. McMurry, "The Problem of Resistance to Change in Industry," *Journal of Applied Psychology,* XXXI (1947); pp. 589–93.

[21] *Ibid.,* p. 593.

[22] C. L. Shartle, "Personnel Research in the Federal Government," *Personnel Administration,* VII (1944), pp. 6–10.

worker is clear. Here again communication—human understanding—seems to be the answer to the dilemma.

Summary

Personnel men—personnel managers, training directors, personnel psychologists and personnel consultants—will provide, it is hoped, the key that will open the doors to improved management of personnel in the decades to come. Occupational descriptions and specifications of these men are vital to this goal. Managements of any organized group, including business and industry, are concerned with the characteristics and equipment that enable personnel men to contribute, as leaders, to the solution of personnel problems.

Some colleges and universities have set up specific courses of training in the relatively new field of personnel methods and management. In addition, courses in personnel and industrial psychology, labor economics, business statistics, social psychology, and cost accounting are of importance in the academic training of personnel men. In one survey, training in psychology, public speaking, and personnel management were mentioned most frequently by managers as important in personnel work.

Personnel research itself is needed to develop the most efficient methods for selection and training of personnel men. Our present ways are based on opinion, not evidence. There is some resistance to research in this area; nevertheless, some work has been done on formulation of the problem and on its analysis.

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Part Two

Human Dynamics in Worker Satisfaction

2 Industrial Social Psychology

INDUSTRIAL SOCIAL PSYCHOLOGY, the study of human relations in business and industry, is important to management. First, it aids managers in attaining maximum use of personnel for the common good; second, it is important because it is closely related to the causes of industrial unrest manifested by symptoms such as absenteeism, excessive labor turnover, slowdowns, grievances, lockouts, strikes, and picketing. Through the knowledge gained by the study of industrial social psychology, the rich productiveness of free enterprise may continue.

When industry was small, when work was performed in the family—as on the farm and in small enterprises in which the owner-worker hired only one or two helpers—the problem of relations was not complex. In the home arts and crafts, human relations were personal. Such a simple social work environment is to be contrasted with the larger present-day industrial enterprise exemplified by the International Harvester Company, which employs more than 80,000 workers and has contracts with more than 150 union locals. A few companies are larger than this. With the growth of larger and larger industrial units the personal aspect of worker and management relations has disappeared behind a cloud of confused organizational relationships. Workers rightly ask questions but, unfortunately, receive inadequate answers. They ask, "Who's my boss?" "What's my job?" "What's it worth?"

A kaleidoscopic view of the historical trends of labor-management relations shows change from primitive to modern relations

but has not, until very recently, revealed a trend toward solutions of problems. The early view was that workers were serfs or slaves. Somewhat later, workers were looked upon by management as machines. Later still, labor was viewed as a commodity, to be purchased and used as are raw materials, in terms of supply and demand. Perhaps under the impact of organized labor, employers are adopting a different point of view—workers are like customers. In fact, they *are* customers, or prospective customers, and should be accorded courteous thought and study. Personnel research methods and procedures such as employee attitude surveys, morale studies, employee induction training, communications systems, job evaluation, and employee services are concerned in large part with human relations and human understanding.

Although relations between employees and management may appear satisfactory on the surface, records very often tend to show an increase in unrest of workers which is manifested in absenteeism, slowdowns in production, and grievances. In the extreme form such unrest may be expressed by strikes or open labor strife and warfare. Frequently the reason for the grievance will be stated as poor working conditions or low money wages. The true reasons for grievances are difficult to unearth, describe, and interpret.

Types of Human Relations

Many students of labor problems agree that grievances arise from "lack of human understanding." To interpret this abstraction, recourse must be taken to industrial social psychology—the study of the dynamic relationships between individuals and groups in business and industrial situations.

Industry is made up of numerous interpersonal and intergroup relationships including:

1. Individual worker to groups of workers
2. Group of workers to other groups of workers
3. Individual worker to a member of management (*e.g.*, a supervisor)
4. Individual worker to management
5. Groups of workers to management

The first type, individual worker related to groups of workers, is the common one. It would seem, at first glance, that no problem could arise from such relationships that would be of any significance to management. Quite the contrary! The manner in which a new employee is accepted by and adjusts to his fellow workers may de-

termine to a large extent his satisfaction with his job, his attitude toward his job, employer, boss, and the firm, his amount of production and quality of work (and hence his performance rating and rate of pay), and even the length of time he remains with the company.

Take, for example, the case of a purchasing clerk-stenographer, we may call her Miss Lane, employed in the purchasing and maintenance department of a medium-sized department store. After her trial period of six months as general clerk in various departments, she was judged by the section supervisor to appear best suited for work in the purchasing department. To obtain a clear picture of Miss Lane's various business-social relationships, it is necessary to obtain a view of her work and work environment. Her job description shows that she:

> Types purchase orders from invoice information; handles all general correspondence; sends out store memoranda; types notes relating to meetings or special reports as dictated by department head.
>
> Keeps records of vehicle and utility expenses and checks monthly statements; keeps mileage report of company vehicles; makes up ditto forms and keeps supply on hand; performs miscellaneous filing and other duties.
>
> Performs stenographic duties in handling general correspondence and other matters for the department head, types purchase orders and keeps records for vehicle expenses and utility bills. Uses a typewriter, ditto machine, and a hand-operated adding machine.

Her position was estimated by the job analyst to require better than average intelligence.[1] Minimum hiring requirements were stated as high school graduate in a commercial or business course, typewriting proficiency of forty words per minute, dictation skill of eighty words per minute, and six months' stenographic experience.

Miss Lane's position of purchasing clerk-stenographer is related to several other positions: she works with the supply record clerks but does not supervise them; she is supervised closely by the assistant department head and receives general supervision from the department head. She enjoys the possibility of being promoted, depending on merit rating and opportunity, to the position of assistant department head.

Now that we have briefly reviewed Miss Lane's job and position relations as seen by the job analyst (and as reviewed and approved

[1] In this situation, as measured by the *Wonderlic Personnel Test*, a raw score range of from 21 to 33 was recommended.

by a job analysis and evaluation committee), we may turn again to her human relationships.

The first human relationship is worker-to-group. She adjusted well and was accepted by the purchasing department, which is a closely knit group controlling a small segment of the dynamic relations existing in the commercial social organization. However, if these human relations were the extent of the necessary business social adjustments, Miss Lane's work life would be relatively simple.

The second type of relationship is group to group. For example, Miss Lane is a member of the purchasing department group which is closely related to the group comprising the typing pool.

The third common type of commercial and industrial social relationship is worker to boss. Miss Lane is accepted by her immediate supervisor, the assistant department head, who looks over her work, checks it for errors, instructs, disciplines, and occasionally counsels her, and reviews her work at merit-rating time, thus controlling her earnings within her rate range of salary as purchasing clerk-stenographer. As is usual, she has one "close" supervisor and several other bosses; to each of these she must adjust if she is to survive in her commercial social environment.

The fourth type of relationship is that of Miss Lane to the company. She is a *member* of the firm and her adjustment and acceptance as a member influence her attitude and behavior toward the other people and groups that we have discussed. The matter of *belonging* to this larger group is not unlike being a member of any large social unit, such as the community, the state, or the nation. The main difference is that one is commercial or industrial membership, the other political. Our common allegiance to groups of which we are a member is sometimes called loyalty or patriotism.

The fifth type of relationship is that of groups of workers to management. The usual example is an organized labor group to which individuals such as Miss Lane, and groups of workers such as those in the purchasing department, may belong. Miss Lane is now a group leader or stewardess of her small group; she may someday be president of the local representing all workers in the business establishment in which she is a member, formulating policy, using strategy of group pressure, and otherwise negotiating and dealing with management for the good of the worker group. Her formal duties as a stewardess of local union #99 may be described as follows:

Works with other stewards and the president of the local union in meetings and conferences to determine policy; assists in developing written reports forwarded by the local president to union national headquarters; hears grievances of the workers in her purchasing department, making written reports of grievances for local union files; prepares correspondence for president of union local; attends national meetings of union, preparing written reports and summaries, and presents these orally to members of local #99.

Attends joint management-union job evaluation committee meetings, participating in job evaluation program and reporting any alleged irregularities in program to local union president; recommends to union president arguments for wage negotiation; sits in wage negotiation meetings with union and management representatives.

Thus, it is apparent that Miss Lane as an individual is influenced from several directions by formal and informal social organizations that involve a considerable number of pressures. These determine in large part her attitude and behavior, her adjustment, job satisfaction, and success. Several concepts have been developed by social psychologists and industrial sociologists to describe these relationships.

Concepts in Industrial Social Psychology

The interplay of forces and pressures resulting from human relationships are no less real than the forces of electricity, gravity, or others dealt with by the physical scientists. One notable aspect of human relationships in business and industry is their lack of concreteness. We must, therefore, fall back upon relatively abstract concepts in dealing with the forces and pressures of human relationships.

These concepts come from several related fields or areas of knowledge: *sociology,* the study of people and of the interrelationships of groups of people; *industrial sociology,* the study of people working together in industrial and business situations; *human psychology,* the study of the behavior and attitude patterns of people as related to their environments; *social psychology,* the study of behavior and attitude patterns of people with emphasis on their social environments; *anthropology,* the study of man and his works; and *industrial social psychology,* a combination of these fields as they relate to personnel in the working situation. These are relatively new fields of knowledge. Their techniques for accurate measurement and quantification have had less time for development than techniques of production engineering, for example. Some aspects of the

social and psychological sciences are, therefore, more descriptive than quantitative.

The terms and concepts that help describe the phenomena of human relations with which we will deal in this chapter fall into two main classes:

1. Sociological
   (a) Social distance
   (b) Belongingness
   (c) Group barriers
   (d) Group solidarity
2. Psychological
   (a) Group acceptance
   (b) Group pressure
   (c) Propaganda
   (d) Configurations and social climate
   (e) "Reasonable expectations"

Sociological. *Social distance* refers to a condition in which a group or individual is remote or close in terms of attitudes and behavior patterns shared with other groups or individuals. We think of the social distance in an industrial organization as being a result of stratification in the organization. The board of directors may be very remote from the porter-janitor or sweeper. Workers tend to be more remote from management than from their local union leaders.

Social distance in an industrial situation may be the result of one or a combination of several factors: rigid stratification or recognition of distinct levels of workers; lack of understanding, from group to group, of mutual goals and motives; inadequate communication through all levels for furthering understanding of mutual goals and problems; a hard-boiled, crack-the-whip attitude on the part of management which engenders fear, distrust, and suspicion on the part of workers, precluding close cooperative relationships.

It is evident that the size of an industrial organization influences to a considerable extent the social distance between workers and top management; and unless management takes great care to obtain optimal social distance with workers, much loss in efficiency and satisfaction of workers tends to result. The exact amount of social distance in any given industrial situation that can be considered "optimal" is unknown. The problem in our increasingly large companies is not how to increase, however, but rather how to lessen the social distance now existing. Many bosses still feel that there is prestige value in distance and that workers "get out of line" if too much familiarity exists. Social distance may be considered as too

close, optimal, or too great. The worker and boss may be very chummy, even too close for proper objective relations, or they may be too far apart. It is doubtful whether the average worker regards his boss as a counselor for on-the-job problems. The distance between the two may be so great that the boss finds it hard to get cooperation from his workers; he does not understand them very well; he is not close enough to them.

Belongingness is a condition which exists between a worker and various groups of people within the industrial organization. It is a condition that enables one to say "I belong" or "I am a member." It is a condition that is felt and understood by the individual worker, who is the basic unit of a social group. It is also a condition which influences the attitudes and behavior patterns of the worker toward the group to which he belongs and, as will be emphasized later on, toward other groups, including management and the firm as a whole. A worker often bears membership signs of the group (such as a union) to which he belongs and these signs (his union card, for example) sometimes have prestige among his fellow workers and among his family and friends in his home community.

Alert managers sometimes set up clubs (bowling leagues are examples), membership in which does not imply management affiliation, to enable workers to attain these values of membership approval by their fellow workers. In recent management-foremen tensions the technique of developing foremen's clubs has been used to everyone's advantage to cement bonds between lower management and the firm.

Group barriers are the hurdles or requirements for membership that groups set up in order to differentiate themselves from other groups and from unaffiliated individuals. Most groups in an industrial society are informal, and few have precise criteria for admittance—a mere expression of interest in joining and payment of an initiation fee are sufficient. The membership barriers sometimes, however, act in an inexorable, if subtle, manner. An applicant is blackballed from union membership if he is suspected of being a stooge of management, or he may be ousted if he does not abide by the rules. In less formal groups, cliques, clubs, or simply "our gang," acceptance means simply talking together, eating lunch together, or griping about other people and other groups. For an industrial worker to be a complete outcast, a member of no informal group, is almost unthinkable. Virtually all workers belong to some group.

Professional organizations and similar groups have very formal

barriers. Admission to membership is rigidly controlled by membership committees who require certain minimum standards: a particular degree, a number of years of a specified type of experience, or an attained level of competence.

Group solidarity is achieved by barriers to group membership: the more rigid the barriers, the greater is the group solidarity. Barriers to group membership become more rigid in a time of strife and less rigid when there is little need for solidarity. A common enemy, clearly defined, enhances the "belongingness" among members of any group causing them to think and work together toward their common goal. Union loyalty is highest during strikes, lowest during periods of peaceful relations.

Observers are beginning to stress that, by providing for personnel procedures such as improved communications with employees during quiet times, workers and management can meet on common ground. Such ground cannot be found when worker group barriers are rigid and the "labor front" is solid. By engendering mutual goals the ground is laid for constructive relationships.

Psychological. *Group acceptance* of an individual worker by his department, by management, by the union, or merely by informally organized cliques of workers influences his job satisfaction and his over-all effectiveness. Upon acceptance in any group the individual becomes changed in his behavior tendencies toward other individuals and groups. Acceptance is not always verbal or formally recognized, especially if the group is an informal one, so that management often neglects, or does not observe, the reasons for changed attitude or behavior.

Group pressures are operative once a worker becomes an accepted member of either a formal or informal group. He is influenced to conform to or share the attitudes, beliefs, prejudices, and behavior patterns of the group. A union group, for example, may have attitudes and prejudices quite different from those of management. The individual worker may tend to conform to the pattern set by the union; he is drawn into the group way of thinking. In doing so he may become less acceptable to management or to opposed groups. Biased pressures generated by unions or by managements are closely akin to political pressures brought to bear on members of political parties. The individual worker is bombarded with slanted information from both sides which may influence his stand on questions.

An industrial plant may achieve the enviable position of being "strike-proof" through the clear recognition of the fact of group pressure and other social forces and by careful study and planning for group relations which result in common goals and human understanding.

Propaganda is a tool sometimes used by pressure groups. It is the organized effort of one individual or group to influence the attitude or behavior of another individual or group to achieve a particular end. This definition does not appear to differ very much from a possible definition of education. People sometimes use the term propaganda, however, in situations where "facts" are presumably suppressed in order to attain a certain goal. The ends of education are ideally achieved by presenting facts. Propaganda is not necessarily "bad," although this question is a matter of morals and ethics rather than method. If management has a sincere desire to attain the common ground in human understanding, if it believes that the goals of labor and management are truly mutual, if it is genuinely interested in the satisfaction the worker derives from his job, then propaganda—slanting arguments in its favor—would seem to be unnecessary. The tool of propaganda would logically give way to that of communications and worker education. The same may be said of managements of labor unions.

Propaganda as a tool may be a short-cut to attainment of desired attitudes and behavior. At best it is merely a stop-gap device, used in emergency situations. In long-range planning both union and company managements would do well, it would seem, to drop propaganda as a tool and make greater use of unslanted, factual information in attaining agreement on personnel policy and management.

Configurations and social climate are the individual tensions or the over-all pattern of the industrial environment of the worker. The tensions and stresses of this milieu are determiners of potential and actual behavior patterns. They determine how the employee feels toward management, how much productive work he accomplishes, how he will vote on union or company issues, how long he remains on the job, how he rates the boss, the firm, the working conditions, the personnel services.

The facts of membership, group barriers, group solidarity, and felt loyalty on the part of the individual toward a group suggest that tensions exist. These tensions or stresses are the determiners of attitudes and behavior. These are not "emotional" or "nervous"

tensions, nor are they signs of personal and social maladjustment, but such stresses and tensions may result in personal and social maladjustment under some conditions.

The tensions arise from the fact that the individual is related in different ways to different groups. A worker, Miss Lane, is related to several groups and individuals. This is the dynamic social work environment of the employee. A characteristic of the social climate is that it is fluid, flexible, and changing. Certain features of the group relations are, however, relatively stable and unchanging. Preferences of worker for boss and for fellow workers have been found by measurement to be fairly stable. There tends to be considerable consistency in such preferences when measurements are made at one time and then again at a later date.

Other features of the social climate, particularly the employees' relations toward management and the firm as a whole, change from time to time. If a new and simplified bonus system is installed, for example, the configuration of relationships may improve at once. A job evaluation program designed as a communications procedure as well as an equitable rate range system, properly inaugurated, may effect a change in social climate virtually overnight.

"Reasonable expectations," objectively viewed, are based on forces of a social nature. The worker expects certain working conditions and wages. Management, in adequately and objectively interpreting expectations of workers, may utilize the concepts of social relatedness and the techniques of sociometry, to be discussed below, to good advantage. Otherwise a subjective approach—"blame the worker and his union"—is the inevitable result. Not the worker, nor his union, but a complex set of configurational forces are responsible for misunderstanding. In the words of Fowler McCormick:

> With individuals there is a tendency both to want to be related and not to want to be related. Business management has many times refused to recognize and accept relatedness to various groups because it has been preoccupied with its own activities and points of view. Often it has lived to regret the fact that it did not accept a relatedness and modify its policies and actions accordingly.[2]

All parties to a disagreement on working conditions or wages have the right to "attempt fulfillment of their reasonable expecta-

[2] Fowler McCormick, "American Business and Its Human Relations," *Industrial Relations and Social Change, Personnel Series No. 106* (New York: American Management Association, 1947), pp. 1–8.

tions." An expectation may be reasonable when the facts and the conclusions are impartially judged. In the case of worker-management relations, the facts are of a sociological nature. It would appear that interpretations of reasonableness of worker needs or labor demands must be based on objective study, by such objective methods as personnel research workers are able to devise, of the social forces which impinge upon and influence workers and unions in their attitudes and expectations.

Early Applications of Industrial Social Psychology

We have attempted to show that an analytical point of view in personnel methods and management is desirable and have thus far developed this viewpoint through illustrative concepts and principles drawn from industrial sociology and social psychology. We may turn to a concrete situation in which the principles are illustrated. The classical socio-industrial situation for illustrating such principles is the Hawthorne Plant of Western Electric Company, the studies of which were described first by Roethlisberger and Dickson.[3] They describe experiments on working conditions and employee efficiency, workers' stated reactions to their working environment, analysis of their stated reactions, and the practical applications of findings.

The important implications of worker sociology were first brought to light by these studies, in which plant management and some 20,000 workers and research technicians cooperated over a period of years, beginning in 1927.

The research technicians were at first interested in worker productivity as related to physical conditions such as illumination and rest pauses. Several experiments were conducted to test the influence of light intensities upon production. In one of these studies a control group of employees worked under constant light intensities and an experimental or test group worked under varied illumination intensities in an attempt to find the optimal illumination conditions. The experiments were designed and data analyzed with considerable care. Production increased. Some subtle forces were at play which were at first mysterious to the experimenters. The investigators and management were stimulated to discover the factors responsible for the increased productivity. The well-known relay assembly room experiments were then undertaken.

[3] F. J. Roethlisberger and W. J. Dickson, *Management and the Worker* (Cambridge: Harvard University Press, 1939), p. 615.

In the relay assembly room studies, which finally covered a period of five years, a crude sociometric procedure was used in selecting the workers who participated in the experiment. Two workers who were known to be friendly were asked to choose the others to form the group. This group of workers was given a special test room after certain figures on output in the regular relay assembly department were obtained for later comparison purposes. The investigators and the supervisors worked with the workers in an informal way in planning and discussing the experiment. This was an experience that the workers had not had previous to that time.

No changes were made in work methods. Experimentation with rest pauses and the length of the working day continued with results as shown in Table 2.1. These were aspects of work situations that production engineers and industrial psychologists were much concerned with during and after World War I.

After about four months of experimentation, the workers filled out a questionnaire containing some thirteen questions dealing with home environment and group relationships. It was found that the workers feared authority. Also revealed was the preference for the new test room work environment as compared with the regular relay assembly department. The workers were found to have formed a group that met outside of work for social activity, suggesting a cooperative group spirit and also a new set of attitudes toward supervision. New group memberships and configurations of social interrelationships were formed. These resulted in a new social climate in the work situation. Production increased. When the investigators reverted to the original work situation of a 48-hour work week, without rest pauses, the production, although it dropped off slightly, was from about *12 to 30 per cent higher than before!*

Several hypotheses were carefully considered and tested to interpret this significant increase in worker productivity:

1. Improved working environment and methods of work
2. Rest periods and shorter hours to reduce (a) fatigue and/or (b) monotony
3. Increased wages under the wage incentive plan operating in the test room
4. Changed human relationships and new social climate

The fourth hypothesis finally was emphasized by the investigators as the most likely and fruitful one, in the light of subsequent findings obtained in follow-up and interviewing.

A series of additional experiments and investigations were conducted to test these hypotheses, including an extremely com-

TABLE 2.1

Working Conditions and Relative Productivity of Girls Engaged in Relay Assembly in the Hawthorne Experiment*

Experimental Period	Duration Weeks	Working Days per Week	Daily Working Hours	Rest Periods	Scheduled Rest Pauses Total Min.	Special Features	Relative Output per Week
1	2	5½	8¾	0	0	Regular department	100
2	5	5½	8¾	0	0	Test room	101
3	8	5½	8¾	0	0	Group rate pay	105
4	5	5½	8¾	2	10	Two 5-min. rests	109
5	4	5½	8¾	2	20	Two 10-min. rests	112
6	4	5½	8¾	6	30	Six 5-min. rests	113
7	11	5½	8¾	2	25	Rests: 15 min. in the morning, 10 min. in the afternoon	116
8	7	5½	8¼	2	25	4:30 stop	123
9	4	5½	7¾	2	25	4:00 stop	125
10	12	5½	8¾	2	25	Check period	124
11	9	5	8¾	2	25	Saturday morning off	123
12	12	5½	8¾	0	0	No rests	122
13	31	5½	8¾	2	25	Rests	131
14	9	5	8¾	2	25	Saturday morning off	133
15	31	5½	8¾	2	25	Rests	135
16	4	5½	8¾	2	25	Operators changed positions	136
17	25	5	8	2	25	4:15 stop and Saturday morning off	138
18	15	4½	8	2	25	4:15 stop, Friday afternoon and Saturday morning off	140
19	15	4½	8	2	25	Operators returned to original positions	138
20	25	5	8	2	25	4:15 stop, Saturday morning off	138
21		4	8	2	25	4:15 stop, Monday and Saturday morning off	138

* By permission from *Personnel and Industrial Psychology* by E. E. Ghiselli and C. W. Brown, p. 436. Copyrighted, 1948. McGraw-Hill Book Co., Inc.

prehensive and carefully planned interviewing program. Many interviews lasted ninety minutes. The results of the interviewing program, after the data were collected and analyzed, yielded several findings:

1. Trained interviewers can sense and interpret meaningfully the responses of the interviewee in a free, or nondirective, type of interview.
2. Changes in supervisory attitude and method result from knowledge by supervisors that their methods are being studied.

3. Changes in worker attitude toward management take place when workers are given an opportunity to participate and to express their feelings, preferences, and attitudes.

Sociometry

If we accept the assumption that people work better when in their "own group," with friends, then we cannot fail to conclude that there is much to be gained by managing conditions so that workers are permitted to work with or near others for whom they show a preference.

The purpose of sociometry, the science of matching people on the basis of their preferences for co-workers, has been used in child study, in armed forces training and combat assignments, community planning, and industrial work situations.[4] By means of sociometry, the quantitative study of group relationships and of the relation of individuals to the group and to other individuals, is made possible.

Under what conditions does it work? First, the use of sociometry presupposes an interest in workers' preferences and feelings as well as a recognition of the importance of group relations and membership that has been discussed above. Second, the use of the technique presupposes a democratic, as opposed to authoritarian, approach to personnel management and government of workers. Third, the workability of the procedure presupposes that workers may be shifted in location without change in job duties. An example of a situation that lends itself to such shifting is the filling and inspection department of a large pharmaceutical firm where 300 workers are all working at the same duties and are regularly moved from one location to another to avoid monotony. Such conditions are present in many factories where the work is routine. Assignment to work stations could well be made on a sociometric basis.

The sociometric technique allows the worker to state his feeling, preference, and choice for others with whom he is to work. What is the procedure in matching workers sociometrically?

The sociometric procedure. The sociometric "test" has the advantage of yielding valuable information which can be put to direct

[4] J. L. Moreno, H. H. Jennings, and J. H. Criswell have been leaders in the development of techniques. Recent work in this field is reported in the journals *Sociometry* and *Group Psychotherapy* (formerly named *Sociatry*). See, for example, John H. Jacobs, "The Application of Sociometry to Industry," *Sociometry*, VIII (1945), pp. 181–98.

use for the benefit of workers as well as management without appearing to be a "test" at all.

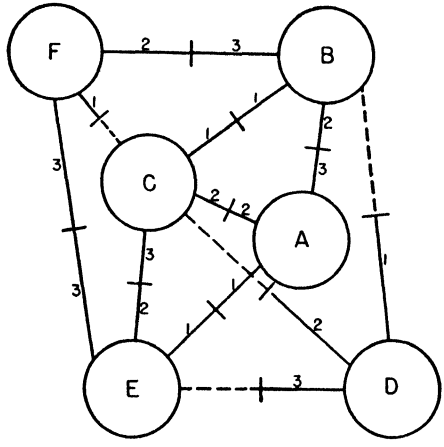


Fig. 2.1. Sociometric diagram showing preferences for working with others (six workers).

Wherever the conditions in an industrial situation are right for the use of sociometric procedures—where the workers can be shifted around from one location to another—a "working with" sociometric test is administered to the employee group. The procedure consists of:

1. Approaching the workers and explaining to them that they are to have the opportunity of choosing whom they wish to work with or near. They are assured that their choices are to be kept confidential and that their stated preferences will be put into effect as soon as possible;
2. Passing out blank sheets of paper on which each worker is asked to place his name and the names of three other persons with or near whom he would prefer to work, numbered in order of preference;
3. Preparing sociometric charts or diagrams (see Figure 2.1) and interpreting the charts;
4. Rearranging the employees in the workroom in accordance with their choices.

In order to keep abreast of changing worker attitudes toward each other sociometric tests may be administered at regular intervals, every two or three months for example. Appropriate shifts in

the positions of the workers in the workroom must, of course, follow.

In Figure 2.1, the solid lines coming from each circle representing a worker indicate first, second, and third choices for "working with." A reciprocated or mutual choice is shown by a solid line from worker to worker with two numbers on it; for example: $\frac{2 \mid 3}{\mid}$ between *F* and *B* indicates that *B* is *F*'s second choice, while *F* is *B's* third. In the event that a choice is unreciprocated, the line is broken into the worker chosen, and only one choice number is given.

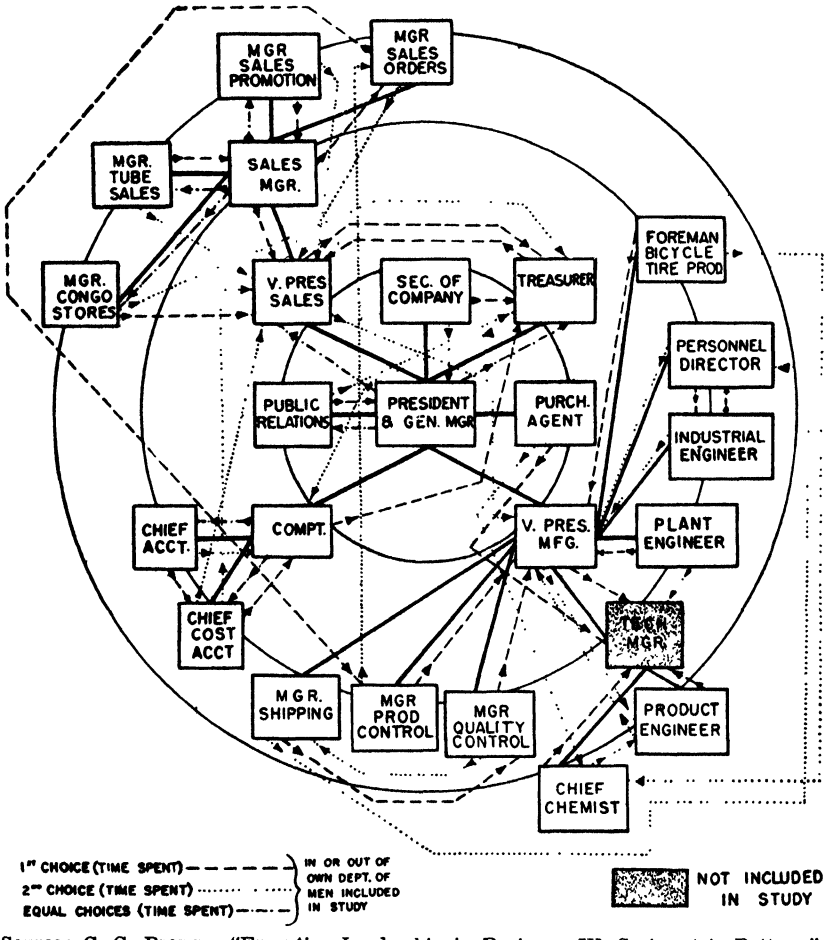
In this situation, worker *C* is the "star" or "leader" from the point of view of number of choices; he is chosen five times. Worker *D* is an "isolate" or "outcast" since he is unchosen by any other worker.

In the actual work situation, it probably would not be fruitful to run a sociometric test on a group as small as this. With a larger group, significant patterns often emerge and different kinds of groups with rather distinctive characteristics can be identified. For example, there are groups which are made up almost entirely of cliques with an absence of interpersonal connections between the subgroups. Strong leadership is not in evidence. This kind of group tends to lack cohesiveness and a spirit of "working together." On the other hand, a sociometric test may reveal a well-knit group with interlacing connections throughout, few isolated (unchosen) individuals, and two or three "leaders," that is, men who are chosen seven or more times in a group of twenty or so. We are using the term "leader" here in a strictly sociometric sense as defined above.

A modified sociometric procedure was used by Browne in his study of executive leadership in business.[5] The 24 executives included in the study were asked to report with whom they spent the most time in getting work done. Figure 2.2 shows the "choices" for each executive presented on a concentric organization chart on which lines of authority, rather than going *down* from the top as on a conventional chart, radiate *out* from the center, that is, from the president and general manager. A first and second "choice" is represented for each man.

An examination of the chart reveals that the "choices" cluster most prominently around three men: the vice-president-manufac-

[5] C. G. Browne, "Study of Executive Leadership in Business. IV. Sociometric Pattern," *Journal of Applied Psychology*, XXXV (1951), pp. 34–37.



Source: C. G. Browne, "Executive Leadership in Business. IV. Sociometric Pattern," *Journal of Applied Psychology*, XXXV (1951), p. 35.

Fig. 2.2. Sociometric pattern. Congo Tire and Rubber Company.

turing with four first and four second "choices"; the vice-president-sales, who also received four first and four second "choices"; and the treasurer with four first and two second "choices." Many other relationships become evident upon close scrutiny of Figure 2.2.

Using the R (responsibility), A (authority), and D (delegation of authority) [6] Scales for the self-rating reported by Stogdill and Shartle in their leadership studies, Browne computed correlations between number of "choices" received and the executive's score on each of the above scales. He found a trend for the executives who

[6] The RAD scales are discussed at some length on pages below.

believe they have greater responsibility and authority, and for those who believe they delegate much authority, to be "chosen" as men with whom others spend time in getting their work done.

Browne feels that a sociometric approach to problems of business leadership may be useful in attacking these aspects:

1. Interpersonal relationships within the organization
2. Communication channels among personnel
3. Differences in the flow of activity as reported on the formal and informal organization charts
4. Study of methods employed in the performance of leadership functions
5. Insight into desirable or needed corrections and modifications in personnel relationships [7]

Summary

Lack of human understanding is commonplace among personnel in an organization. Social distance between management and worker increases more and more as size and specialization in industry increases. This is a serious problem in present-day industrial civilization. The solution lies in planned study of the problem from the viewpoint of industrial social psychology and the development of techniques of sociometry and communication.

A number of concepts, developed by the social psychologist, are of importance in interpreting the behavior patterns and attitudes of workers, and of worker and management groups. Among these are: social distance, belongingness, group barriers, group solidarity, group acceptance, group pressure, propaganda, configurations and social climate, and reasonable expectations. These concepts aid in verbal description of industrial social phenomena. They do not, however, lend themselves to exact measurement, nor do they provide basic methods in themselves. They do provide a basis for the beginnings of sociometric methods and other tools for developing an understanding of the dynamics of groups and of individuals allied with groups. Sociometry is a simple method, easily applied in industry, for determining preferences of workers for each other. With the help of sociometry, workers can be placed where they will tend to derive the greatest satisfaction. It is also possible to apply sociometric techniques to problems of executive leadership.

The importance of worker sociology was revealed by comprehensive studies begun in 1927 at the Western Electric Company. These studies yielded amazing results. Among these was the fact that

[7] Browne, *op. cit.*, p. 37.

working conditions and hours of work were not so significant in determining worker productivity as the subtle, sometimes quixotic but nonetheless demonstrable, influences of group interrelationships.

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3 Employee Dynamics

PSYCHOLOGY TEACHES that the worker, as well as any other individual, needs certain things, and that such needs influence how he feels and behaves. One school of psychology, called "dynamic" or "configurational" psychology, holds that there are two main classes of needs men strive to satisfy.[1] The first class embraces those needs which have to do with survival: food, clothing, and shelter. These needs are sometimes called "primary" or "biological" needs.

The second main kind of need might be referred to as social or social-psychological. Approbation by the worker's fellowmen, approval by others, acceptance in formal and informal social groups in the plant, home, and community, participation in planning groups—these are important motivational forces.

The proponents of this view of dynamic needs say that all motivated workers are in a stress or tension relationship with their environment. They have unsatisfied needs. These unsatisfied needs may be either biological, social, or, commonly, a combination of both. In normal times, a fully employed worker will probably be able to supply the minimum biological necessities; he and his family will not be cold or hungry. However, most men do not stop here in their wanting. To one worker, "shelter" may mean owning a sprawling ranch-type home on an acre of land rather than renting a five-room row house. The prestige value of the home represents a social need, more important a motivating force than the primary

[1] Roger M. Bellows, "Learning as Perceptual Evolution," *Psychological Review,* XL (1933), pp. 138–59.

biological need for shelter. As a home owner, he wins approbation from friends and fellow workers. In this case high wages would be the indirect means of satisfying his need. But are high earnings invariably the solution to the problem of what the worker wants? Can they alone be relied on to foster high level production and a satisfied group of workers?

Worker Satisfaction and Dissatisfaction

"I'm quitting because—well, for several reasons. Mainly, I'm quitting because I want to go south for the winter." The worker was reflecting dissatisfaction with his job. That he did not make clear to the exit interviewer the real reasons for quitting his job is understandable. The worker dynamics behind his dissatisfaction were so complex that it is no wonder he did not, or could not, express them. What are the worker dynamics behind behavior that bring about unrest and job dissatisfaction?

Industrial social psychology has made contributions to our knowledge of the facts of worker-satisfaction and dissatisfaction. To understand worker dynamics, we must take advantage of the leads provided. In what ways do worker groups and individual workers express dissatisfaction? Can dissatisfactions be isolated, categorized, and controlled? Turnover or quitting one's job is one of the important indices of dissatisfaction. Management is interested in the causes of "quits" or turnover as well as in methods for control. By taking steps, as a matter of policy, to prevent unrest before workers quit their jobs, go on strikes, or otherwise show dissatisfaction, management often is able to avoid labor emergency situations.

It is our central thesis that the solution to this problem of worker behavior cannot come from emergency or once-a-year measures such as are involved in negotiating a union contract. Neither can the solution come from more clever or precise negotiating techniques. It can come only from personnel management that has as its basis goals which take into account worker satisfaction as well as productive efficiency.

What is the most fruitful way of looking at worker satisfaction and dissatisfaction? It is by study of the facts surrounding satisfaction and dissatisfaction of the individual worker. Knowing causes of unrest, we can develop more appropriate techniques for its control.

We may define worker satisfaction as a state of normal motiva-

tion or tension. Management would refer to the individual who is satisfied as a well-adjusted worker. He is not a troublemaker. From management's point of view, the worker has an appropriate relationship with various groups, including supervisory and management groups. He feels, and upon occasion expresses, a degree of loyalty to these groups and to the firm for which he works. He receives satisfaction from membership in these groups. His foreman or supervisor approves of the type of group to which he belongs. Some of his satisfaction is derived through this state of normal motivation. It is expressed in satisfactory work and in what would commonly be called good relationships with management. He is a satisfied worker.

Worker dissatisfaction, on the other hand, is a state of abnormal stress or tension. So far as management is concerned, the worker who is not in a state of normal motivation may be said to be dissatisfied. The worker ceases to be a producer. He may become a troublemaker. Often the worker's behavior results from membership in worker cliques which encourage behavior that is, from the point of view of management, maladjusted or undesirable. These tensions may manifest themselves in grievances, slowdowns in production, or unusual absenteeism. Abnormal stresses, in their more advanced stages, result in overt behavior such as union authorized or unauthorized work stoppages, quitting, or otherwise indulging in acts that do not conform to a pattern desired by management.

It should be emphasized here that the word "normal" has to do with the point of view taken with respect to the worker. As the union perceives worker behavior when the worker goes out on authorized strike, such behavior is normal. As the worker himself perceives it, it is normal because of his loyalty to the group to which he belongs, which engendered the behavior. As management perceives it, it is, of course, abnormal or maladjusted or undesirable behavior. As the consumer views such behavior, it is maladjusted or adjusted, depending on the consumer's background and affiliations. It depends upon the vantage point from which such behavior is being perceived and from the memberships and loyalties of the observers.[2]

Inarticulate versus articulate behavior. Some behavior reflects only slight dissatisfaction on the part of the individual. He may not even recognize his dissatisfaction as such. Very often it is not no-

[2] Ross Stagner, "Psychological Aspects of Industrial Conflict: I. Perception," *Personnel Psychology*, I (1948), pp. 131–43.

ticeable to supervisors or management that the worker is dissatisfied. Such behavior is called inarticulate, in that it is not talked about openly or does not reveal itself plainly to the casual observer. The inarticulate forms of dissatisfaction are the individual's attitudes: whether he likes certain things about management, whether he would vote on a company issue in the way that management would say is a well-adjusted or desirable way of voting.

Worker dissatisfaction is articulate, overt, and immediately noticeable to management if it consists largely of such behavior as excessive absences or work slowdown on the part of a worker.

The dissatisfaction of workers as a group can similarly be described either as articulate or inarticulate behavior. Inarticulate unrest is not expressed in overt behavior of the group. It is akin to attitudes or potential behavior patterns. Attitude measuring devices either in questionnaire form or by interview are sensitive enough to pick up such vague or undefined feelings on the part of groups of individuals. It is the inarticulate expression of dissatisfaction that is of much significance to management if sensitive procedures such as attitude scales and interviewing techniques are devised and used for its measurement. Preventive measures can be applied to avoid the overt type of behavior that is so costly.

The articulate or overt group behavior commonly takes the form of excessive turnover, strikes, lockouts, boycotts, and work stoppages. The tremendous cost to society of labor strikes cannot be gainsaid. The *Monthly Labor Review* shows that, for the year May 1951 to April 1952, a total of 4,851 new work stoppages began.[3] This directly involved 3,100,500 workers! Idleness—lost days of work—aggregated 25,320,000 man-days! These data summarize only losses within plants on strike. They do not include workers' and managements' losses from "indirect or secondary effects of stoppages on other firms or industries whose employees are made idle as a result of material or services shortages."

Such unrest and dissatisfaction affecting large groups of workers result in appalling waste and discomfort for society as a whole. Most of the cumulative dissatisfaction can be traced to the once latent unrest of individuals. It is eminently desirable to be able to recognize ahead of time the sore spots likely to result in costly work interruptions.

[3] U. S. Department of Labor, Bureau of Labor Statistics, "Work Stoppages Resulting from Labor-Management Disputes," *Monthly Labor Review,* LXXV (1952), p. 119.

More research work has been done on labor turnover and more information is available on it than on some other dynamic aspects of employee unrest. Although turnover is but one of the indices of employee dissatisfaction, it may be considered in some detail, inasmuch as it is perhaps more susceptible of measurement than other manifestations. It should be emphasized that managers are required, as part of their responsibility, to interrelate the various phenomena and the methods for dealing with them in the personnel field. No one index is separate from others. No one method of personnel management can be isolated and separated from the other methods and management techniques. Turnover may be considered a symptom of dissatisfaction for which there exists a multiplicity of interrelated influencing factors.

"Causes" of employee unrest; the exit interview. Why do employees quit? It is difficult to determine this by exit interviews, since excuses, rather than real reasons, are often given. Sometimes employees themselves really do not know why they quit.

The exit interview, however, is a tool that may provide management with information concerning the efficacy of its personnel policies. It is a procedure for discussing with the quitting employee his reasons for leaving. It is a final step in the termination procedure.

The exit interview is more likely to be profitable if conducted by someone other than the employee's immediate supervisor. In such instances it may disclose real or fancied grievances, illness, lack of understanding of the job, lack of understanding of the importance the job bears to the general production scheme, improper wage differentials, poor selection and placement policies and practices, anxiety neuroses, personal and home problems. Exit interviews sometimes result in the immediate elimination of the cause. They also sometimes result in the retention of a valuable employee.

In one plant, the technique of exit interviewing was used during a six-months' period to obtain data for studying employees. This company attempted to get at the genuine feelings and reactions of 300 terminees. After the exit interview was completed with a terminee, answers to seven questions were recorded on an interview blank. The employees were not interviewed by their former supervisor but rather by one of three people: the exit interviewer, the assistant employment manager, or the personnel clerk. The exit interviewer personally talked with 60 per cent of the group of 300.

Table 3.1 indicates the "yes—no" answers to the questions asked during the exit interview.

TABLE 3.1

Results of Exit Interviews of 300 Terminees*

Question	Terminees' Answers (*in per cent*)	
	Yes	No
1. Were you told that all applicants must agree to work all shifts?	95	5
2. Were you misplaced on your job?	17	83
3. Were you able to adjust yourself to departmental conditions?	88	12
4. Were you personally irritated by other workers?	13	87
5. Were you personally irritated by supervision?	8	92
6. Were you personally irritated by health conditions?	9	91
7. Were you personally irritated by the shift?	15	85
8. Were you made any promises which were not kept?	2	98
9. Were you satisfied by the general working conditions here?	96	4
10. Did you tell your foreman about your leaving?	71	29
11. Do you think the company misrepresented any of the jobs they asked you to work on?	6	94

12. What is your one main criticism of the Company? (This question was asked two sub-groups of 100 terminees each.)

	Group I	Group II
Per cent having no criticism	53	68
Per cent having favorable comment	26	16
Per cent having unfavorable comment	21	16

* Source: Adapted from Spicer, *ibid.*, pp. 5–14, see footnote to page 54.

It is of interest to note some of the unfavorable replies to Question 12 shown in Table 3.1. Ten examples of the replies are given below:

My supervisor is definitely not the "leader" type of man.

Did not get the right deal from company or union which ultimately resulted in my being dissatisfied.

The work I do is a little oily.

No criticism at all other than that I can make more money outside than I can here.

It was hard to get advancement. New employees seemed to get better rates, job pay, and classifications than some of the old employees.

Too much horseplay in the shipping department.

I don't care to argue.

My work was a monotonous effort; and though I told Jim Brown about it, he didn't do anything about it until the day I told them I was leaving.

Not enough money for a married man.

I feel I was entitled to more consideration than I received.[4]

In this study results were available for those who quit voluntarily and those who were discharged. Table 3.2 shows the reasons for separation which the 300 terminees gave in the exit interview. The

TABLE 3.2

Reasons for Separation of 300 Terminees as Stated in Exit Interview*

Reason for Separation	Per Cent
Voluntary Quits:	
Leaving for another job	27
Leaving state	18
Going to school	19
Personal reasons	7
"Dissatisfied"	10
Poor health	6
Starting own business	5
Disliked shift	5
Re-enlisting in service	2
Pregnancy	1
Retiring	0
No reason given	0
Total	100
Discharges:	
Gambling	16
Habitually absent	46
Fighting	11
Intoxicated	11
Insubordination	12
Improper handling of equipment	4
Total	100

* Source: Spicer, *ibid.*, p. 27.

greatest single reason given was "leaving for another job"; 27 per cent of the voluntary "quits" fell in this class. Of those who were discharged, absenteeism was shown (in this particular plant) to be closely related to turnover. A total of 46 per cent of the individuals who were discharged during the study had been habitually absent.

[4] An unpublished study by Lawrence G. Spicer, "A Statistical and Narrative Analysis of Separated Employees' Opinions Concerning the Personnel Policies of the Detroit Plant, Nash-Kelvinator Corporation, Over a Six-Month Period of Time," 1949, pp. 15–17.

In another study, 200 terminees were interviewed at termination to discover their reasons for quitting.[5] The data are shown in Table 3.3.

In another situation, Kerr [6] used elaborate statistical procedures for studying the relationship between labor turnover and a number of different variables by departments. His results are reported in two studies.

TABLE 3.3

Reasons for Separation of 200 Terminees From an Automobile Manufacturing Plant, Semi-Skilled Production Jobs*

Reason for Quitting	Per Cent
Transiency	30
Other Employment	27
"Job Dissatisfaction"	14
Returned to School	8
Health Reasons	7
Self-employment	5
Objection to Shift Work	4
Excessive Job Demands	3
Domestic Reasons	2
Total	100

* Source: McKenna and O'Sullivan, *ibid.*

The first study involved an electronics manufacturing plant in Indianapolis. There were seven major factory manufacturing divisions, each employing an average of somewhat more than 400 workers. This analysis included the relationship between labor turnover and each of 24 other variables. Of the 24 variables studied, 3 were significantly associated with turnover. These were: hourly earnings of male workers, job monotony, and promotion probability. Among factors not found to be significantly associated with turnover in this study were: whether the hourly-paid employees belonged to a company athletic association; average hours worked by employees; the amount of noise in a department as measured in decibel units; the absenteeism rate; average supervisory quality, as judged; social prestige of jobs; average intelligence of supervisors as measured by the *Army Alpha Test;* and average age of employees.

[5] From an unpublished study, supervised by the writer, by Sidney McKenna and W. J. O'Sullivan, "An Attitude Survey of Hourly Terminees," Ford Motor Co., 1948.

[6] Willard A. Kerr, "Labor Turnover and Its Correlates," *Journal of Applied Psychology,* XXXI (1947), pp. 366–71.

The second study was made in an electronics factory in Camden, New Jersey. It involved 53 factory departments, each employing an average of 189 workers. A larger number of variables was studied. The departments that tended to have much "avoidable" turnover were characterized by: a wage incentive system; high job monotony; high per cent of females among hourly-paid employees; high difference in average hours worked per day by each sex; low morale by union ratings; low hours worked per week per hourly-paid female; low hourly earnings of hourly-paid males.

Some relationships in both studies fell a little bit short of being statistically significant. For example, there was a slight but not statistically significant relationship between turnover and youth of employees (possibly in turn related to the fact that the younger the employee, the fewer dependents he has). Another quite interesting near-relationship was the tendency for departments with most supervision to have high turnover.

Wickert has described an investigation of turnover and morale among several groups of young women employees in the Michigan Bell Telephone Company. By empirical procedures, turnover was found to be related significantly to these employees' feeling of ego involvement, engendered, for example, by participation in making decisions in the day-to-day operation of the company.

Turnover in this situation was not found to be related to any of the factors that personnel researchers traditionally associate with it. Neither biographical data from the application blank nor scores on tests taken at the time of employment were any help in identifying the turnover-prone employees. Nor did neurotic tendency, as measured by scores on some personality test items, show any relationship to turnover. Attitudes toward some traditionally important conditions of employment, e.g., wages, supervision, and the like, showed little or no relationship, or quite unexpected relationships, to turnover.

The main point of difference between those who stayed with the company and those who left was the greater feeling of ego involvement in the day-to-day operation of the company among those who stayed. Specifically, those who stayed tended to say (1) they had a chance to make decisions on the job, and (2) they felt that they were making an important contribution to the success of the company.[7]

Covner has taken the point of view that absenteeism, a symptom of worker dissatisfaction, may be either *management-centered*

[7] Frederic R. Wickert, "Turnover, and Employees' Feelings of Ego-Involvement in the Day-to-Day Operations of a Company," *Personnel Psychology*, IV (1951), pp. 185–97.

(quality of supervision, size of department, nature of work, etc.) or *worker-centered* (sickness, transportation difficulties, etc.).[8] He reports the findings of a study in a plant of 1,000 people, which had a high rate of absenteeism during World War II and the years following. Generally, it was found that: men had attendance records superior to those of women; larger departments tended to have higher absenteeism (and also a greater percentage of women in the departments); and departments with better supervisors tended to have lower absenteeism. When management seeks the factors related to absenteeism with a view to its control and reduction, it should turn the spotlight on itself, as well as upon the workers.

The approaches used by management to motivate and satisfy employees are of great importance. There are two classes of methods: psychological and autocratic. These are considered as they are related to production and worker satisfaction in the next section.

Psychological and Autocratic Methods of Motivation

Managements that have been aware of the importance of employee satisfaction have tended toward psychological methods, as opposed to autocratic. Psychological management is a "we" rather than an "I" management. It takes into account the feelings and needs of the worker. Some needs of the worker arise from interrelationships of individuals and groups in business or industrial social systems. They include participation—"working with." They are complex, but may be understood from discussions such as the one presented in the preceding chapter on industrial social psychology.

Motivation is the process of getting people to do things, to behave in a certain pattern. One way is to tell, or order, Jones to do it; another is to arrange the situation in such a way that he will do it because it is the natural thing to do, because he wants to do it. We may contrast the psychological way of supervision, or of management, with the autocratic.

Table 3.4 presents schematically the difference between the psychological and autocratic modes of motivation. Four sections in the table show these differences as pertaining to making decisions, communicating decisions, control, and the role of the supervisor.

[8] Bernard J. Covner, "Management Factors Affecting Absenteeism," *Harvard Business Review,* XXVIII (1950), pp. 42–48.

TABLE 3.4

Comparison of Psychological and Autocratic Modes of Management

Psychological	*Autocratic*
Making Decisions	
Group discussion of problems	Absence of participation by group
Decisions made by group concurrence	Degree of concurrence unknown and disregarded
Decision-making recognized as a training problem	Decision-making regarded as a prerogative of management
Feelings of group members analyzed and recognized	Feelings of group members unknown and disregarded
Social climate analyzed and recognized	Social climate disregarded
Communicating Decisions	
Participation and mutual understanding necessary	Orders by fiat; understanding not necessary
Workers discuss with supervisors and among themselves	Boss arbitrarily tells worker
Control	
Psychological	Logical; legal
Staff organization emphasized	Line organization stressed
Social pressure	Supervisory pressure
Common goals	Diverse goals
Training and counseling	Discipline; enforcement
Nondirective	Directive
Problem solution	Shift from one problem to others
Role of Supervisor	
Employee oriented	Production and company oriented
Member of "in" group	Member of "out" group
Leader who has leader skills	Dictator
Group discussion moderator	Boss
Morale survey analyst	Authority
Expert	Commander
Counselor	Director

Making decisions by group participation. The psychological procedure is characterized principally by the manner in which decisions as to work conditions and methods are made. In the psychological way, the group participates in making the decision; whereas in the autocratic way, there is a notable absence of participation by the group. As suggested by Table 3.4, the psychological mode is especially characterized by: group concurrence; recognition by management of decision-making as a training problem; and cognizance of the problems and feelings of the group members who participate in the decision-making. Furthermore, the decision-making procedure in the psychological way of motivating groups of workers is concerned with the social climate that exists for groups involved.

Tannenbaum and Massarik [9] list the advantages which have been said to come from this type of decision-making participation. The list includes improved quality of managerial decisions, increased output, reduced turnover, and more peaceful management-labor relations. They suggest several conditions needed for effective participation: ability of the subordinate to participate; favorable attitude on the part of the subordinate toward participation; perception of the relevance of participation on the part of the subordinate; and ability of the subordinate to express himself.

Some managements have hit upon the group participation method, in part, through trial and error or the survival of methods that work. Thus, natural selection of personnel procedures has probably played a part in the genesis and use of the psychological approach by some managements. Certain other managements have supported experimental research programs which have yielded evidence in favor of the psychological mode of motivation.

Experimental Results from Democratic Management

Results with sewing machine operators. In the case of decision-making by group participation, Bavelas [10] has conducted and reported a study which is of interest. Bavelas's study was concerned with the production of female operators of sewing machines. He worked with the group in establishing production goals. These sewing machine operators worked on an incentive pay plan. Bavelas selected a high-producing group and discussed the matter of production with them, indicating to them that they could, if they wished, establish their own production goal. Up to the time of the initiation of this study, the girls produced between 70 and 78 units per hour. After the group discussion, an agreement was reached among the workers that they would like to establish 84 units per hour as the goal. In less than a week, these workers exceeded the goal they had set for themselves. Another group discussion then took place for the purpose of determining whether they would care to change the goal. They decided themselves that they

[9] R. Tannenbaum and F. Massarik, *Participation by Subordinates in the Managerial Decision-Making Process, No. 14.* (Los Angeles: Institute of Industrial Relations, University of California, 1950), p. 11.

[10] The study by Alex Bavelas was reported by Kurt Lewin, "Group Decision and Social Change," in *Readings in Social Psychology,* eds , T. M Newcomb and E. L. Hartley (New York: Henry Holt and Company, 1947), pp. 330–44. The results of this study were later reported in Norman R. F. Maier, *Psychology in Industry* (Boston: Houghton Mifflin Co., 1946), p. 463; they were also discussed by Norman R. F. Maier, *Principles of Human Relations* (New York: John Wiley & Sons, Inc., 1952), p. 8 ff.

would set a goal at 95 units. During the next week, they fell short of the goal. At the time of a third meeting, the workers decided to establish the production goal at 90 units of work per hour. The follow-up made by Bavelas for a six-months' period indicated that production averaged 88 units per hour over the six-months' period. The conclusion from the results obtained by Bavelas was that the group participation and mutual decision contributed to a change in attitude. These conditions elicited a degree of motivation that resulted in increased production. The girls reported that the increased production was not accompanied by any increase in fatigue.

Results with other garment workers. Coch and French [11] sought answers to the question: What can be done to overcome resistance to change by employees? When management determines, by engineering developments, that a job can be done more efficiently by a new work method, what psychological conditions may facilitate acceptance of the new method by employees? The usual way, the autocratic way, is to tell them to make the change. Another and far better way was validated by Coch and French. They used dynamic group motivation as their solution.

Their experiment was conducted at the Harwood Manufacturing Company plant. The plant, in Virginia, had a working population of about 500 women and 100 men. The average age of the employees was 23 years. The average education was 8 years of grammar school.

The study was conducted on female garment workers performing work in pajama folding, hand pressing, and pajama examining. They worked on an individual piece rate incentive system. Units of work produced were transmuted so that 60 units per hour was the standard efficiency rating. A transfer bonus was arranged for each worker whose work method was changed. This bonus was to compensate a worker for loss during the period of relearning, or learning the new method.

Three experimental groups and a control group were used. These were roughly matched as to efficiency ratings before the change in work methods was made, which might tend to alter the amount of "we" feeling. Group size varied from 7 to 13 workers.

It was theorized that individuals resist change when frustrated by strong group pressures and forces. If this is true, then if the total group participated, or if representatives of a group partici-

[11] Lester Coch and J. R. P. French, Jr., "Overcoming Resistance to Change," *Human Relations*, I (1948), pp. 512–32.

pated in the decisions regarding the change in work methods, these group pressures, and the individual frustration induced by them, would disappear.

In arranging the changes in the method of work, a control group was used. It was treated in the usual way. The workers of this group went through the usual factory routine in changing the work methods. Engineers of the production department planned the changed method, and new piece rates were set. The control group was told, in a meeting, of the change and of the new piece rate.

The three experimental groups were treated differently, as follows:

Experimental group 1. Before any changes took place, a group meeting was held with all the operators to be changed. The need for the change was presented as dramatically as possible, showing two identical garments produced in the factory. One was produced in 1946 and had sold for twice as much as the one produced in 1947. The group was asked to identify the cheaper one and could not do it. This demonstration effectively shared with the group the entire problem of the necessity for cost reduction. A general agreement was reached that a savings could be effected by removing the "frills" and "fancy" work from the garment without affecting the folders' opportunity to achieve a high efficiency rating. Management then presented a plan to set the new job and piece rate:

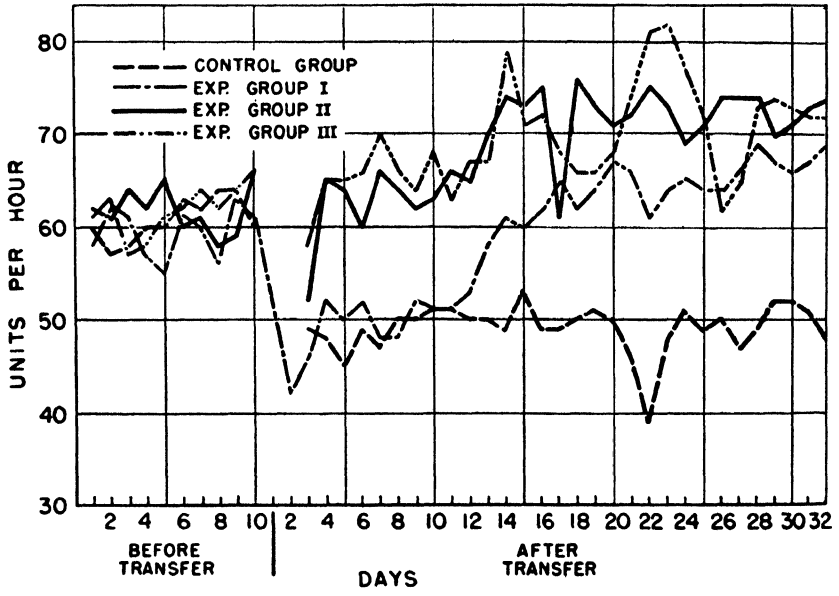
1. Make a check study of the job as it was being done.
2. Eliminate all unnecessary work.
3. Train several operators in the new methods.
4. Set the piece rate by time studies on these specially trained operators.
5. Explain the new job and rate to all the operators.
6. Train all operators in the new method, so they can reach a high rate of production within a short time.

The group approved this plan (although no formal group decision was reached) and chose the operators to be specially trained. A submeeting with the "special" operators was held immediately following the meeting with the entire group. They displayed a cooperative and interested attitude and immediately presented many good suggestions. This attitude carried over into working out the details of the new job. When the new job piece rates were set, the "special" operators referred to the resultants as "our job," "our rate," etc. The new job and piece rates were presented at a second group meeting to all the operators involved. The "special" operators served to train the other operators on the new job.

Experimental groups 2 and 3. These two groups went through much the same kind of meetings to present the changes. The groups were smaller than experimental group 1, and a more intimate atmosphere

was established. The need for a change was once again made dramatically clear; the same general plan was presented by management. However, since the groups were small, all operators were chosen as "special" operators; that is, all operators were to participate directly in the designing of the new jobs, and all operators would be studied by the time study man. It is interesting to note that in the meetings with these two groups, suggestions were immediately made in such quantity that the stenographer had great difficulty in recording them. The group approved of the plans, but again no formal group decision was reached." [12]

Figure 3.1 shows the differences in work performance of the four groups. The control group did not recover to standard performance, whereas experimental groups 2 and 3 that had total participation, recovered rapidly. Experimental group 1, that had partial or representative participation, recovered slower than the two groups with total participation. The results show that for the conditions of the experiment, recovery of standard performance was directly proportional to amount of participation.



Source: L. Coch and J. R. P. French, Jr., "Overcoming Resistance to Change," *Human Relations*, I (1948), p. 522.

Fig. 3.1. The effects of participation through representation (Group I) and of total participation (Groups II and III) on recovery after an easy transfer.

[12] Lester Coch and J. R. P. French, Jr., "Overcoming Resistance to Change," *Human Relations*, I (1948), pp. 521–22.

Another indication of degree of adjustment to change of the several groups was available: amount of turnover. Turnover may be viewed as a manifestation of lack of adjustment. Quitting the job may be the overt expression of frustration or dissatisfaction engendered by group pressures. Seventeen per cent of the control group quit during the first forty days after the change. There were *no* quits in any of the three experimental groups during the first forty days!

Here, management recognized the need for effective communications through providing group meetings to stimulate the participation of employees in planning. It would seem that this dynamic, psychological mode of motivation could be generalized to many business and industrial situations with much benefit to all concerned.

Usually, managements with the psychological approach to the motivation of employees regard the making of decisions as a training problem, whereas those characterized by the autocratic approach look upon decision-making as the prerogative of management. In this latter approach, training supervisors and, indeed, rank-and-file workers in decision-making is of no consequence.

Results with clerical employees. It is evident that in the psychological procedure, the feelings of the group members are analyzed and recognized; whereas, in the autocratic approach, the feelings of the group are completely disregarded. A portion of a study conducted by the staff of the Survey Research Center of the University of Michigan is in point.[13] This study was of considerable scope and provided control of a number of aspects of the work situation such as type of work, physical conditions, and work methods.

The study was conducted in the home office of the Prudential Insurance Company. A brief outline of the design used in the analysis will be of interest. Several independent measures were made. The first of these had to do with the productivity of individuals and sections. This was based on the amount of time required to do a given number of units of work. Secondly, the measure of employees' "perceptions and attitudes furnished by intensive interviewing of the employees" in high and low productivity groups was used. The high and low groups were matched roughly on the basis of several other variables. The third measure

[13] Daniel Katz, Nathan Maccoby, and Nancy C. Morse, *Productivity, Supervision and Morale in an Office Situation. Part I* (Ann Arbor, Michigan: Survey Research Center, Institute for Social Research, University of Michigan, 1950), p. 84.

was the amount of supervisory perceptions, values, practices, and attitudes furnished by intensive interviews with all supervisory heads of the matched high and low groups.

The research program stressed analysis of the kind of social organization in which the work went forward. This included personnel practices and policies, such as formal rewards. The study was concerned with the interactions of the work group as well as the character of supervision. The work of the high and low productivity groups consisted of a number of clerical duties. These included servicing the field agencies, processing insurance policies, records, handling correspondence, filing, and so on. The authors state: "Since the base is the same for all sections doing the same kind of work, the sections, and likewise the divisions, may be compared with each other for any one month."

One of the aspects of the study that is pertinent to the present discussion is the analysis of attitudes of supervisors toward employees. Attitudes of two groups of supervisors toward their own jobs and toward their employees were considered. The supervisors were divided into two kinds: production-centered, and employee-centered. The production-centered supervisor tended to be concerned, as revealed by interview, with the production or technical aspects of the job and considered his employees primarily as people to get the work done. Supervisors who were more concerned with training people or taking an interest in employees were called "employee-centered."

The production-centered supervisor tended to say in answer to the question on the most important part of his job, "Well, the most important part is to get the reports out. The biggest thing is to get the work out." In answer to the same question an employee-centered section head mentioned such things as keeping the section running smoothly, keeping the clerks happy, keeping production up, making impartial assignments of work, etc.

Results of the study indicate significantly that production-centered supervisors were found more frequently in the low production sections than in the high production sections. Six heads of high production sections were employee-centered, but only three heads of low producing sections were employee-centered. Only one production-centered supervisor had a high-producing section, whereas seven production-centered heads were heads of low sections.

Another distinction between supervisors could be made on the

basis of the interview findings. Some of the section heads could be said to be primarily concerned with employee identification, whereas others could be said to be concerned primarily with company identification. Those who were company-identified answered a certain question somewhat differently from those who were employee-identified. This question was, "Some people feel the job of supervisor is tough because they stand between the workers and management. Do you feel this is a problem?" A typical employee-identified supervisor said, "I have never found it that way .Maybe because I always try to put myself in their place because I can remember when I was a clerk and had someone over me and things I was allowed to do, and I don't think they feel that I am above them or anything like that." The more company-identified supervisor said, "I think it's tough because when you tell the girls things, I have to tell them that I'm not after the girl personally. It is because someone is always after me. I tell them I dislike things as much as they do, and if we'd all cooperate. . . ." [14]

Significant differences were found between these two kinds of section heads. The section heads identified primarily with employees tended to be heads of high production sections; those primarily concerned with the company tended to be heads of low production sections. Of twelve employee-identified section heads, eight were heads of high production sections and only four were heads of low production sections; of the ten who were primarily company-identified only two were heads of high production sections and eight were heads of low production sections.[15]

We would expect the supervisor who is production-centered in attitude to be primarily company-oriented. He would tend to disregard the feelings of the group that he is supervising, being postured more toward the feelings of top management. We would expect that there would be a greater social distance between employee and supervisor in sections where the supervisor was company- or production-oriented rather than employee-oriented. We would expect also that the supervisor who is company-oriented would tend to communicate orders by fiat; he would not regard understanding on the part of employees as necessary, and he would "issue orders" rather than discuss matters and gain mutual understanding.

[14] *Ibid.*, pp. 22–23.
[15] *Ibid.*, p. 23.

Psychological Versus Autocratic Control

In light of the evidence presented, these differences in attitude of supervisors are exceedingly important in obtaining production from the people supervised.

Managements seek to control the behavior of the workers. The autocratic procedure tends to stress discipline. It seeks logical and legal grounds on which to discipline workers and bring them into line. The extreme example of line organization with autocratic control is the traditional military discipline. In this type of control orders are given by the top command and go down the line, being theoretically carried out to the letter by the subordinate commands and the rank-and-file. The line of control is based upon a logical, as opposed to psychological, pattern. Autocratic control stresses supervisory pressure from the top, identification of the supervisor with the company, company and production orientation by the supervisor. Such control is similar to the control of a police department which enforces law and depends for its power of enforcement upon legal precedent.

The psychological procedure in control is quite different. Instead of logical and legal, the control is based upon psychological principles. Staff organization rather than line organization is emphasized. Social pressures are employed within the group that does the work rather than from the top. Training and counseling are stressed; discipline and enforcement are de-emphasized; non-directive counseling procedures are utilized. The supervisor is employee-oriented.

In considering the psychological mode of motivation and control, it is important to remember that all organized behavior in a factory or commercial office situation is goal-seeking behavior. Every individual in the group is concerned with the achievement of goals. Analysis of the situation, as well as analysis of the duties of particular jobs, shows what these goals are. Such analysis takes into account the interests, attitudes, and feelings of the people who are to do the work. As a result of motivation based on such analyses, production becomes the common goal of management and the worker. In the autocratic form of control, the goals of management and worker are often diverse.

Thus, when Foreman McAninch orders Joe Brown to spend his overtime in washing windows because a department head said that there would be a visit and inspection of the department by an

out-of-town top management member, the goal of management and the goal of the worker may not coincide. The better way would be to discuss, explain, and achieve mutual understanding. Most situations are much more elaborate than this. However, the same principles are involved.

The procedure utilized in the psychological mode involves analysis. This procedure does not result in blaming the employee; it does not use a retaliatory or a censoring approach. It attempts to analyze the problem that is involved. It endeavors to set up solutions to the problem; solutions very frequently are arrived at through group participation and group discussion. It becomes clear, then, that successful production requires more than a production engineer conferring with management. The production planning team includes, along with the production engineer and the motion and time study man, the industrial social psychologist, the human relations man. It is frequently more effective to take into account the human relations problems before production is planned, or at least the two kinds of planning should go forward concurrently.

The role of the supervisor in motivation. The supervisor assumes, first and foremost, under the psychological form of motivational procedure, membership in the "in" or "we" group. In the autocratic form, he takes pains to hold membership in the management or "out" group.

This distinction can be pictured in the following diagram, Figure 3.2. The left side of Figure 3.2 shows the democratic form in which supervisors are represented by the letter *S* and the workers by *W*. The diagram suggests an interchange of information and participation of the workers with the supervisor. It suggests no difference in "level" of the supervisor. He gains prestige through psychological principles of leadership and his ability to handle situations. It does suggest that he is oriented toward the employees. Contrariwise, the right side of the diagram represents the traditional supervisor as oriented toward management and as directing his employees without recognition of the need for intercommunication. Communication flows downward to the worker. In the autocratic form the supervisor attempts to maintain a social distance and to create a social climate that will preclude mutual solution of problems. He wishes prestige based on his identification with top management. The supervisor has one goal, that of satisfaction of management, whereas workers have other goals, one of which is, not infrequently, actual opposition to management. Thus, dynamic intergroup forces

or pressures are frequently more serious than the old production problems for which traditional managements sought to use autocratic solutions.

Workers communicate among themselves, may form cliques, may be frustrated in terms of ways that they can contrive to satisfy their own goals and also placate the supervisor. The supervisor, being oriented toward the company, not employees, and toward production, not job satisfaction or the feelings of the worker, will tend to use techniques such as discipline, rigid adherence to rules,

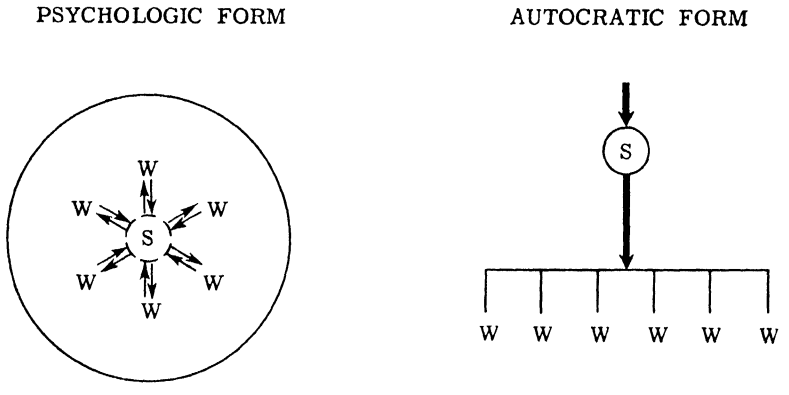


Fig. 3.2. Comparison of the flow of communication in the psychological and autocratic forms of management.

production schedules, motion and time results, and dictatorial procedures. The social distance between supervisor and worker in the psychological form will tend to be small. He will realize that management-connected prestige has no place in the solution of problems. He recognizes the main problem of supervision as that of engendering participation. He will find, at least at the start, that this problem is a difficult one; because of resistance to change, the employees fear that any new way of establishing relationships with the supervisor will be frowned upon.

The psychological mode means neither abandoning control of the situation nor complete disregard of discipline. It is not a way of giving every individual his wishes, nor is it a clever way of manipulating people. It is not a selling device or a sugar-coated autocracy. It is not a way of divorcing the supervisor from management. Studies by the Research Center for Group Dynamics at Ann Arbor have shown, at least for a large organization, that, while the em-

ployee-oriented supervisor is more effective, other things equal, he must at the same time be influential with top management.[16] On the other hand, it is a way of controlling through psychological principles, a way of accomplishing group discipline through social rather than company pressure. It is, further, a method of reconciling conflicting attitudes and seeking the solution of problems without creating new and sometimes insurmountable ones.[17]

The supervisor then becomes, as a member of the "in" group, a group discussion moderator, a morale survey analyst, a situation expert, and a nondirective counselor, as contrasted to a member of the "out" group: a dictator, boss, an authoritative disciplinarian, or a commander.

This is a new role to many managements. It cannot be fostered overnight, as by magic. It is necessary that the psychological supervisor develop certain skills which may be called leader skills. These skills will be based on the social psychology of employee motivation. The supervisor needs to learn, through systematic and planned training procedures, the techniques of the group discussion moderator. It is necessary for him to acquire an objective rather than a subjective attitude. It is assumed that he has knowledge of the situation sufficient to enable him to be thought of as an expert in his field and to that extent he would be prestigious to the workers. He will not be prestigious in the sense of "high brass" or fair-haired boy of top management. He will also need to achieve skill in nondirective counseling techniques. Principles for the development of the psychological leader-supervisor are set forth in some detail by Maier.[18] These principles may set the stage for a new and more promising viewpoint of management in the motivation and control of the behavior patterns of workers. They will provide the pattern for training of supervisors in the democratic use of psychological tools for controlling production. They will enable supervisors to set up the necessary psychological conditions for the satisfaction employees can derive from their jobs.

Summary

Employees are not motivated today primarily by the need for the bare necessities of life. They have these. Their behavior is con-

[16] Donald C. Pelz, "Leadership within a Hierarchical Organization," *Journal of Social Issues,* VII (1951), pp. 49–55.

[17] Adapted from Norman R. F. Maier, *Principles of Human Relations* (New York: John Wiley & Sons, Inc., 1952), p. 30.

[18] *Loc. cit.*

trolled by dynamic forces. These forces are psychological; they are present in the office and factory as well as in the community in which employees live. Study of employee turnover, by exit interview and other methods, helps describe the complex, dynamic properties of employee satisfaction and dissatisfaction.

Some managements have analyzed and learned to use methods that facilitate social forces which yield high production accompanied by worker satisfaction. These methods deal with psychological principles of group participation. A number of earmarks that differentiate them from autocratic methods have been discussed.

Evidence from several research studies on group dynamics shows that group participation can pay off in both worker satisfaction and high production. In one study in which new production methods were introduced, several experimental groups participated in planning and decisions regarding use of the new work-methods. These groups not only recovered production rapidly, but had no quits. The control group, which was not permitted to participate in decisions, produced less and had much turnover.

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4 Leadership and Social Organization

SIX MILLION MEN are leaders in business and industrial enterprises in the United States. One could reasonably expect, by this time, a science or at least an art of leadership. On the financial and manufacturing side of business, there is much scientific know-how. There is an extremely meager heritage of scientific knowledge and principles concerning the important function of leadership.[1]

The problems involved are essentially psychological and social-psychological ones. Our search of the literature suggests that psychologists started work on the problem in 1904,[2] but there was no attempt to quantify data derived from experimental and observational studies of leadership until the 1920's, beginning with the Western Electric Hawthorne Plant studies. These studies were, however, largely of a clinical nature and yielded comparatively little quantification. Program research in the area of human dynamics, used as source material in this chapter, and several studies described in the preceding chapter, were begun at the end of World War II or shortly after 1945.

In view of the comparative newness of the topic, it will be interesting to start the discussion of leadership with a definition and a statement of point of view. Hence, the chapter will proceed to discuss what is known concerning the leadership job, the situation

[1] See, for example, Chester I. Barnard, *The Functions of the Executive* (Cambridge, Mass.: Harvard University Press, 1947), pp. 282, 289.

[2] L. M. Terman, "A Preliminary Study in the Psychology and Pedagogy of Leadership," *The Pedagogical Seminary,* XI (1904), p. 444.

in which the leader functions, the behavior of the leader, and implications for executive development.

Definition and Point of View

A variety of definitions of leadership exist in the limited, controversial literature that is available. For our purposes, we may define leadership as:

1. a form of individual, goal-seeking patterned behavior that depends upon goal-seeking patterned group behavior;
2. a relationship of one, the leader, to the other members of the group, such that progress toward the goal is enhanced by the leader; and
3. a situation which is characterized by formal or informal social patterns.

The first characteristic of leadership, the fact that it is a form of goal-seeking patterned behavior, makes it a problem for psychological study. Psychology is interested in describing and interpreting organized behavior, especially the organized behavior of adult humans. Recently, there has been research conducted by individuals and several major program research groups devoted exclusively to the study of leadership behavior as it is being defined here. Most, but not all, of the psychological studies that have been made thus far on leadership have been in nonindustrial situations.

Leadership is characterized by the fact that it depends upon group behavior. A leader cannot function in isolation from other members of a group; he must be a member of the "in" group; group barriers cannot separate him from the group he leads. The pressures and tensions that are operative in the group must enable him to be a group member. In addition, the entire group must have a degree of conformity with respect to the short or long range goals that the leader and the group wish to achieve. The goals of an industrial production department are to produce so many units of work or to organize the work situation in a way that will render a maximum amount of service. These are goals that are to be achieved by the group as a whole, not by the leader by himself, or by any single individual. Leadership is thus dependent upon integrated, patterned, goal-seeking behavior by a group of people in addition to the leader.

Leadership is also dependent upon the leader's being so fully accepted by the group that the goal-seeking behavior is facilitated or enhanced by the behavior of the leader. By definition, if the

leader's behavior does not facilitate the work to be done, he is not a leader. It is readily seen that the characteristics of the leader and of the situation must be such that he bears not only group membership but also something in addition. The fact that he is different from other members of the group is obvious. Just how he is different is not so clearly visible. This will be discussed in some detail below in terms of both the situation and in terms of the personal and psychological characteristics of the leader.

Leadership takes place in a structured or organized industrial or business social environment. The structure of the environment emerges from forces that are attributable to both formal and informal social organizations. Thus, leadership cannot operate without some patterning of the group in which the work is done.

It may be said that each of the three characteristics that have been listed above is necessary, and that no one of the characteristics is sufficient, by itself, for the leadership activity.

Reflection on these characteristics of leadership activity will reveal two aspects. One is that leaders are not born that way; they do not exist by virtue of certain traits that are given to them as a result of inheritance, such as appearance, stature, or any physical or psychological characteristic. Qualities of leaders are learned rather than inborn. Another aspect that emerges appears to be that the characteristics of a leader are not enough in themselves to assure that leadership activity or status will emerge. The situation in which leadership activity takes place is at least as important as, if not more important than, the characteristics of the leader. The social and environmental features of the situation are crucial, and the qualities and characteristics of the individual are of secondary importance. Given the leadership situation, not just one person but several may be qualified for taking the leadership role.

Likewise, the fiat or directive of top management appointing Mr. Tom Brown as head of a department is insufficient in and of itself to create a leader of Tom Brown or to create a leader situation in which he can function. Neither can legal, financial, or judicial acts of top management create the kind of leadership which it hopes to see achieved in working units of the company. Management must be alert to create a total situation in which leadership can operate. Mere "executive development programs" or "managerial training programs" or "seed-beds for growing leaders" will not suffice.

The Leader Job

In gaining insight into the nature of the leadership activity, it is of interest and value to analyze and study the work patterns of the leader. Some top executives spend a good bit of their time on one kind of activity such as public relations, others may emphasize finance, others sales, and still others engineering activities.

One goal of the Ohio Leadership Studies, conducted by the Personnel Research Board of The Ohio State University, has been to analyze systematically the leadership activities of top executives. This program views leadership activity as "acts by persons which influence other persons in a shared direction . . . the term 'shared direction' implies that the persons influenced by a leadership act participate positively; that is, they respond in the direction of the goal of the leader." [3]

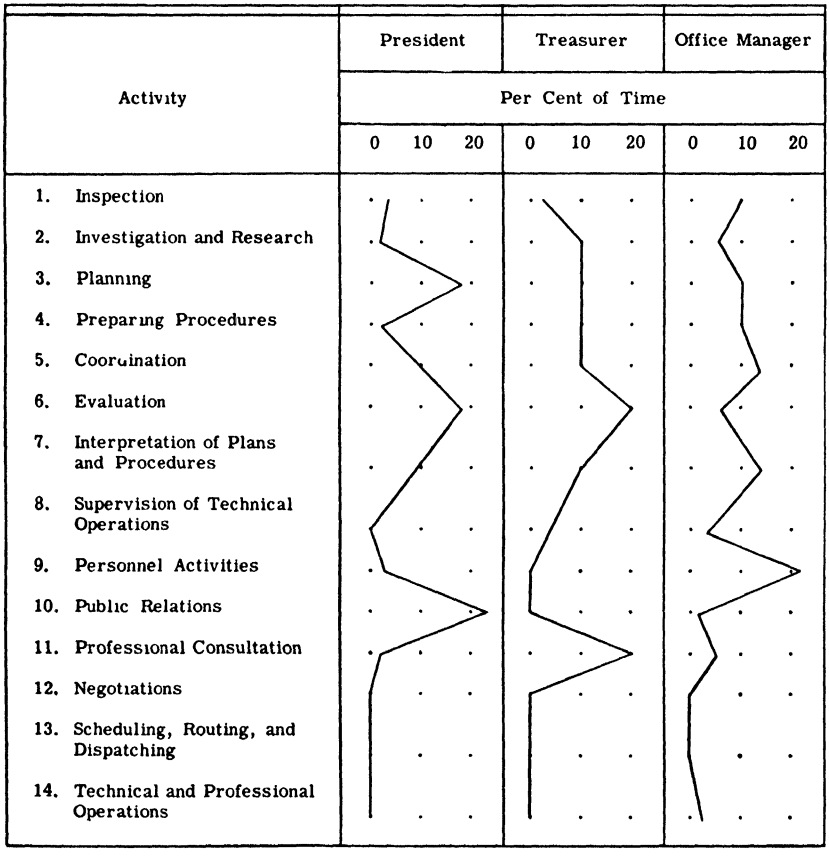
Shartle and his co-workers in the Ohio Leadership Studies have isolated and classified about two hundred variables pertaining to the activities of individuals who were performing as leaders. These variables include the background of the people performing the activity, the situations in which the leader-acts occur, and what the leader does in his job. In the present section, we are interested mostly in what the leader does in his job. Some two hundred persons, assumed to be leaders, were studied in ten different organizations.

Job analysis and interview procedures were used as the tools for analyzing these activities. Job analysis technicians observed the activities of the member of the organization, reviewed his communications, had conferences with his associates, and made notes of the interpersonal relationships between the various functionaries in the organization. They studied jobs such as president, vice-president, general manager, treasurer, and office manager in industrial and business situations. They classified the activities or responsibilities into fourteen groups: inspection of the organization; investigation and research; planning; preparation of procedures and methods; coordination; evaluation; interpretation of plans and procedures; supervision of technical operations; personnel activities; public relations; professional consultation; negotiations; scheduling, routing and dispatching; and technical and

[3] Carroll L. Shartle, "Leadership and Executive Performance," *Personnel*, American Management Association, XXV (1949), p. 370.

professional operations.[4] Figure 4.1 shows the work pattern profiles for president, treasurer, and office manager, indicating the percentage of time which several kinds of executives spend on these fourteen groups of activities. The percentage of time indicated in the work pattern profiles of these three leader positions was obtained by the use of questionnaire and interview methods, supplementing the job analysis activity. It is noted from the figure that the president spends most time in public relations activities, with planning as second in the amount of time. The treasurer is high in evalua-

WORK PATTERN PROFILES FOR PRESIDENT, TREASURER, AND OFFICE MANAGER *



Source: Shartle, "Leadership and Executive Performance," *Personnel.* Adapted from Figs. 1, 2, and 3, pp. 371, 372, and 374.

FIG. 4.1.

[4] These groups of activities are defined in some detail by Shartle, *ibid.*, pp. 375–76.

tion and in special consultation, whereas the office manager spends considerable time in personnel activities. Thus it is seen that not all leaders have the same activities.

We may not assume that all top management leaders have the same amount of technical, as compared with so-called "leadership," duties. This fact has implications not only for describing the situation in which leaders perform, but also for selection and training of executives and management personnel. With this background of leader activity analysis, we may go to a discussion of the situation in which leadership activity emerges and functions.

The Leader Situation

Perhaps the main reason that the leadership situation has not been studied quantitatively to any large extent in the past is the complexity of the leader situation and the fact that methods are not readily available with which to isolate the variables pertaining to the situation. The Ohio Leadership Studies have been working in this direction for several years. They have developed a technique for the quantitative description of groups which may provide the needed foundation for work in the analysis, interpretation, and description of groups in the next several decades.

Current developments in this direction have been reported by Hemphill.[5] Using a rather elaborate design for the collection and analysis of data, a total of fifteen variables or dimensions of the leadership situation were isolated and measured. These dimensions concern facts about groups such as the size of the group, the degree of control of the group, and the amount of participation among the members. The list of quantifiable dimensions of groups is:

1. *Size of the group.*
2. *Viscidity:* the cohesiveness or "we" feeling of the group. It is an index of how closely knit the group is.
3. *Homogeneity:* the diversity of the membership in terms of variables such as age, belonging to many or few outside groups, common interests among the members, and socio-economic status of members of the group.
4. *Flexibility:* a group with many traditions, of long standing, and persisting in certain patterns of behavior is said to be not very flexible. If the traditions have been of short duration, if rules of conduct are

[5] John K. Hemphill, *"Situational Factors in Leadership," Leadership Studies No. 4* (Columbus, Ohio: Personnel Research Board, The Ohio State University, 1949), especially pp. 30, 50. This work was actually begun at the University of Maryland.

not rigid, and controls are not precise ones, then there would be a high degree of flexibility.

5. *Permeability:* refers to restrictions on membership in the group. This variable refers to the rigidity or solidity of group barriers.
6. *Polarization:* the degree of orientation toward clear and definite goals. If the goals to be achieved by the group are numerous, or if they are not clearly defined, then the group would be low in polarization.
7. *Stability:* some groups are highly stable, in that few changes occur within them. Other groups are low in stability. Changes take place frequently. The permanency of membership within the group is related to its stability.
8. *Intimacy:* close intercommunication may exist between group members. Some may be well acquainted with others or they may be remote in their personal relationships, without much discussion or communication among members.
9. *Autonomy:* some groups are highly autonomous in that they are quite independent of other groups. On the other hand, groups may be quite dependent, thus lacking autonomy.
10. *Control:* the index reflecting the amount of control upon a group is a way of quantitatively stating the degree of regulation of the membership of the group by outside or nonmember conditions or forces.
11. *Position:* an indicator of the position of the individual who completed the questionnaire or supplied the data. The position may be high or low in the group.
12. *Potency:* the strength of the needs of the person who belongs to the group. It has to do with the importance of the group membership. A low potency index means many minor needs are involved. High potency would indicate one or a few major needs involved in belonging to the group.
13. *Hedonic tone:* the amount of satisfaction derived from belonging to the group. If a member said that he does not get much feeling of satisfaction from belonging to the group, then the hedonic tone would be low in degree.
14. *Participation:* the amount of a member's participation. If he spends all his available time and effort on group activities, then participation would be at maximum.
15. *Dependence:* an index of the relationship between an individual member of a group and its leader, in terms of how much the member depends upon the leader.[6]

Each of these dimensions pertains in some degree to most organizations. Each one is believed to be both psychologically and operationally meaningful. Each pertains to the total psychological configuration of the organization, that is, it helps describe the whole organization rather than a mere fragment or part of the organiza-

[6] Adapted after Hemphill, *loc. cit.*

tion. Each one of the variables used in describing the organizational groups is quantifiable, for the data may be coded and handled statistically.

In the studies under consideration, 500 groups were described in terms of these 15 dimensions, 24 of which were industrial management and office groups, and 16 of which were industrial and shop groups. The data were collected by questionnaires which were coded by Hemphill. The interrelationships among the 15 dimensions of the group situation as listed above were studied by statistical analysis methods.

It was found that some of the dimensions intercorrelated fairly highly with others. For example, the dimensions of potency and participation were fairly highly intercorrelated, to the extent of a correlation of .73; the dimensions of control and participation were intercorrelated .67; viscidity and hedonic tone, .64; control and potency, .59; homogeneity and intimacy, .59; and potency and hedonic tone, .52. Intimacy and homogeneity were intercorrelated showing that they had elements in common. The other dimensions were fairly unique in that they did not overlap significantly among themselves.

In the study, a measure of leadership adequacy was obtained, which consisted of ratings by the respondents as to the leader's over-all quality of leadership. The ratings made possible an analysis of the relationship of leadership adequacy to the dimensions of the leadership situation. And this analysis, in turn, facilitated the formulation of hypotheses bearing on the influence of the dimensions of the situation on the behavior of leaders. In this way it was found that:

> . . . there is at least a slight tendency for leaders whose behavior indicates confidence to be rated higher in leadership adequacy than otherwise; the leader who "loses face" or who does not have prestige tends in general to be rated lower in leadership adequacy in stable groups, but the reverse seems to be true if the group dimension of stability shows the group to be fairly unstable; leaders who are low in emotional tone tend to be leaders of groups which are low in flexibility and low in hedonic tone; these leaders who are low in emotional control also tend to be rated low in leadership adequacy; those leaders who enjoyed being authoritative, as indicated by responses to the questionnaire, had a slight tendency to be rated low in leadership adequacy; leaders who "go all out" for their groups and identify themselves with the welfare of the members of the groups tend strongly to rate high in leadership adequacy—thus the adequate leader tends to "risk his own welfare rather than fail in his obligations to his

group"; the management orientation versus employee orientation of the leader is of some significance, if the leader is management-oriented, *i.e.*, prefers the company of his superiors, he tends to be rated low in leadership adequacy; [7] leaders whose behavior is inconsistent, *i.e.*, who reverse decisions frequently once they make them, tend to be rated low in leadership adequacy.[8]

It should be emphasized that the studies just described are considered exploratory and pioneering. These studies, however, have definitely demonstrated that it is possible to measure the dimensions of a group in which leadership activity takes place. Such measurements will aid in the description and understanding of leadership behavior as well as in the development of methods for the selection and training of leaders for leadership responsibilities.

Another research program, being undertaken by the human relations program of the University of Michigan's Survey Research Center, confirms many of the findings of the Ohio State Leadership Studies. The Human Relations Program is now in its seventh year. Results thus far have confirmed the importance of the situational dimensions discussed above. The results of these studies stress the importance of the characteristics of the organizational pattern in understanding leadership. Large organizations may be entirely different, as far as leadership is concerned, from smaller ones. In hierarchical organizations, for example, the leader's effectiveness depends to a great extent upon his role within the larger organizations of the hierarchy. Thus leadership behavior cannot be understood by reference to only the employee group supervised. "From a broader view, the data illustrate the futility of studying supervisor-employee relations without regard for the organizational setting." [9]

Leader Behavior and Effectiveness

From the above discussion, it is evident that the characteristics of the leader situation play a considerable role in the effectiveness of the leader. It has been suggested that the personal characteristics of the leader play a role of somewhat less importance. Thus, in the

[7] This finding supplements and tends to confirm the results of the investigation of management vs. employee orientation discussed in the chapter on employee dynamics.

[8] Daniel C. Pelz, "Leadership within a Hierarchical Organization," *Journal of Social Issues* (Issue for Human Relations Research in Large Organizations), VII (1951), pp. 49–55.

[9] *Ibid.*

study of the human relations program referred to above, it was found that if a leader who is highly influential with top management endeavors to help employees achieve their goals, his efforts will be effective. The work of the department will tend to be achieved in an economical manner, and the work will be accompanied by satisfaction on the part of the employees. If, however, the supervisor who is not very influential with those above him in the hierarchy attempts to help employees achieve their goals, his efforts will fail, and this failure will be accompanied by a low degree of employee satisfaction.[10]

Other research projects by the Ohio State Leadership Studies have been concerned with the amount of responsibility the leader has, the amount of authority he has, and the amount of authority he delegates. The studies have developed techniques or measures in the form of scales which yield scores for responsibility, authority, and delegation of authority. These are called R, A, and D scales. There is a strong indication that there are certain combinations of executive leadership behavior patterns and practices in the delegation of authority which affect worker satisfaction and the efficiency of groups of workers. The development of the R, A, and D scales and the implication for their use in improving effectiveness of leadership have been discussed by Browne.[11] In a sample of 24 executives in a rubber manufacturing company, Browne found that the amount of time the executive spent in supervision was negatively related to his evaluation of his authority. The executives who felt that they had a great deal of responsibility also tended to evaluate their authority as high (correlation of .56). Those who judged their authority to be high also tended to judge their amount of delegation of authority to be high (correlation of .54). Those whose salaries were higher tended to evaluate their responsibility, authority, and delegation of authority higher (correlations of .48, .41, and .49, respectively).

The higher the echelon on which the executive functions, the higher his evaluation of his responsibility, authority, and delegation of authority seems to be (correlations of .34, .40, and .14, respectively). Browne formulated a general hypothesis that "leadership and executive activity are dependent upon social and working relationships in group activities, and that their study from this ap-

[10] *Ibid.*, p. 55.

[11] C. G. Browne, "Study of Executive Leadership in Business. I. The R, A, and D Scales," *Journal of Applied Psychology*, XXXIII (1949), pp. 521–26.

proach will prove more helpful than the analysis of individual characteristics with psychological trait testing methods has proven." [12]

Not only is the effectiveness of the leader behavior influenced by the social framework within the company or the hierarchy of the company organization; it is also influenced by outside social group patterns. An intensive study of the social activities of the same 24 executives referred to above was studied by Browne.[13] He tabulated (1) the amount of social activity with people in the company in which the executive worked, which may be called the "company group"; (2) social activity with individuals outside the company but with whom there is a business affiliation of the company, which he called the "outside business group"; and (3) social activity with individuals outside the company with whom there was no business affiliation, called the "outside group."

It was found that the president and general manager of the company at the top echelon had the highest possible score for each of the first two kinds of social activities. Whereas the president, the first echelon, achieved a score of 16 for "company group" activities, the second, third, and fourth echelon executives achieved a score of 14, 9, and 10, respectively, for these activities. For the "outside business group" activities, the president achieved a score of 24, and the second, third, and fourth echelon executives achieved scores of 7, 2, and 3, respectively. For the "outside group" where business of the company was not involved in the social activities, the president earned a score of 8. Executives on echelons two, three, and four had mean scores of 10, 15, and 15, respectively. Browne concluded from his study that the social group choices and the amount and kind of social activity of a business executive are influenced not only by his echelon level in the organization, but also by his particular job and by the department in which he works. He found that memberships in social and professional organizations and the number of memberships paid by the company increase as the executive advances in echelon level.[14]

Implications for Executive Development

It seems unfortunate that few programs now in operation in

[12] *Ibid.*, p. 526.

[13] C. G. Browne, "Study of Executive Leadership in Business. II. Social Group Patterns," *Journal of Applied Psychology*, XXXIV (1950), pp. 12–15.

[14] *Ibid.*, p. 15.

business and industry for the training of executives take into account the aspects of the leadership situation that have been discussed above.

In setting up an executive development program, it is suggested that it would be valuable to include in the curriculum results of these program research studies on group dynamics and leadership. The program should be grounded in the psychological principles of leadership since it is only by the knowledge the trainee may gain from such research results that he will be able to see clearly the implications of the dynamic situation in leadership functions. Executive and leadership activity must be tied in with other adequate personnel techniques and methods through training. Aids such as supervisory opinions and inventories, an example of which is *How Supervise?*,[15] can be of much help. These aids have been used by the Standard Oil Company of New Jersey with favorable results.

Summary

The history of development of our present heritage of knowledge and techniques for leadership has been short. Our present knowledge is exceedingly meager; nonetheless, long range *program research,* established some six or seven years ago at several universities, has produced an exceedingly important body of information for this field. The most fruitful point of view for the development of leaders is that their behavior is dependent upon two socio-psychological aspects of the situation: informal and formal social group structures and group activities, both within and outside of the organizational structures in which they work. These factors are perhaps of greater importance than the personal and intellectual characteristics of leaders.

It has been demonstrated that it is possible to measure the dimensions of the leadership situation and that leader behavior is related to these dimensions. The emphasis upon the leadership situation and the interrelationships between these measurable dimensions have implications for the training and development of executives. The facts pertaining to leadership situations and leadership activity cannot be considered as separate from other psychological procedures that are designed to result in maximum worker

[15] Quentin W. File and H. H. Remmers, *How Supervise?* Test (New York: The Psychological Corporation).

satisfaction and efficient organizations throughout the hierarchy of a company.

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5 Counseling Employees

"I WANT TO GO FORWARD IN MY JOB and I used to work hard to go forward, but now it seems I just want to get by. I'm just stumbling along with a weight that's holding me back . . . !" A worker is talking to a counselor and between them they are attempting to solve the problem of the worker's lack of motivation, his waning zest for his work. It is a problem typical of those brought to an industrial counselor.

Such aid in solving worker problems of every kind is all-important if production is to be high. Workers cannot be motivated to produce as a team simply by "cracking the whip." Such tactics lead to chaos in personnel relations and end in industrial warfare. Mutual understanding of problems is needed.

Managements are now using employee counseling as a means of improving employee relations, in recognition of the importance of the "human element." Up to the 1920's little or no recognition was given by managements to employee counseling as a formal procedure.

Shortly after Henry Ford first announced his bonus pay and profit-sharing plan to the newspapers in January 1914, he formed a kind of counseling program by establishing an educational department, later named "department of sociology." This department advised workers on personal affairs, assisted them in health, legal, and family matters, and checked up on them to see whether they were "living right," according to the rules set down by Henry Ford.[1]

The early Ford program was developed as an attempt to correct

[1] Two lucid articles describe the growth of the profit-sharing plan. They show how the paternalistic "counseling" procedure was handled as a part of it and discuss

two difficulties: low productivity of workers and instability of the working force. Whereas the average number of employees on the job at Ford in 1913 was 14,366, figures show that 50,488 left that year—an enormous labor turnover!

The Henry Ford plan did not work because employees felt it was paternalistic. Employees did not like being checked on during their leisure hours and told "how to live." It was authoritarian. The plan did not work perhaps because Ford had an unfortunate philosophy of management-worker relations. For example, he said, "I pity the poor fellow who is so soft and flabby that he must always have an atmosphere of good feeling around him before he can work." And again, "We do not believe in the 'glad hand' or the professionalized 'personal touch' or 'human element.' " [2]

Some aspects of the old sociological department are still in existence at the River Rouge Plant of the Ford Motor Car Company. The service, however, is no longer paternalistic. It now aims to assist the worker to adjust by advising and helping him and his family in much the same way that a social welfare agency assists its cases.

Many companies aid workers in solving their health and family problems by home visits in times of emergency, illness, or death in the family. About 32 per cent of 325 firms surveyed employed visiting nurses and 32 per cent of the companies surveyed gave free medical and health service to employees.[3] Such employee services are motivated by management's desire to aid workers but generally are not directly concerned with problems of human relations, adjustment, and motivation.

Types of Counseling Programs

Analysis of some sixty counseling programs yields four types of programs in existence in industry.[4] These can best be described by their different functions:

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reasons for the plan's lack of success: Samuel M Levin, "Ford Profit Sharing, 1914–1920," *Personnel Journal*, VI (1927) and "The End of Profit Sharing," *Personnel Journal*, VI (1927) In the latter article Levin concludes, "The adjustment of relations between employers and employees cannot be settled by a mere impulse to be generous."

[2] Henry Ford in collaboration with Samuel Crowther, *My Life and Work* (New York: Doubleday Page and Co., 1922), pp. 92, 263.

[3] W. D. Scott, R. C. Clothier, and W. R. Spriegel, *Personnel Management*, 4th ed. (New York: McGraw-Hill Book Co., Inc., 1949), p. 577.

[4] Helen Baker, *Employee Counseling: A Survey of a New Development in Personnel Relations* (Princeton: Industrial Relations Section, Princeton University, 1944), pp. 1–64.

1. Provide information to employees, to supervision, and to top management
2. Give assistance to foremen in handling the special problems of women workers
3. Coordinate personnel policies in production departments and, by interview indoctrinating and training, to improve workers' understanding of management objectives and personnel policies
4. Provide employee adjustment counseling

The first function—dissemination of information to all levels of the organization—formerly achieved in an informal way by the personnel director or his assistants, more recently appears to be included as part of counseling programs in some plants. The second activity arose largely as a result of the use of many women workers during war years. The third, like the first, has been done on a more or less informal basis. The fourth type of counseling, that performed as a personnel method for improved adjustment of the individual worker, is believed to be a basic and profitable area, and for that reason it is given further consideration here.

Employee adjustment counseling, sometimes called "employee mental hygiene," falls in the same general area as employee development, since it is concerned with improving the personal, social, and job adjustments of the individual worker.

Several companies pioneered in counseling for mental hygiene in the 1920's, for example, R. H. Macy and Company.[5] These companies were not paternalistic in either their viewpoints or their procedures. Their research staffs included psychologists, psychiatrists, and social workers. Studies which were made by their staffs revealed that there was a close relationship between an employee's efficiency at work and his personal and social problems while away from his place of work. The results of the studies helped managements to recognize the importance of worker adjustment and engendered the "open door" philosophy.

Employee counseling at the Western Electric Company. The program for employee counseling at the Western Electric Company grew out of studies which were begun in 1927. At first, these studies were concerned with the relation to production of working environ-

[5] V. V. Anderson, *Psychiatry in Industry* (New York: Harper & Bros., 1929), p. 51.

ment and conditions such as rest pauses and the length of the working day.

It was originally planned to have the foreman of the test group of relay operators remain in the test room as the immediate supervisor. However, when difficulties arose or when changes were contemplated, the investigator for the study was also consulted. It developed that the investigator himself came to assume the role of the foreman within the department. As their comments were solicited, the employees tended to relax unfavorable attitudes toward management. In time, the investigator found it necessary to call more and more on the operators themselves for their suggestions and cooperation in working out a new experimental condition. It soon became apparent to management, as well as to the investigators, that factors other than mere working conditions and environment had remarkable effects on the productivity of the workers. The cause was identified as a change in the attitudes of the workers toward management and toward their own positions within the experimental test room.

The investigators realized that they must formulate a new program, which was actually a survey of worker attitudes throughout the plant. They desired information on the factors or components of morale. Their thought was that what had happened in the test room might be found within the plant as a whole.

At first, they tried to conduct systematized, structured interviews. This seemed to restrict a portion of the employees who tended to wander off the subject, even directly avoiding the question which the interviewer sought to have answered. As the next approach, the investigators tried an extremely informal type of interviewing. The workers were allowed to discuss any topic of interest to them. The theory was, of course, that what bothered the worker most would be what he would tend to talk about. The results were discouraging at first. They had hoped to unearth some clues to factors of employee dissatisfaction or low morale. Instead, they had merely allowed a large number of people to "get things off their chests."

This "getting things off their chests" soon became the new goal of the interviewing program at Western Electric. The employees interviewed had shown repeatedly, and with enthusiasm, a favorable reaction to the opportunity of talking out their problems.

The program became one of employee adjustment counseling. It began formally in 1936 [6] and supplanted the interviewing-for-the-needs-of-management program that had been projected.

The Western Electric Company now has about 55 full-time counselors. Each counselor is assigned to a given department or area within the plant. He is not responsible for production, hiring, layoffs, discipline, or any other administrative or managerial function of a routine nature. His sole function is to acquaint himself with the employees with whom he is to work and to pursue facts relating to the effectiveness of the program. Counseling is performed at the benches and desks of the workers, in the hallways, washrooms, and in private counseling rooms. The interviews average around an hour and twenty minutes. All interview material is treated confidentially. Employees are not docked in pay for the time they spend in the counseling sessions. Counseling may be initiated by the employee, his supervisor, or by the counselor. [7]

The technique used has undergone changes as the program progressed. In summary, it may be described as follows:[8]

1. *Interviewer's attitude*
   a) One of interest and sympathetic curiosity.
   b) Quite as much interested in interviewing satisfied employees as those who are dissatisfied.
   c) An employee's interpretation of his own personal situation can be changed only by an internal or psychological change within the employee.
   d) An employee will take the necessary steps to correct a situation when he has clarified his thinking by talking over his problem in detail with the interviewer. This employee will initiate his own action and assume the responsibility for his acts.
   e) Any action initiated by the employee will tend to relate him to other people in the situation in question.
   f) The supervisor's relationship with his employees will be strengthened rather than weakened by the interviewing process.
2. *Methods used*
   a) The employee is put at ease by the general surroundings and attitude of the interviewer.

[6] Helen Baker, *Employee Counseling: A Survey of a New Development in Personnel Relations* (Princeton: Industrial Relations Section, Princeton University, 1944), p. 11.

[7] W. J. Dickson, "The Hawthorne Plan of Personnel Counseling," *Human Factors in Management,* ed. Schuyler D. Hoslett (New York: Harper & Bros., 1946), pp. 228–50.

[8] See William J. Dickson, "Understanding and Training Employees," *Personnel Series No. 35,* American Management Association, pp. 4–18.

b) Strict confidence is guaranteed the employee in reference to anything he may say.
c) The employee is encouraged to talk freely and to continue to talk until he is talked out.
d) The employee is never interrupted while he is talking.
e) The interviewer never argues with the employee or gives him advice.
f) The interviewer strives to discover how the employee thinks and feels and why.

The main emphasis in counseling at Western Electric Company is its use as a "humanizing agent." In formal industrial organization, there is little of the human element. It has been called a status system, a line system of authority. A humanizing agent, counseling, tends to foster a less formal relationship among workers and managements, engendering teamwork.

In such a situation the interviews can be counselee-centered and nonauthoritarian. A case illustrating benefits derived from such counseling may be given.

This is a story of a man who was about 45 years of age and who had 20 years of service with the company. As a younger man he had progressed rapidly and had risen to the rank of supervisor. Then something happened and his course tended downward. When he came to the counselor's attention, he was assigned to the lowest grade of work in the department and was not doing well at it. His supervisor said that they had been concerned with his output and quality of work for a long time but had tried every method they knew of for improving him, without results. They said he had become so nervous that they hardly dared approach him for fear he might incur an accident on his machine.

In the interviews, the man seemed very willing to talk although at first he had great difficulty in expressing himself, and there were long pauses in the interviews. Gradually his picture unfolded. Briefly it was one of extreme social isolation. He had no friends or relatives except a brother whom he saw only infrequently. After work he ate his dinner and then locked himself in his room. His medicine cabinet was stocked with all sorts of nostrums, and after dosing himself with these he went to bed and read detective stories or occasionally drank himself into a stupor.

His locker at work also resembled a small drugstore which he drew upon frequently during the day. He said that one of the things that bothered him most was the way in which his supervisors continually spied upon him. Every time he turned around he said he could see his supervisor staring at him and even when his back was turned he could feel his supervisor's eyes boring a hole in his back. This was the general pattern which was revealed.

The counselor began interviewing this man daily for about three weeks

and then less and less frequently as the need for it diminished. Within a relatively short time his fears began to diminish, his performance began to improve, and he seemed to take a new interest in the people around him. Shortly afterward he had improved sufficiently to justify his supervisors in recommending him for a higher grade of work and increase in pay.

Today, six years later, he has married, established a home and has risen to a reasonable position and seems to have overcome his former difficulties completely.[9]

Clinical and employee-centered counseling. Wholesome adjustment of the worker is well exemplified by the short case history presented. The counselor lets the employee unburden himself by talking through his problems. By so doing, he works out his own difficulties and finds a solution based on his own whole situation as he sees it, not as a counselor or as a line foreman may see it.

The counseling interview is, ideally, worker-oriented rather than management-oriented. The interviewer-counselor listens, does not argue; records what he hears, not what he thinks or feels; uses information he gets to dispel anxieties and to promote human relations adjustments, not to discipline the worker; tabulates information from workers to enlighten management, not for use against the worker. It is adjusting rather than paternalistic; it is counselee-centered and nondirective rather than authoritative; it is clinical rather than disciplinary.

The clinically trained psychologist refers to nondirective counseling as client-centered therapy,[10] which he considers a kind of psychotherapy. It is not so much concerned with diagnosing or recognizing and classifying the maladjustment as it is with therapy or curative treatment. The treatment does not consist of prescribing or telling the patient to do or not to do something. No directions are given. Rather, the patient is subtly led, by the nature of the conversational situation established by the counselor, to discuss his trouble.

In client-centered counseling, the counselee or subject does, by far, the most talking. Sometimes pauses of long duration occur. It is perhaps during these pauses that most good is accomplished. During them, the counselee is working out solutions to his prob-

[9] W. J. Dickson, "The Hawthorne Plan of Personnel Counseling," *loc. cit.*

[10] See C. R. Rogers, *Counseling and Psychotherapy* (Boston: Houghton Mifflin Co., 1942) 437 pp.; and *Client-Centered Therapy* (Boston: Houghton Mifflin Co., 1951), p. 560.

lem situation. Most often, after pauses of considerable length, the counselee says something that reveals to the trained counselor that the way to better human relationships is more clearly seen by the patient.

How and how not to treat employees. The counselor's attitude and procedure in the nondirective counseling approach may perhaps best be pictured by use of two contrasting case transcripts. The first is an example of what not to do if attempting to achieve worker adjustment; the second is an example of use of the nondirective approach.

The conversation reported below took place in the office of Mr. Z, Director of Personnel for an organization employing about 3500 persons. Miss W has been reported by her supervisors as doing unsatisfactory work. They have asked that she be transferred on the basis of a list of charges outlined in a memorandum. Mr. Z has sent for Miss W, who enters his office while he is talking to an assistant about another matter. Also present in the office during the interview, but presumably not able to hear the conversation and doing other work, are Mr. Z's secretary, his assistant, and the recorder of the interview. Inasmuch as Miss W speaks in a low tone, all her comments were not audible to the recorder, especially as she became more emotional and finally tearful, but the conversation was substantially as follows:

W-1: Did you send for me, Mr. Z?

Z-1: Yes, I did; I'll be with you in just a minute. (*Mr. Z continues to talk to his assistant for seven minutes. During this time there is considerable confusion in the office, with the telephone ringing often, and with Mr. Z becoming more and more concerned over some matter about which he talks loudly, interspersing his rather definite comments with considerable swearing. This, it may be noted, is his usual manner under stress. Mr. Z continues. . . .*) Now look, Miss W. . . . (*Takes several minutes to look over her file and to talk to his assistant about another matter. . . .*) You remember we talked together in March and at that time the B Division was not satisfied, and since you have been with Mr. W, and he was not altogether satisfied.

W-2: He didn't tell me anything like that. (*Speaks in a low courteous voice. . . .*) He told me after I left that he wanted me back. . . .

Z-2: Now you have been in C Division and there is a report on your work there. Now, Miss W, we take each employee and try to fit her in where she can do the best job. We realize that people sometimes can't get along because of the supervisor or fellow employees, and we try to make adjustments. (*This comment is given in Mr. Z's usual*

direct and rather belligerent manner. . . .) Now, you have been in a number of positions. How many have you occupied?

W-3: *(After thinking a moment. . . .)* Four or five.

Z-3: Do you agree with the comments made in this report? *(Quotes from report before him on the desk. . . .)* "Shows little interest in work and says she doesn't care for filing."

W-4: *(Miss W's voice is growing husky now and her response is almost inaudible, but she explains that she doesn't like filing, and that she wasn't hired to do that kind of work. She was to be a stenographer.)*

Z-4: We don't have the work always to everyone's satisfaction.

W-5: But I wasn't told that was what the job would be.

Z-5: But we can't give everyone a job he wants. . . . *(Interview has turned into something of an argument at this point. Mr. Z presents next charge. . . .)* "Deliberately slows down on the job."

W-6: No, I do not. *(Miss W seems quite incensed at this charge.)*

Z-6: "Uses business hours to write letters."

W-7: I did that once.

Z-7: "Doesn't keep up to date with her work."

W-8: They put in a new system up there, and the supervisor asked me to help with it, and I said I would. But I couldn't keep up to date on my own work and do that, too. The supervisor asked me to do this and that; at the same time I had more than enough work of my own to do. *(Though deeply disturbed at these charges, Miss W's responses are direct; by this time, however, she is on the verge of tears.)*

Z-8: "Leaves 15 minutes before 12:00 and returns 20 to 25 minutes late."

W-9: If I went before 12:00, I returned earlier.

Z-9: "Uses restroom facilities on second floor instead of third as required by the rules."

W-10: They were dirty on the third floor.

Z-10: We can't be in those rooms every minute of the day. When I went in there *(apparently at an earlier complaint . . .)* it wasn't dirty—only a few papers thrown around. It wasn't like any bathroom at home, but it wasn't dirty.

W-11: I have seen it at times when you couldn't use it.

Z-11: Why didn't you report it?

W-12: I did—but that's a petty thing. *(i.e., the complaint.)*

Z-12: Yes, but it means 5 to 10 minutes more away from your desk. Listen, Miss W, I think the supervisor doesn't have an axe to grind; maybe all these things aren't true, but a certain amount are.

W-13: I did the work I was told to do, but some had to be left over. They expected me to get the mail out, and certain work had to be left.

Z-13: That's right, but there are those times when you were away from your work. *(Mr. Z explains the limitation on the number of persons the organization may hire; that each girl must do her work, or the organization will get behind.)*

W-14: I still think the charges aren't fair.

Z-14: Well, tell me, are there any differences between you and J? *(her immediate supervisor.)*

W-15: I'd rather not say.

Z-15: Don't you get along?

W-16: Oh, sometimes.

Z-16: Please tell me the story. . . . (*When apparent there will be no response.* . . .) Did you go over this with Miss C? (*Miss C is a counselor.*)

W-17: (*Miss W replies that she did, but by this time is crying softly, and the exact words were not heard.*)

Z-17: We have a reputation of being fair. We try to analyze every factor in a report of this kind. . . . You have been here two years, long enough to know the whole story. . . . Do you think you aren't in the right job?

W-18: I want to leave the job.

Z-18: (*In a milder tone.* . . .) Now, that's not the right attitude. We won't get anywhere that way. Has Mr. A ever talked to you? (*Mr. A is a higher supervisor.*)

W-19: Not once.

Z-19: Has the Principal Clerk of the department talked to you about it?

W-20: Yes, once. (*Two sentences not heard.*)

Z-20: Do you think your work too heavy?

W-21: I can keep it cleaned up at times, but not all the time. There are days when, with dictation, etc., I can't.

Z-21: Well, why don't we have the job analyzed on a week's basis and see if there is too much for one person?

W-22: A week wouldn't be right; once I was behind for three weeks.

Z-22: Honestly, haven't you taken extra time off?

W-23: No, absolutely not. I've noticed other girls going out when they weren't supposed to, though.

Z-23: Are you getting along with other employees?

W-24: Yes.

Z-24: Well, I'll tell you, you go back upstairs after you get set. (*i.e., after she has made repairs on her face because of the crying.*) Do you have any other comment to make?

W-25: I feel he has been very unfair about my slowing down on my work. (*Refers to her supervisor.*)

Z-25: All right, O.K., now you stay down until—let's see, it's 3:30 now—until 3:45. I'll call them to expect you at 3:45.

(*Mr. Z calls the immediate supervisor and the next higher supervisor into his office to discuss the situation.*)

Z-1: What is it all about, this W case?

A-1: Her attitude is wrong. She wants to be a stenographer, and she was hired as a clerk-typist, and there isn't a 100 per cent steno job up there. We give her some dictation but can't give her full time. She doesn't want to do filing.

J-1: She gets behind. (*Telephone call interrupts.*)

A-2: She said to someone, "I'll let this filing pile up and just see what happens." I think for the good of the department she should be transferred. (*Another telephone call interrupts.*)

Z-2: But we can't transfer her all the time.

A-3: We spoke to her about the restrooms, but she disregards the rules. We have given her a fair chance.

Z-3: O.K., thanks a lot. (*Apparently the decision is to transfer Miss W to another department. Mr. Z goes off to a meeting.*) [11]

What has been gained by management as a result of this inquisitorial interview? Has the worker gained in productivity? Have the relations between the personnel department and this employee been improved by the procedure? What sort of "publicity" for the company would be disseminated by this girl in the community? What of the relation of this girl with her immediate supervisor who obviously transmitted the charges?

Attention turns to an example of non-directive counseling. The case was counseled and arrangements made for recording the responses of the employee by C. E. Evans, a clinical psychologist. The aims of the interviewer, the way of handling the case, and the apparent outcomes are in marked contrast to those in the case presented above.

The subject, designated by S in the following reproduction of the recorded transcript, was referred to the counselor by the woman's matron of the plant, Mrs. G. The subject was a woman of about 45 years who recently lost her nephew under conditions reported to be suicidal. She had been worried because her emotional recovery had not been as rapid in this instance as it had from other deaths in the family. She had been granted a two-weeks' leave of absence to rest up and was making a visit to the counselor prior to leaving. She was brought to the counselor's office by the matron, who made the introduction.

C-1: Mrs. G has told me a little bit about your problem. Would you like to tell me more?

S-1: I've wanted so much to talk to someone about myself. I think I'm slipping. Always before I've been able to come back after I get down in the dumps, but this time I can't seem to get hold of myself.

C-2: Sometimes we can't see anything else but our own immediate problems.

S-2: (*Talking rapidly . . . hands quite restless . . . tearful.*) That's right. I just can't seem to do anything right anymore. I just think and think. I go home in the afternoon, and I'm so tired that I can't help at all with the work. I'm no good to myself or anyone. I've had

[11] S. D. Hoslett, "Listening to the Troubled or Dissatisfied Employee." Reprinted by permission of the American Management Association, New York, N. Y. from *Personnel* (July, 1945), pp. 52–57.

a lot of time off, but my boss must think I'm all right because he is willing to give me more. He just put me in the first floor crib, and I got that straightened out O.K.

C-3: It helps a lot because your boss has confidence in you.

S-3: It sure does. I like my work here and I really want to get over this nervousness so I can do a good job. I asked for six months off but they could only spare me for two weeks. I'm going to ———— for a visit. That's where my folks are. There's been a lot of deaths in our family the last few years, and I think about them all the time now. My daughter lost one of her children a couple of years ago . . . it was a miscarriage. She just had another one, and that makes three that she has now. I just love them, and they think there's no one like their grandmaw. My husband died a few years ago, and I've been living with my daughter and son-in-law since. My son-in-law works here, too. I had to take time off a couple of months ago when my daughter had her last baby because there wasn't anyone to take care of the kids and the house. You know, I had to have a gall-bladder operation about a year ago, and I've never felt right since. I'm so tired all of the time that I don't know what to do.

C-4: You think that you've never recovered completely from your operation?

S-4: Well, I've often wondered if that could be the reason for my not being able to take it anymore. (*Pauses reflectively.*) Right now though, I'm wondering what to do when I go back home. This nephew seemed just like my own boy. He was my younger sister's son and was all she had in the world. Her husband died a few years ago and she's brought up this boy by herself. It's hard to understand why this happened because he was such a normal boy. He had a lot of friends and there wasn't anything that he asked his mother for that he didn't get. He was 17 years old and just made arrangements so he could quit school and begin working. He had to go over to another little town and get some glasses. He was to go the first thing the morning after he was killed. His grandmother and grandfather were going with him. He had been out that night with the gang and came home late. The first thing he told his mother was that the car had two flat tires and that he had left it because his mother told him to do that. She had him lay down on the couch in the front room and covered him with her coat. Then she called up a garage, and the man came and picked her up and they went and fixed the car. When she came back home, the boy wasn't in the living room but she had noticed a light in his bedroom. She went upstairs and found him on the floor. The gun—a .22 rifle—had gone off in his mouth. His head was a mess and there was blood all over the floor. I talked to the coroner, and he said that it was suicide because he found powder stains back of the teeth. If he had been blowing out the gun as he was supposed to be doing, the stains would have been in front of the teeth. He analyzed the boy's stomach and found that he had a couple bottles of beer. That old coroner is the kind of person who says something, and

that's it. The papers all carried the story as suicide, and the talk in town was all along that line.

C-5: What they all say upsets you because you're not sure whether or not he committed suicide.

S-5: It don't seem possible that he would do a thing like that. He didn't have any reason to kill himself. We've thought that a girl might have been the reason, but we just can't be sure. There was a girl who lived down the street from him. She was a little bit younger, about 16, I'd say. They were together a lot of the time. She'd come down to the house and get a pair of overalls and help him with the car. They went out a lot together, too. Then she started going out with another fellow who had a job and was older. They were out the night before and had a few beers. His mother said that when he came home he seemed to be O.K. He talked about going over to ———— the next morning to get his glasses so he could start to work. I just can't get it out of my head that that girl might have had something to do with it though. It was really funny. The day of the funeral, there was an announcement of this girl's engagement in the paper, and they were married two days later.

C-6: You wonder if there isn't something to the girl being back of it.

S-6: In a way, yes. But he never seemed too interested in girls. He ran around with a mixed bunch and didn't seem to prefer anybody. His room was all fixed up with pin-up girls. He collected guns and knives and had them fixed up on the wall too. All of the kids his age liked him and looked up to him as their leader. Three girls his age broke down and cried at the funeral.

C-7: The fact that he was well-liked by his friends seems against the idea of suicide.

S-7: That's just what his mother thinks. She's really broken up about this. I've tried to talk her into moving somewhere else because everything in the house and town make her think of him. She's too dazed to do anything, though. She has a good business—it's a beauty shop—and she could set up anywhere she wanted to. She doesn't think there's much reason to live now and has just given up.

C-8: She thinks there is no future for her.

S-8: Yes, and in a way I can see how she'd feel that way. I'm smart enough to know that you can't go on living that way, though. You've got to pull yourself out of the dumps. We've had a lot of trouble in our family. About nine years ago my brother was found dead in a garage. He had been shot. We think [a] . . . gang did it because he was running them competition on a bus line and had gotten a mail contract. They told him to get out and said that if he didn't they would do away with him. He also was going out with a girl who wasn't any good, but he said that he was doing it to make another guy mad. Just to show off. Nobody never learned anything about that because being a small town, the sheriff just came in and said that it had happened and there weren't any fingerprints. The newspapers made some guesses about it, but there really wasn't ever anything found out.

C-9: It is always harder to accept death when you don't know all about it.

S-9: That sure is true. I think that this boy's death would have been better taken by all of us if we had just been able to work out some reason for it. I've been trying everything I can think of. I've even gone to a spiritualist. She was pretty good . . . could even tell me my dead brother's name. She is a very religious woman and says that the angels tell her things. She said that my nephew did not commit suicide. She didn't tell me any more about it, but said not to worry, that he was all right. You know, I never did go to those kind of people before, but a friend told me that this old woman wasn't a quack, so I thought I'd give her a try. I felt a lot better after she talked to me, but I'm still nervous. I just don't know what to do when I go to my sister's. It's going to be an awful experience if she is like she was when I went down there for the funeral. I don't know whether I can take it or not. There's nobody else who can straighten the thing out though, because my parents are too old to be of much help.

C-10: You're a little bit afraid to go back just now because you're nervous yourself.

S-10: I will just have to stop any talking about the whole business. Whenever my sister starts moaning, I'll change the subject. Of course that wouldn't do my sister any good because she'd still be thinking about her troubles. It would do me good because then I wouldn't have to listen to her feeling sorry for herself. She thinks and thinks, trying to remember whether or not she had done anything or said anything that might have caused the boy to kill himself. There just aren't any answers though and she is definitely certain now that the whole thing was an accident. But she still goes on crying and can't seem to get hold of herself. I sure wish I knew what to do. I've thought and thought and I don't see how I'm going to snap her out of it.

C-11: It puzzles you because there are no apparent answers.

S-11: Yes, but I guess it's the sort of thing that I'll have to work out myself. I could go around and talk to everyone here in the shop but I'd still have to make my own decision. I suppose I'll have to get myself straightened out first before I try to do anything about my sister and her troubles. You know, my father has had three strokes. He's 74 years old. I don't know what I'd do now if he should suddenly die.

C-12: You realize that the chances are your father might die suddenly, but it's hard to face it.

S-12: It would almost seem like too much. But I've got to get hold of myself and get in a frame of mind where I can take anything that comes along. I suppose that other people have lots of trouble, too, but when I get worried too much I don't think much about other people. Well, I've got to get back to work. I have a lot to do before leaving tomorrow. You've certainly helped me a lot. I guess I shouldn't think about my own little problems so much because I only get going around and around and the first thing you know I'm so mixed up I don't know

what to do. Thanks a lot for giving me so much of your time. Do I have to have a pass to get back to work?

The counselor noted that S did not seem quite as restless when she left, that she was smiling and did not show any evidence of tearfulness, and remarked that it was doubtful whether she would return.[12]

The counselor stated that the nondirective approach was profitable in this case because it centered the interview on those problems of most interest to the counselee. This woman did not have a serious problem, but needed the opportunity to discuss a problem which seemed insoluble to her. The opportunity to ventilate her feelings in an understanding, neutral atmosphere was sufficient in and of itself. The counselor could have offered advice and given a specific plan of action, but this was not what S was seeking. It was quite apparent that S's personality was quite stable and that she normally makes a good adjustment.

The treatment of the case, without either advice or guidance, is typical of nondirective technique. Try as he will, the counselor often cannot put himself in the shoes of the subject to advise him adequately or to guide him. The present viewpoint is to let the counselee work through his own problems to his own satisfaction.

A list of *do's* and *don'ts* may be helpful.

DO	DON'T
Establish rapport.	Advise.
Listen.	Argue.
Let counselee talk.	Break in with questions.
Use few words.	Lecture.
Be a conversational equal.	Be prestigious.
Accept his feelings and attitudes and reflect acceptance.	Tell the counselee he's wrong.
Understand his problem with him.	Misunderstand.
Accept statements as true.	Cross-examine.
Let the counselee break up silent intervals.	Question to get a "yes" or "no" answer.
Let him perceive his problems clearly.	Break up silences.
Make counselee feel his way to better adjustment.	Kid the counselee or minimize his troubles.
	Take responsibility for final action.

Characteristics of an ideal employee counseling procedure.

A. *Desirable Physical Aspects*

1. Privacy.
2. Comfortable furniture.
3. Elimination of outside distraction.

[12] Used here by courtesy of C. E. Evans.

4. Arrangement of furniture.
5. Personal appearance of counselor.
6. Interior decoration of counseling room.
7. Appointment schedule for counselees.
8. Adequate time.
9. Ventilation, temperature control, lighting.
10. Adequate records and data on hand.
11. Counselor preparation.
12. Convenient location of office.

B. *Counselee Reception*

1. Put counselee at ease.
   a) Use counselee's name.
   b) Rise as counselee enters room.
   c) Be pleasant.
2. Counselor should be secure, comfortable, well adjusted.
3. Counselor should start conversation, get counselee to talk.
4. Structure counselor-counselee relationship.
   a) Be a good listener.
   b) Be acceptive.
   c) Define permissive aspects of relationship.
   d) Make a brief statement of the purpose of interview.
5. Endeavor to gain counselee's confidence.
6. Make counselee feel that he and his problems are of prime importance.
7. Indicate the purpose of the interview in the opening remarks.
8. If in accord with rules, encourage smoking to enable counselee to relax.
9. Mention any positive information about his record.
10. Be attentive.
11. Avoid being uninterested, wooden, or impersonal.
12. Avoid unnecessary interruptions to interject your opinion.
13. Maintain a relationship where the dignity of the counselor-counselee contact is assured.
14. Use language level appropriate to the counselee, yet maintain the dignity of the counseling relationship.
15. Avoid a prying attitude at this point since it can destroy rapport for the remainder of the contact.
16. Avoid inordinate sympathy.
17. Establish confidential nature of counseling relationship.

C. *The Problem*

1. Counselee's statement of problem: The problem itself is not so important as its meaning to the counselee.
2. History of problem.
3. Avoidance of leading questions or cross-examinations.
4. The unfolding of the problem occurs in direct proportion to the acuity of the counselor in recognizing the underlying attitudes the counselee is trying to express.

D. *Aiding Counselee to Achieve Insight*

1. Recognize ambivalent emotions.
2. Respond to expressed attitudes rather than factual statements.
3. Avoid emotional reaction to counselee's statements.
4. Restate and condense problem. *Discuss.*
5. Avoid injecting the counselor's personal opinion or experience if it is irrelevant to the acquisition of insight by the counselee.
6. Avoid misleading or premature insight, since it retards counselee insight.
7. Do not assume insight by the counselee because the solution or cause of the problem is obvious to you.
8. Exercise caution to avoid moralizing or lecturing.
9. Avoid critical attitude. It is just as harmful as critical remarks.

E. *Solution*

1. If counselee arrives at solution of problem that is obviously wrong, point out inconsistencies.
2. Let counselee think *he* has solved his problem by his direct and clear thinking.
3. Advice-giving by the counselor does not assist a solution by the counselee.

F. *Termination*

1. If solution not completed within scheduled time, arrange appointment for additional contacts.
2. Leave opening for future contacts, even though counselee has solved immediate problem.
3. Avoid abrupt termination of counseling interview.

4. Stress informality for future contacts.
5. Remember that the counselee deserves a feeling of accomplishment as well as the counselor.
6. Determine whether additional help is wanted by the counselee.
7. Refer to community agency or physician for problems beyond your scope yet requiring corrective therapy of a physical type.

Directive and nondirective counseling.[13] The main difference between the directive and nondirective approach is a difference of degree rather than of kind. In the former, a somewhat more active part is taken by the counselor on planning, arranging, analyzing, and treating. The nondirective approach is on the extreme end of the active-passive scale which places the burden for adjustment squarely on the counselee. Both directive and nondirective counseling emphasize that the worker-counselee must work out his own problems. He develops better adjustments to his work, social, and home environments by gaining improved insight into his problems in these areas. He does this mainly by talking through his problems before an interested, neutral listener. Both types of counseling, directive and nondirective, stress "let the counselee do the talking."

Thorne,[14] a proponent of directive counseling, maintains, "The general rule may be stated that *the need for direction is inversely correlated with the person's potentialities for self-regulation, i.e.*, the healthier the personality, the less the need for direction; the sicker the personality, the more the need for direction."

Thorne believes the more passive approach advocated by nondirective counselors may preclude use of diagnosis to determine and remove causes for maladjustment. C. R. Rogers, leader of the nondirective counseling approach, would agree that his less active procedure minimizes importance of causes of maladjustments. Rogers is not so much concerned with specific causes and specific treatments as he is with establishing attitudes of a remedial kind

[13] It is the intention of this and the following section to give the manager in industry and business, as well as the interested student of personnel methods, a nontechnical overview of modern viewpoints of counseling therapy Caution may be given that the field is a highly specialized one requiring years of technical training and internship practice.

[14] F. C. Thorne, "Directive Counseling and Psychotherapy," *American Psychologist,* American Psychological Association, Inc., III, (1948), pp. 160–65.

on the part of the counselee. In setting the conditions for changing attitudes and behavior patterns by passive counseling, he is directing to some degree. Other than this sort of directing, Rogers lets the counselee work out the solutions to his problems on his own initiative.

Evaluation of nondirective counseling. Managements, in considering whether nondirective counseling is profitable, are concerned with the problem of developing methods for evaluating it. How much good, in terms of salvaging maladjusted workers, does it do? In spite of the considerable technical difficulties in getting at measurement of adjustment, pioneering work has been done in this area by Muench.[15] Problem cases of varying degrees of maladjustment were treated, and Muench undertook to evaluate the effectiveness of the nondirective treatment by the use of tests or measurements of adjustment before and after treatment. He completed the study with twelve cases. Data from all twelve of the cases were analyzed and used in drawing conclusions concerning the effectiveness of the counseling.

The first test used was the *Rorschach Test,*[16] which, in the hands of a clinically trained technician, may measure changes in personal, social, and job adjustment that take place during the counseling interviews. This test yielded information on 22 signs of adjustment. Eleven of the twelve cases showed improvement in these signs of adjustment. There was evidence of decrease in adjustment in only one of the cases and this was one in which the counselor had previously judged that his treatment had been unsuccessful. The favorable changes that were revealed by this check were found significant by an impartial statistical device.

The second index of improvement in adjustment was derived from scores from the *Kent-Rosanoff Test,* an old clinical tool which reveals common or normal mental associations, unusual responses, and peculiar responses. These scores tend to be indicative of personal and social adjustment. They showed improvement after treatment by counseling in nine of the twelve cases, and this change was found to be statistically significant.

[15] George A. Muench, "An Evaluation of Non-Directive Psychotherapy," *Applied Psychology Monographs No. 13* (1947), pp. 1–163

[16] A rather technical diagnostic measurement procedure described in B. Klopfer and D. M. Kelley, *The Rorschach Technique* (New York: The World Book Co., 1942) and W. Mons, *Principles and Practice of the Rorschach Personality Test* (Philadelphia: J. B. Lippincott Co., 1951), p. 176. Originally a clinical technique used chiefly in mental hospitals, its use in business and industry has increased somewhat during the last decade.

The third index of improvement in adjustment was the *Bell Adjustment Inventory*. This is an inventory, used commonly in psychology clinics, which yields an objective index of adjustment to job, to home, and of health and social adjustment. Seven of the twelve cases were found to improve significantly in this impartial measurement.

The author of the study concludes, "Ten of the twelve cases showed general improvement. . . . The results would seem to indicate that a change occurs in the basic personality structure in certain cases of non-directive psychotherapy." [17]

These results are the first to appear on evaluation of the method. They serve as thought starters. They have implications for further development, evaluation, and use of such tools in personnel management in industry.

The Counselor and Top Management

An industrial psychologist one time said to the president of a company, "If you arrange the situation according to the plan for delegating responsibility, you could probably take a thirty-day vacation." To which the president responded, "By George, I haven't had a day's vacation in six years—I'll do it." This minor incident suggests that top men, presidents, vice-presidents, and heads of large elements of enterprises may, at times, need the help of an impartial trained counselor who knows their peculiar situation and personal problems. Some of their problems are minor, some are severe, all are serious.

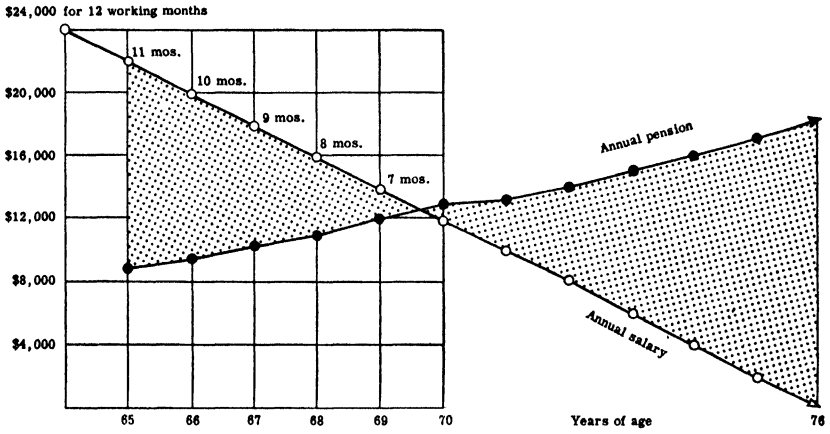
The psychological needs of top managers and the tensions which accompany these needs are often greater than those of other employees. The reason is this: they are in a situation that is different from the vast majority of personnel. We have seen in the previous chapter that the demands of their social relationships are greater. The nature of their job responsibilities, furthermore, requires them to be more objective and inhibited, less given to emotional behavior than personnel in other jobs. Thus, group pressures and stresses are likely to be of greater intensity and duration and are more frequent.

Presidents, executive directors, and general managers are alone at the top. Subordinates fail to get the feel of the superior's problems; they fail to get "the big picture." The president is the only

[17] George A. Muench, "An Evaluation of Non-Directive Psychotherapy," *Applied Psychology Monographs No. 13* (1947), p. 160.

one who has to be his own inspector; he takes the responsibility for others; he is a model for the rest of management; his decisions are terminal and final; he has to live alone and like it. These are other features peculiar to the top job, discussed by Janney.[18]

Often, the top man sees how to arrange the situation so that a vice-president or department head can function effectively, or he may provide expert advice for them but does not see his own problems so clearly. He tends to neglect his own problems. The solution has been found by a number of companies in the use of the services of a qualified counselor.



Source: Reprinted from June 1952 issue of *Fortune* magazine, by special permission. Copyright 1952, Time, Inc.

Fig. 5.1. How to wean aging executives from their jobs.

A closely related problem is retirement of aging top management executives. This problem requires a special kind of counseling. The problem is of increasing importance now because of the increased numbers of executives who reach retirement status each year. They are reluctant, generally, to fade away.

The Wm. Wrigley, Jr. Co. has developed a plan for two-way retirement, for weaning executives away from their jobs. The plan is discussed in *Fortune*.[19] It is depicted in Figure 5.1.

The chart pictures earnings related to age. The executive who might begin to retire with 30 years service, at age 64, works 11 months during the first year of partial retirement, 10 months dur-

[18] J. Elliott Janney, "Company Presidents Look at Themselves," *Harvard Business Review*, XXX (1952), pp. 59–70.

[19] Perrin Stryker, "How to Retire Executives," *Fortune*, XLV (1952), p. 111 ff.

ing the second, etc. As his salary decreases $2,000 per year, his annual pension begins. His pension increases while his salary decreases. After five years of partial retirement, at age 69, he would work only 7 months, earn $14,000; his pension credit plus social-security would nearly equal what he would earn for 7 months' work. He adapts progressively to retirement, gradually learning to use his leisure time. At the Wm. Wrigley, Jr. Co., no executive has chosen to stay on longer than 4 extra years.

Psychologists have exerted increasing efforts in the area of methods for adjustment of the aging. A considerable body of facts and methods has been developed.

Counselors may aid in the process of retiring executives.

The Counselor, a Clinical Psychologist

Our present method of counseling employees for more production and job satisfaction has come from two sources. First, it has come from industry itself—from experiences management has had concerning the relation of worker morale to counseling, as at the Western Electric Company. Second, our present body of knowledge and technique has come from clinical psychology. The counselor in industry who is to be concerned primarily with adjustment of workers and with therapeutic counseling probably should be a trained clinical psychologist.

Clinical psychology differs from pure, theoretical, or experimental psychology. Pure psychology aims to describe the nature of human behavior with no intention of making a practical application or use of the information. Clinical psychology on the other hand is one phase of applied psychology. It intends to apply or use the information developed by the pure psychologists. A good, working definition of it is: "Clinical psychology is a form of applied psychology which aims to define behavior capacities and behavior characteristics through methods of measurement, analysis, and observation; and which, on the basis of an integration of these findings with data received from the physical examinations and social histories, gives suggestions and recommendations for the proper adjustment of the individual." [20] The clinical psychologist intends to improve the counselee's adjustment to home and family, to health, to the job situation, to the community and society.

[20] American Psychological Association, Clinical Section, "The Definition of Clinical Psychology and Standards for Training Clinical Psychologists," *Psychological Clinic*, XXIII (1935), pp. 2–8.

Shartle specifies the minimum qualifications for the position of clinical psychologist:

> At least an M.A. and generally a Ph.D. is required in this field with required courses in clinical tests and measurements, experimental, applied, and abnormal psychology. Work in education, biology, medical and social science service is also important.
> On-the-job training varies from none to six months probationary period. Experience requirements are generally from one to three years in teaching, social service, or clinical work.
> Ability to gain rapport with clients, meet the public, and supervise others is required. Must be able to stimulate and interest student psychologists. Should be mature emotionally and at least 25 years of age.[21]

Perhaps the training and professional requirements for industrial counselors might best be delineated by reference to the requirements for membership as Associate or Fellow of the Clinical Division of the American Psychological Association.[22] Associates of the parent organization, the American Psychological Association, are persons who have the Ph.D. degree based in part on a psychological dissertation or persons who have completed two years postgraduate work or one year of graduate study plus one year of experience in professional work that is psychological in nature.

The minimum qualifications of an Associate of the Division of Clinical Psychology are, in addition, evidence of two years successful full-time clinical experience. The requirements for Fellow in Clinical Psychology are satisfactory evidence of not less than four years full-time clinical practice in (1) interviewing procedures, (2) technique of psychological testing and personality evaluation, (3) the synthesis of case evidence, and (4) therapeutic or guidance counseling. These are in addition to the Ph.D. degree in psychology and acceptable published research of a scientific character.

Summary

Employee counseling provides an employee service and a means of management-employee communication. Industrial counselors both give and get information. The information they get may

[21] C. L. Shartle, "Occupations in Psychology," *American Psychologist,* American Psychological Association, Inc., I, No. 12 (1946), pp. 565–66.

[22] Jane D. Hildreth and Carolyn L. Konold, eds. *1951 Directory of the American Psychological Association* (Washington: The American Psychological Association, Inc., 1951). The total membership comprises 1533 Fellows, of whom 502 are listed in the Division of Clinical and Abnormal Psychology, and 7797 Associates, of whom 787 have membership in the Division of Clinical and Abnormal Psychology.

rightly be transmitted in the form of anonymous or generalized reports, as in morale and attitude surveys, yielding a basis for personnel policy decisions and actions. Employee counseling as a nonpaternalistic, nonauthoritarian service did not emerge until the 1930's—except in the case of one firm, the Western Electric Company.

One of the several purposes of employee counseling is the improved adjustment of the worker. The adjustment sought may be job, social, family, or health. Since much improvement in worker morale may be the result of improved adjustment, this purpose of counseling is stressed as most important.

Adjustment counseling falls in the province of the clinical psychologist. Two closely related procedures for therapy—directive and nondirective—are used. The nondirective counselor is extremely passive. The counselee works out his own problems by talking through them in the presence of the counselor. The counselor does not probe, diagnose, or attempt to get at causes and correct them. Rather, the burden of adjustment is on the counselee. In directive counseling, although talking out the problem is advocated, the counselor analyzes, diagnoses, seeks causes, and makes overt and clear suggestions for remedial attitudes and behavior patterns. Nondirective counseling is perhaps best for milder personality disorders, but the directive approach is sometimes recognized as necessary in the more extreme cases.

A quantitative approach to evaluation of nondirective counseling has shown that significant improvement in adjustment of counselees may be expected when it is used as a method by a well-trained clinical psychologist. This objective evidence is suggestive for further development and use of counseling as a tool for greater productivity and morale of employees.

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6 Communication and Suggestion Systems

BEFORE THE INDUSTRIAL REVOLUTION, two or three workers formed closely knit work units. Such a unit was the family. Communications flowed openly and quickly through the group.

Today, few employees ever have the opportunity to get information to the lips of the president or vice president. They get information through their immediate supervisors, who, in turn, received it from *their* supervisors. In the process of repeating information, it becomes interpreted in a variety of ways. Sometimes information never breaks through at all.

It is a responsibility of managers to see that their communications get through channels effectively, accurately, quickly. Devices used for this one-way transmission of information to employees include media such as posters, bulletin boards, company magazines and newspapers, letters, annual reports, handbooks, and pay inserts.

Other media of communication are designed to get information from the employees to management. Suggestion systems, employee polls, and attitude surveys have been designed expressly for upward communication. In addition, there are some ways in which information may be mutually shared and interchanged. These two-way channels of communication include collective bargaining, the grievance procedure, meetings and discussion groups, counseling and other types of interviews, and training courses.

There is a trend for managements to study and apply media of

communications.[1] This trend probably results from the feeling on the part of managements that communication media will further workers' understanding of the purposes and aims of management.

We shall discuss in this chapter the various media or channels of sharing information. It will be clear that some, more than other, industrial and business firms have a fuller recognition of the need for planning media, just as some firms have well organized personnel departments while others have little or no personnel management organization.

Media for sharing of information may be classed in two kinds: indirect media and direct media.

Indirect Media

Personnel methods. Virtually any of the personnel methods that are discussed in the various chapters in this book act as media for human understanding.

The activity of the company in attracting and recruiting additional personnel is a channel of communication which—through grade schools, high schools, newspaper advertisements, and various other devices for attracting personnel—informs the potential worker about the company. Sometimes recruiting is done by foremen and supervisors and, not infrequently, by the rank-and-file worker. These people share information with potential workers and with the community. Such ways of transmitting information about the company constitute a rudimentary public relations program. This is potentially a valuable asset in terms of community and employee good will.

Other employment procedures serve as media for sharing information. Consider the selection procedure. One of the central goals of the interviewer is to offer the applicant information about the company. He tells him about company history, about the job for which he has applied.

The process of placing the employee is also a channel of communication. The placement interviewer discusses various jobs with the new recruit. He describes the departmental organization of the company. He answers various questions that the new recruit puts to him. Information is both given and received during the employment procedures.

[1] See *Case Book of Employee Communications in Action* (New York: Industrial Relations Division, National Association of Manufacturers, 19 W. 49th St.).

Training, while generally an indirect medium of communication, may be considered more formal than the other channels we have touched upon. Induction training is designed to give the new employee information he needs regarding the company. Often, induction training programs include the company history, nature of the products, the process of manufacture, the service rendered to the community. Well-planned, these programs serve a public relations as well as an employee relations function. Later, after the employee is on the job, training and education programs as well as on-the-job training are indirect media for the exchange of information.

Another personnel method, job analysis and evaluation, serves not only as a device for developing a wage administration plan but also as a medium of communications. "One of the main goals of this job evaluation program is to gain rapport with the worker group—let them know what our problems are." This statement was made by the president of a medium-sized department store at a planning session for a job evaluation program. The job evaluation was performed by a committee composed of employee representatives, members of management, and personnel technicians. During their meetings, there was much discussion of both the workers' problems and of management's problems.

The same may be said for the cooperative development of wage incentive plans. It is evident that a loss would result if management persisted in developing such plans without participation by employee representatives. Although it may take more time, management consultants almost invariably advise that employee representatives be brought in to aid in formulating such plans. The reason for this is added value in human understanding.

The process of negotiating contracts with organized labor constitutes an indirect channel of communication. However, such a channel of communication is usually not very effective because of the atmosphere in which such discussions are held. They are held in a setting of mutual dissatisfaction which prevents free interchange of factual information. Some seasoned observers are beginning to stress continuous planned communication: sharing information, with the aim of lessening the severity of industrial strife, as a preventive measure.

Employee participation. The use of committee or group meetings including employee representatives is often an effective device for sharing information, as well as receiving information. Such meetings may act as two-way communication, from the bottom up and

from the top down. Programs and decisions that lend themselves to employee participation include: development of recreational programs; development of employee services and security programs; development of wage administration and wage incentives; development of merit-rating programs; development of campaigns for public relations; and, of course, the development of employee relations and communications programs.

Committee meetings have been found to be more efficient as media of communication than large mass meetings of employees. For the small management-employee meeting, it is important that employees who represent the entire group of workers be selected as committee members. They should be good mixers, good talkers, and "belong" to the employee group. A good representative is the one who has ability to understand, who participates in the discussion or actions being taken, and who then goes back and discusses what happened with fellow workers, perhaps at lunch, perhaps on the way home. The policies or the results of the program are more likely to be phrased by him in the realistic language of the worker, language that the worker can understand and which he is likely to accept.

The grapevine. The grapevine seems to have four characteristics: it is self-starting; it carries information rapidly; the information becomes more and more erroneous and distorted the farther it goes; it flourishes vigorously in the absence of other effective channels of communication. These four characteristics of the grapevine suggest its inadequacy as a medium of communication. It often solidifies the walls of misunderstanding. It acts as an obstacle to the sharing of information with employees.

In the following example Karl Menninger shows how an unrecognized element of wish can develop and distort a gossipy yarn: [2]

MRS. ADAMS TO MRS. BECK: "Where is Mrs. King today? Is she ill?"
MRS. BECK TO MRS. CLARK: "Mrs. Adams wonders if Mrs. King may not be ill."
MRS. CLARK (*who does not like Mrs. King*) TO MRS. DAVIS (*who does*): "I hear Mrs. King is ill. Not seriously, I hope?"
MRS. DAVIS TO MRS. ELLIS: "Mrs. Clark is saying that Mrs. King is seriously sick. I must go right over and see her."
MRS. ELLIS TO MRS. FRENCH: "I guess Mrs. King is pretty sick. Mrs. Davis has just been called over."
MRS. FRENCH TO MRS. GREGG: "They say Mrs. King isn't expected to live.

[2] Karl A. Menninger, *The Human Mind*, 2nd ed. (New York: Alfred A. Knopf, 1937), pp. 289–90.

The relatives have been called to her bedside."

MRS. GREGG TO MRS. HUDSON: "What's the latest news about Mrs. King? Is she dead?"

MRS. HUDSON TO MRS. INGHAM: "What time did Mrs. King die?"

MRS. INGHAM TO MRS. JONES: "Are you going to Mrs. King's funeral? I hear she died yesterday."

MRS. JONES TO MRS. KING: "I just learned of your death and funeral. Now who started that?"

MRS. KING: "There are several who would be glad if it were true!"

If, however, trust and understanding between worker and management have been accomplished, the grapevine can aid in the sharing of information. It acts as an informal supplement to the other media of communication. Since it is fast, seemingly immediate, it can be an effective adjunct. News does not become so erroneous and distorted if it has a basis in fact. If such a framework of factual information exists, truth becomes difficult to distort.

"The vice-president in charge of production," so the grapevine has it, "will be fired next Tuesday at the meeting of the board of directors." This grapevine information will be generally believed if the vice-president in charge of production has been on the pan; if he has been in ill-favor in the past. On the other hand, if it is well known that the vice-president in charge of production has been well thought of by the workers, then the grapevine story insidiously suggesting his dismissal will not be very effective. It will not be supported by the framework of belief already established. The workers will not be ready for it.

Whether or not they are ready for the information that the grapevine carries determines whether such information will be believed.[3] Of course, if the information is not believed, it will not be transmitted, and the grapevine will die.

But there is still another condition aside from readiness and unreadiness that determines whether the grapevine will flourish. This has to do with no information at all. If the employees have no information at all, then any kind of information will probably be picked up and disseminated along the grapevine. If the workers know nothing at all about the vice-president in charge of production—do not know what his reputation is, have never seen or heard of him, do not know his past history, cannot judge his competence —the grapevine may flourish with erroneous information.

[3] The matter of the workers' being ready to take in information has been given a fancy name by psychologists: it is called "apperception." Herbart is perhaps more famous for his doctrine of "apperception" than for anything else. See E. G. Boring, *A History of Experimental Psychology*, 2nd ed. (New York: Appleton-Century-Crofts, 1950), pp. 256–60.

General Electric Company's Erie plant dealt with the grapevine problem by a permanent "rumor clinic." [4] The weekly plant paper contains a coupon for employees to use in requesting information about a rumor. All rumors are discussed in meetings and explained in the plant paper. Since 1942, the rumor clinic has answered questions about more than a thousand rumors.

To sum up: the grapevine, at once a mysterious and extremely effective device, may be helpful in the sharing of information only if other media are effective. It may be harmful in the absence of other media or in the presence of erroneous information brought to the workers in an emotional atmosphere.

Direct Media

There are several planned media through which management shares information with and obtains information from employees.[5] These are formal techniques specifically developed for the purpose of exchanging information.

A survey, made by the National Industrial Conference Board, Inc., shows the use of various communication media in industry [6] (Table 6.1).

TABLE 6.1

Use of Various Communication Media in Industry

Method	*Wage earners (% of 360 Co.'s)*	*Salaried employees (% of 474 Co.'s)*
Bulletin boards	99	92
Letters or bulletins	51	62
Meetings	44	58
Payroll inserts	51	39
Employee handbooks	28	36
Employee magazines	20	33
Financial reports	16	28
Films	16	23
Other special booklets	16	21
Employee newspapers	16	20
Safety manuals	19	15
Public address systems	12	10

Source: National Industrial Conference Board, Inc., "Personnel Practices in Factory and Office Revised," *Studies in Personnel Policy No. 88.* (New York: National Industrial Conference Board, Inc., 1948), p. 27.

[4] Raymond W. Peters, *Communication within Industry* (New York: Harper & Bros., 1950), pp. 96–97.

[5] They are described in considerable detail in Peters, *ibid.*, pp. 41–126.

[6] National Industrial Conference Board, Inc., "Personnel Practices in Factory and Office Revised," *Studies in Personnel Policy No. 88* (New York: National Industrial Conference Board, Inc., 1948), p. 27.

The bulletin board. The bulletin board is a device that management has used for a long time to share information with workers. It is a one-way communicating device in which the information goes from management to the worker. The bulletin board is a common medium not only in factory and mill and in business offices but in nearly all places where people gather.

A survey [7] reported that bulletin boards were the most widely used planned communication device. Ninety-nine companies out of 100 surveyed utilized bulletin boards. Most of these companies had one board for each 50 to 100 employees. The size of the bulletin board depended upon the purpose for which it was used and, of course, upon the amount of information management wished to display on it.

What kind of information is posted on the bulletin board? Rules, regulations, and warnings with respect to different kinds of behavior that are taboo—these are the usual types of information. As in the employee handbook (to be discussed later) greater value would probably be derived if the bulletin boards were utilized in a more positive way, rather than to warn the worker against unwanted behavior. The use of bulletin boards for political and for company propaganda purposes is to be looked upon unfavorably. Some experts on media of management-employee communications suggest that bulletin boards be used only for educational purposes and for sharing information in which the employee is interested and which will benefit him. Examples of such information are: changes in top management personnel, in employee security, services, and other employee benefits, regulations that directly affect the employee and in which he is interested, new plans of the company, new company policies, information regarding the activities of the sales department, and interpretations of the financial statement of the company.

Complete information cannot be given on the bulletin board. It should give only terse, concise information in a "flash" way. For example, it cannot give a complete financial statement, but it can refer the employee to the place where he can get it if he is interested. If the company has a library, the bulletin board might carry a short, selected list of new available books

The location of the bulletin board is dependent upon the kind of

[7] "How Management in 100 Plants Informs Workers," *Factory Management and Maintenance*, CIV (1946), pp. 114–17.

information that is to be shared. The use of safety poster bulletins in the workroom is quite appropriate. In general, personnel services information, such as insurance or security information, could be placed in the main corridor, since it is not departmental information. Departmental information might be placed in the hallways that are used by employees of a given department.

Heron presents several simple rules or generalizations for the use of bulletin boards in sharing information. These are:

1. Any message on the bulletin board must be brief. Arbitrarily, it should aim at a maximum reading time of 30 seconds.
2. All such messages must be current; they must be "flash" messages related to immediate events or immediate future action.
3. Any such message should tell something the employee wants to know —about working schedules, wages, rules, and privileges.
4. These messages should be confined to those which assist the employee in guiding his positive action, such as coming to work, planning a vacation, or registering for the draft.
5. When lengthy information, or information which only indirectly interests the employee, is to be offered to him, the items can meet the standards of good bulletin board usage; the information as a whole (the annual report, for example) cannot. The item in this can be brief, and can tell how and where the complete article or report can be seen.[8]

Mailing letters to employees. Letters to employees are used by a number of companies to share information. Out of 100 companies surveyed, 53 reported using letters.[9] Of those using letters, only 7 issued the letters regularly; some companies send out letters regularly and others only when there is something unusual to report. Letters may be used to announce a new product that is about to be launched on the market, or the acquisition by the company of a new plant, of a new contract, or a change in management personnel. These are suitable and appropriate topics and seem to be natural reasons for sending a first-class letter signed by the president of the company to the home of the worker. Many workers read slowly and cannot grasp difficult material. Much may be gained by working over the letters to a level of difficulty that will be understandable by practically all of those addressed. How to make such writing readable is discussed below.

[8] Reprinted from *Sharing Information with Employees* by Alexander R. Heron with the permission of the author and of the publishers. Stanford University Press, 1942, pp. 97–98.

[9] "How Management in 100 Plants Informs Workers," *Factory Management and Maintenance*, CIV (1946), pp. 114–17.

Closely related to the procedure of mailing letters to the employees' homes is the practice of inserting a printed slip into the workers' pay envelopes. As Heron [10] points out, caution must be exercised in the choice of information to be shared by this method. Heron pictures the worker's mental receptivity at the time he receives his pay check. He opens his envelope, thinking about the details of what it contains and how he will use it. Some kinds of information inserted in the pay check envelope would be an intrusion. For example, a statement of company losses or company taxes would obviously be inappropriate. However, as Heron indicates, information fundamentally related to the pay check may be inserted. The insert might be accompanied by a self-addressed mailing card that the employee could use to inquire about voluntary insurance.

The employee manual. Companies use various kinds of employee manuals or handbooks. They are used for two purposes. First, some companies use them as a rule book, as a book of warnings, telling the employee how to behave, what to do, and what not to do. Second (perhaps the more valuable use), they are used as a medium of nondirective communication. They are not intended to direct or admonish the worker but rather to keep him informed about the company and the things that he wishes to know for his own personal development and self-improvement. Companies that have had employee manuals full of "thou shall nots" might profit by revising them to share information.

The handbook or manual is an effective device for sharing information. One reason for its wide use is that it gives the employee the information he needs at the time he enters the company. At that time, he may be more ready to receive this kind of information than he will ever be again. He wants information. He will often take the handbook home and read it there and comment about it with his family and friends, since they, too, are interested in his new job.

The topics that are included in employee manuals will be of interest. The National Industrial Conference Board has prepared a list of 188 subjects dealt with in 25 employee handbooks.[11] They include topics such as Absences, Air Raid Regulations, Attendance

[10] Heron, *op. cit.*, pp. 99–106.

[11] National Industrial Conference Board, Inc., "Employees' Handbooks," *Studies in Personnel Policy No. 45* (New York: National Industrial Conference Board, Inc., 1942), p. 11.

Bonus, Cafeteria, Change in Personal Status, Company History, etc. National Foremen's Institute has published a manual titled, *How to Prepare an Employee's Handbook*.[12] It is indexed, in loose-leaf form, and contains suggestive paragraphs on 578 subjects which could be included in handbooks.

The following are some of the cover titles currently in use:

About Our Bank
Your Work at Allis-Chalmers
Here's How We Do Things at Johns-Manville
Partners in Industry
Let's Go to Work
The Wright Way of Working
You and Your Company
Now It's Your Company
You, Your Job, and Your Company
On the Job with Lilly
Welcome to Our City
John Doe and the Armstrong Cork Company
Among Ourselves
Your Job with Monsanto at Springfield
Partners in Reverse
Get Off to a Good Start
The Spirit of Service
Your Management and Mine

Figure 6.1 shows typical covers of employee handbooks.

Management publications for employees. Managements of larger enterprises use several kinds of house organs as media of communications. These house organs have the advantage of being put out regularly. If they are appropriately and attractively done, they are effective devices for communication. Often they are designed for public relations as well as employee relations. Sometimes such publications, originally aimed at stockholders and customers, are sent to employees, thus serving two purposes.

In a survey, it was found that magazines are somewhat more popular as a communications medium than are newspapers;[13] 42 per cent of the companies publish magazines monthly, and 47 per cent publish magazines periodically. Only 23 per cent of the companies surveyed publish newspapers. Newspapers are published monthly, weekly, or bi-weekly. Six of 100 companies had 2 full-time editors and 21 had 1 full-time editor.

What do employees want to know? What would they like to see most in management-employee publications? According to a survey conducted by the Eaton Manufacturing Company, the employees indicated that they were most interested in news about the

[12] Staff, National Foremen's Institute, Inc., *How to Prepare an Employee's Handbook* (Deep River, Connecticut: National Foremen's Institute, Inc., 1948), p. 32 and appendices.

[13] "How Management in 100 Plants Informs Workers," *Factory Management and Maintenance*, CIV (1946), pp. 114–17.



Source: The J. L. Hudson Company, Detroit, Michigan; Winkelman Brothers Apparel, Incorporated, Detroit, Michigan; Michigan Bell Telephone Company, Detroit, Michigan.

Fig. 6.1. Covers of three employee handbooks.

company.[14] Ten items for which they expressed preference are shown in Table 6.2. The percentage figures in the table show the

[14] Reported by John Cadaret, *The Employee Publication; Its Current Use in Management-Employee Communications*, a Master of Arts degree thesis on file at Wayne University Library, Detroit, Michigan, 1948.

proportion of the employees who voted for each of the ten items. Employees were encouraged to vote for more than one choice.

TABLE 6.2

Items Preferred in Employee Publications*

Item	Per Cent
News about the company	68
News about the products and uses	60
Pictures	60
Sports	53
Personals	51
News about the plants	49
Employee-management news	40
Cartoons	39
Hobby page	35
Columns by officials of the company	33

* Source: John Cadaret, *The Employee Publication; Its Current Use in Management-Employee Communications*, a Master of Arts degree thesis on file at Wayne University Library, Detroit, Michigan, 1948.

Cadaret conducted by questionnaire a survey of industrial publication practices. He received 146 filled questionnaires in return, of which 93 were sufficiently complete for analysis. He found that 4 out of 5 of the companies responding were attempting to give factual information regarding company policy to their employees. About half of the companies responding gave employees an active part in originating articles for publication, and about half also gave them some authority in establishing editorial policy. About 95 per cent used employees as reporters. Nearly 3 out of 4 of the companies held their publication open to expression of opinion and questions from employees.

What an employee wants to know may be determined by survey techniques. An opinion survey group, the Opinion Research Corporation, asked a sample of employees in five companies, "If you were to sit down with the president of your company some evening over a beer (cup of coffee) and could ask him anything you wanted to know about the company you work for, what are some of the things you'd ask him?" Subjects of employee interest, in order of frequency of mention, proved to be: job security, company products (what products are made, how they are made, who buys them, how they are used, how they compare with competitors' products), plant operations, opportunities for advancement, working conditions, wages, and employee benefits.[15] Readership surveys of com-

[15] Opinion Research Corporation, Princeton University, "Interpreting the Company through the Employee Publication," *Public Opinion Index for Industry* (Princeton, New Jersey: Opinion Research Corporation, Princeton University, November, 1947), p. 45, plus 35 tables in appendix.

pany publications have suggested that employees want more company news and news of research activities, plans and policies, products and by-products.[16]

A survey in one of Esso's refineries showed that both supervisors and union representatives had only a limited knowledge of manufacturing policies and company organization, but a keen interest in finding out about them. Ninety per cent of the supervisors polled expressed the desire for more information from management on collective bargaining. The survey revealed also that most workers, including supervisors and shop stewards, were vague on general matters of company policy, more interested and informed regarding financial matters, and well informed on matters concerning cost control in production. The conclusion was reached that where it is direct and pertinent, information makes a lasting impression; where it is not, it is likely to be forgotten quickly.[17] According to Peters, "comparing management's desires and employees' wants, as expressed in the foregoing surveys, it appears that they actually conflict less often than would be expected. The majority of managements today are willing to give employees desired information, but just do not get around to it—or use ineffective methods." [18]

In May, 1950, General Motors Plant Paper Services held regional meetings, at which time each divisional GM plant paper editor and his supervisor received the results of a survey that had been made of the editorial content of their publication. The Comparator, shown in Figure 6.2, is part of the report of the survey (the other part is concerned with the reading ease of the publications, discussed in Readability of Training Media chapter). In preparing the Comparator, nine editions of each GM divisional plant paper were analyzed. They were the February, March, and April editions of 1950; August, September, October of 1951; February, March, and April of 1951. In the figure, the content is shown for *GM Folks,* the GM Corporation publication.[19]

How much do employees read the house organ? Two studies throw some light upon this problem. The first [20] indicates the em-

[16] Raymond W. Peters, *Communication within Industry* (New York: Harper & Bros., 1950), pp. 36–40.

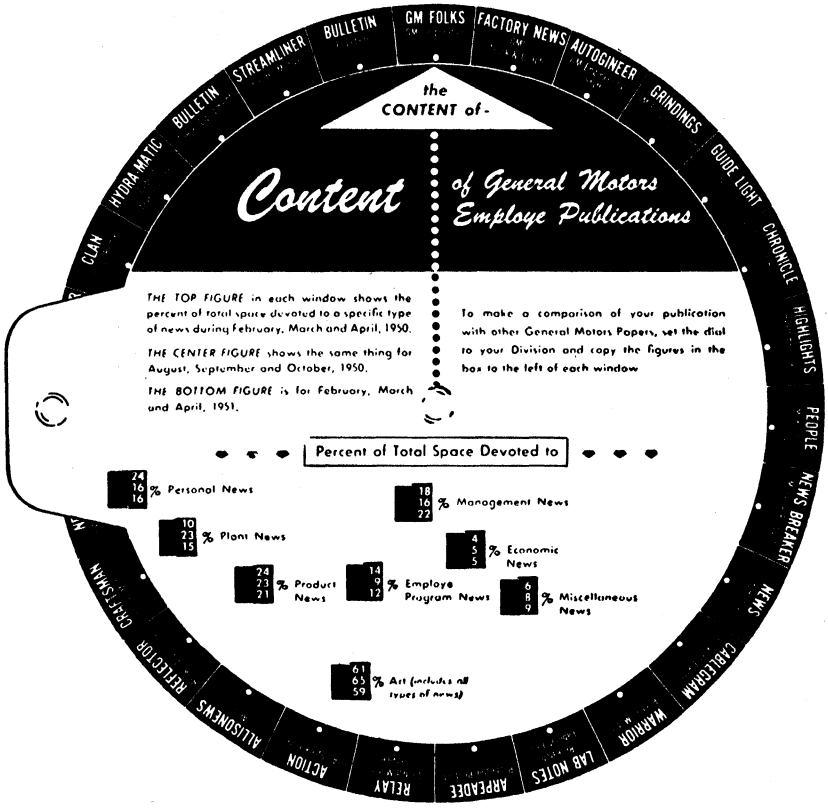
[17] Industrial Relations Section, Princeton University, *Transmitting Information through Management and Union Channels* (Princeton, New Jersey: Industrial Relations Section, Princeton University, 1949), p. 141.

[18] Peters, *op. cit.,* pp. 39–40.

[19] GM Plant Paper Services, *Which Way Does the Wind Blow Now?* (Detroit: General Motors Corporation, April, 1952), one page.

[20] *The Eaton News,* X, No. 2 (1947). After Cadaret.

ployees' answers to the question, "How much of it (*Eaton News*) do you read?" Thirty per cent of the employees checked "from cover to cover"; 50 per cent checked "most of it"; 14 per cent checked "only parts concerning my plant"; only 1 per cent checked "none of it."



Source: General Motors Corporation, Detroit, 1952.

Fig. 6.2. *The Comparator,* a device for reporting the content of management publications to the plant paper editors.

A second study [21] covering *GM Folks,* a publication of the General Motors Corporation, included two plants in Lansing, Michigan. In answer to the question, "Which question best describes how you feel about *GM Folks?*" the following percentages were tabulated: 60 per cent checked "like it very much"; 24 per cent checked "it's all right"; 9 per cent checked "it's all right but . . .";

[21] *Employee Research Study, No. 23-2* (Detroit, Michigan: The General Motors Corporation, December 20, 1946).

less than 1 per cent checked "not as good as other publications"; and less than one-half of 1 per cent checked "not worth reading." These results are suggestive of what employees may think of a house organ or company newspaper.

It is interesting to note the job specification for an industrial editor. We might assume that industry would require college training in journalism for such a position, but Cadaret's survey revealed that training in journalism is generally not considered a requirement. Most of the respondents required four years of college with no specification as to major study. However, over half of the companies responding required up to two years' experience in publication work as a desirable specification. Slightly more than half of the companies listed experience with the company as the necessary requirement. The most frequently mentioned abilities, experience, or skills were: (1) writing ability; (2) newspaper or magazine experience; (3) personnel relations experience; and (4) knowledge of printing. The four items are given in order of frequency of responses. About eight out of ten of the companies had established some kind of minimum hiring requirements for the position of industrial editor.

Attitude surveys. Most of these direct media have been developed by management to share information with employees rather than to gather information from them. The attitude survey, however, is a direct medium, designed almost wholly by management for the purpose of tapping into group attitudes of employees—rank-and-file, as well as supervision. The attitude survey procedure will be discussed in some detail in chapter 7, "Employee Attitude Surveys."

During the past two and a half decades, there has been activity on the part of management to survey systematically the attitudes of workers. Periodic surveys are conducted as an upward communications device. Specifically, they are intended to uncover areas that bother employees, areas that can be improved.

Management has learned to plan employee policy and action in terms of known employee attitudes rather than in terms of what management itself thinks the employees want.

Attitude surveys have often revealed an unfortunate lack of downward communication. Employees may be in complete ignorance of many policies affecting them. Such surveys have revealed that morale is often low because of this misunderstanding. Periodic surveys enable management to detect trends in employee wants

and employee feelings. The attitude survey procedure has helped supply the second half of the needed two-way communication.

Employee counseling. As discussed in the chapter "Counseling Employees," this activity serves as a medium of communication both to and from the rank-and-file employee. Counselors, while not violating personal confidences, gather data bearing on workable personnel policies and practices. In some firms, notably the Western Electric Company, such data are tabulated, analyzed, interpreted, and reported by counselors to top management.

Employee Suggestion Systems: A Medium of Communication

Why do companies use suggestion plans? Do they engender the "we" feeling of teamwork so important in large corporations? Do they act as direct communication devices? Do they provide employee representation? Do they pay for themselves? Do they aid in safety, increased production, better working conditions? Both tangible and intangible benefits are derived from suggestion systems that work. The tangible benefits that may result from employee suggestions include increased production, greater safety for workers, better working conditions, and possibly lower cost of products to the consumer. The intangible benefits include increased communication resulting in a feeling of belongingness for the worker and improved relations between management and worker. Suggestion systems are not new. The earliest known formal suggestion plans occurred in 1880 at the William Denny Shipbuilding Company near Glasgow, Scotland, and at the Yale and Towne Manufacturing Company at Stamford, Connecticut. The National Cash Register Company inaugurated a formal suggestion plan in 1894. Two years before the turn of the century, the Eastman Kodak Company and the Bausch and Lomb Company started plans. By 1910, Westinghouse Electric and Western Electric Company had plans; and the following year, the United Shoe Machinery Corporation and the Public Service Company of Northern Illinois had suggestion systems. History shows that in 1915, the Public Service Corporation of New Jersey and the Philadelphia Electric Company inaugurated suggestion systems. Stromberg-Carlson Company and the Firestone Tire and Rubber Company used employee suggestions before the close of World War I.

In 1942, in answer to a plea by the chairman of the War Production Board for all employees to participate in offering suggestions

for the improvement of their work, suggestion plans all over the country were aggressively activated. The National Association of Suggestion Systems was formed that year, providing semiannual conferences for exchange of experiences, discussion of problems, and development of sound policies. In a survey, it was found that of the 325 companies from which information was gathered, about 39 per cent were utilizing suggestion plans.[22]

L. J. Alger, Chairman for the Committee on Statistics for the National Association of Suggestion Systems, reports on the rate of participation of employees in suggestion system plans.[23] The rate of participation, defined as the number of suggestions received per 1000 employees per year, varied considerably from one company to another. In 1945, the company with the lowest rate had 27 suggestions per 1000 employees per year; the highest has 1718 per 1000 employees. This latter rate of participation was reported by the United Shoe Machinery Corporation. The average was 227 for 1944 and 206 for 1945. These figures included government agencies. When government agencies' figures were removed from the tabulation, the average rate of participation was 347 for 1944 and 333 for 1945. When the war ended, the national suggestion program was recognized for its contribution in improving war production. "Production suggestions are saving the nation at a conservative estimate . . . the equivalent of the full-time labor for an entire year of an army of about 80,000 workers." [24]

Alger's sources comprised organizations employing a total of 2,000,000 employees eligible to make suggestions. He estimated that 28 million persons are employed in organizations where suggestion systems are applicable. Alger presents an interesting estimate of use of suggestion plans. He estimates that awards amounting to $2,165,778 paid by the companies he surveyed would be increased to $30,320,892 if his survey had been countrywide.

General Motors Corporation announced that $1 million was paid for employee suggestions between 1947 and 1951.[25] An average of $52 was paid for each suggestion, although 15 people received the

[22] Walter Dill Scott, Robert C. Clothier, and William R. Spriegel, *Personnel Management*, 4th ed. (New York: McGraw-Hill Book Co., Inc., 1949), p. 586.

[23] L. J. Alger, "Suggestion Statistics," *Getting and Using Employees' Ideas, Production Series No. 165* (New York: American Management Association, 1946), pp. 11–14.

[24] J. A. Krug (then chairman of the War Production Board) in *Getting Results from Suggestion Systems* by Herman W. Seinwerth (New York): McGraw-Hill Book Co., Inc., 1948), p. 13.

[25] Detroit radio newscast, January 27, 1952.

maximum award of $1500. During this 5-year period 80,000 suggestions had been submitted, of which 23,000 were accepted.

Although some suggestion systems work without money awards to employees, and this is especially true when part of the job duty of the employee is to contribute ideas without award other than regular salary, most plans come eventually to the payment of money awards. This was, for example, the experience of the Picatinny Arsenal in Dover, New Jersey.[26] In 1941, the first phase in the development of the program there, the Arsenal offered no financial awards, no publicity, and no worker recognition through certificates. During the second phase in the development of the plan at the Arsenal, covering 1942 and 1943, no money award was offered, but there was a considerable patriotic urge during these years to offer suggestions. In the third phase, the addition of financial payments was advertised, and more promotion and recognition was given by supervision and management. This plan, covering 18,000 workers over a period of 3 years, resulted, in the first phase, in only 113 suggestions received and 3 accepted; in the second phase, 1490 ideas submitted and 138 adopted; during the third phase, 4789 suggestions received with a total of 962 accepted, resulting in savings estimated at $2,724,574.

To refer back to the survey made by Alger, the minimum award of $5 is the most popular figure; 68 per cent of the companies surveyed have followed the policy of the $5 minimum award. There is a variation in minimum awards ranging from $1 to $25. With regard to maximum awards, 63 per cent of the firms contributing to the survey placed no maximum whatever on the amount that could be paid for an idea.

Seventy-three per cent of the companies surveyed permit supervisory participation. About 1 out of 5 companies have what is called an "anonymous system." Other plans permit the suggester the option of identifying himself or remaining anonymous (26 per cent of the total); 54 per cent of the plans, slightly over half, required the suggester's signature. About half of the plans that require the signature specify that the identity of the suggester will be held confidential.

A noteworthy event in the history of suggestion procedure in the General Motors Corporation was the case of Al Weckle. The story of Al Weckle is the story more of brain power than hand

[26] Robert B. Shapiro, "$1000 for the Boss, $50 for Me," *Personnel Journal*, XXIV (1946), pp. 338–44.

power; it is a story typical of the finest tradition of development and use of employee ingenuity. Al was a General Motors Institute student assigned for a time to the truck and coach factory. He was working in the warehousing and merchandising department, computing bin sizes for service parts. The department at that time was working on a project to determine the bin sizes for some 86,000 different parts. A good day's work for a man computing the proper bin size was to determine the space necessary for 120 parts.

After familiarizing himself with the job, the 23-year-old student developed a special slide rule. (See Figure 6.3.) By using Weckle's new device, it was possible for one man to determine the correct bin size for 430 items per day instead of 120. By the old method, it would have taken 5,728 hours to compute the bin sizes for the 86,000 items involved. Owing to Al Weckle's suggestion, the job was completed in 1600 hours, saving 4128 hours. This saving involved only the warehouse in Pontiac, Michigan. Other warehouses are set up in several zones in the United States, and Al's idea will go on and on saving a great many hours of labor and, of course, a considerable amount of expense.

Management of the suggestion system. All supervision from top management down through foremen and immediate supervisors may well assume some responsibility for the success of the plan. It is virtually necessary to indoctrinate and train management in the selling of the plan and in its use if it is to be successful. However, the responsibility centers in an individual who is called executive secretary of the suggestion system, or manager of the suggestion plan. He generally works out of the personnel department under the supervision of the director of personnel; however, he may work out of the office of the controller, the works manager, or vice-president in charge of production. Assuming a plant of 8,000 workers where the secretary of the suggestion system operates from the personnel department, what are his duties? He is responsible to the personnel director for the following:

Contacts employees on the job and in meetings (usually of a training nature), indoctrinating and training them in procedure for making suggestions. Collects suggestion forms, daily, from the suggestion boxes scattered throughout the plant. Reviews the suggestions and arranges weekly meetings with the suggestion committee, consisting of two members of management and two employee representatives.

Checks over each of the filled suggestion blanks to see that they are properly filled in. Contacts individual workers on the job to discuss their

suggestions with them and to revise and work out better wording of the suggestions (may include collaboration from the drafting department in drawing up the suggestions for the worker). Meets with the suggestion committee, acting as chairman. After committee decisions, sends out notices of action to the suggester and discusses details of the action. In the case of rejection, tactfully explains action to the suggester.

Maintains a tickler file on all aspects of the suggestion plan pertaining mainly to individual suggesters but also to members of the suggestion committee and to committee meetings. Keeps records pertaining to the suggestion system to make up weekly summaries of activity including suggestion committee meetings. Makes up semiannual and annual reports concerning all phases of the activity. Prepares special reports on cost system and other aspects of the development and revision of the plan and makes recommendations to top management through the personnel director on policies regarding the suggestion system and other related personnel relations matters.

Meets with groups such as Kiwanis, Rotary, and educational cooperative groups to explain the system to such groups for public relations values. May prepare articles for popular or technical literature. Attends national meetings of the American Management Association, Society for Advancement of Management, and National Association of Suggestion Systems.

The secretary's time allocation throughout these duties might be divided up roughly into three parts: about 75 per cent of his time is spent in personal contacts, helping frame suggestions, including wording, drawings, and collaboration with specialists in the plant to aid the suggester. About 5 per cent of his time is spent in committee meetings and working with committee members. Approximately 20 per cent of his working time is spent in miscellaneous duties, including record keeping, correspondence, and public relations phases of his position.

The minimum specifications for the secretary of the suggestion system would include: experience in the plant and knowledge of employee relations and personnel at the rank-and-file as well as at top management level. He should have training in public speaking, report writing, personnel methods, and personnel psychology.

The attitude of supervision toward the system is all-important for its successful operation. The training and indoctrination of supervision is therefore of importance. In companies with plans of long standing, this indoctrination can take place with the induction of supervisors. If the foremen and supervisors are brought in under an understudy program or a junior executive training program, such indoctrination is relatively easy. It is necessary for supervisors

to unlearn some of the employee relations attitudes acquired in the "old school" of labor relations. Training courses for supervisors may give indoctrination in all phases of the suggestion system including data representing the activity of the suggestion system, the pitfalls that are common in operation, and the appropriate relationship of foremen to employees in the handling of suggestions.

Many of the foremen with the older point of view will be distrustful of the system, since they may feel suggestions should be made by them rather than the rank-and-file employee. The foreman feels that he is the idea man of his organization. What will top management think if the employees come up with all of the good ideas? The enterprise is a teamwork enterprise, and, as such, the foreman should have the attitude that part of his job is to foster the growth and development of his employees. If he has this attitude, his department is more likely to work as a team.

It is necessary to indoctrinate the foreman not only in foreman training courses and supervisory conferences but every time and place possible. Foremen and supervision must be aware of the necessity for keeping the program alive and for developing in the workers the desire to participate. Special meetings can be held. Periodic letters on different aspects of the suggestion system, written in the foreman's language, have been found by some plants to be helpful. Such letters, coming from top management, appeal at one time to the need for suggestions in connection with a safety campaign; at another time, suggestions on reduction of scrap and rejects are stressed. Working conditions may be emphasized or suggestions of an intangible value—brief discussion and simple explanation of the intangibles and examples of the type of suggestions that benefit the workers and management are included in the letters.

Immediate supervisors may be quite helpful in suggesting to the workers specific problems on which suggestions are needed. For this reason, top management as well as the suggestion committee may consider it part of their jobs to make these appeals to foremen and through them to the worker. The foreman's job in connection with the suggestion system is to solicit and aid the employees in making suggestions and to use the employees' ideas to the fullest extent.[27]

Why do suggestion systems fail? Denz lists five reasons for failure of plans (among which the first is most damaging):

[27] Charles C. Gibbons, "The Supervisor and the Suggestion System," *Personnel*, American Management Association, XXIV (1948), pp. 284–87.

1. Supervisory resistance and indifference on the part of management
2. Lack of the know-how—proceeding on a hit or miss basis rather than by establishing a sound policy before installing the program
3. Inadequate rewards for adopted ideas
4. Carelessness and undue delay in handling suggestions
5. Lack of an educational program to teach employees how to submit workable suggestions [28]

In a study of productivity, supervision, and morale in an office situation, reported by Katz, Maccoby, and Morse, the number of suggestions made was compared for employees in high-producing sections and low-producing sections. There were significantly more suggestions submitted by the employees in the low-production sections. In one department, sheer number of suggestions appeared to be a goal of the department supervisors, evidenced partly in the number of suggestions accepted. There was an average award of $11.64 paid for an approved suggestion in this department, compared with $33.57 paid for suggestions from a department with fewer suggestions. The authors observe that:

> when sheer number of suggestions is encouraged, the additional suggestions tend to come in larger proportions from low-producing employees. It may also be true that the relationship between supervisor and employee is such that in the high production sections many employee suggestions are made directly to supervision. On the other hand, for some employees in low-production sections, the formal suggestion system may represent an opportunity for participation and communication which is not otherwise available to them.[29]

Extra dividends possible from suggestion systems. The suggestion system may serve as an employee relations agent. As discussed in chapter 2, "Industrial Social Psychology," one of the central problems of industry is to organize relationships between management and the workers in such a manner that the worker will derive satisfaction from his job. The successful suggestion plan enables the worker to become a member of a team—furthering, in another way, beneficial informal social organization.

The suggestion system may serve as a training agent. For the worker's personal development and self-improvement, contacts

[28] F. A. Denz, "Why a Suggestion Plan?" in *Getting and Using Employees' Ideas, Production Series No. 165*. New York: American Management Association, 1946, pp. 3–6.

[29] Daniel Katz, Nathan Maccoby, and Nancy C. Morse, *Productivity, Supervision and Morale in an Office Situation* (Ann Arbor, Michigan: Survey Research Center, Institute for Social Research, University of Michigan, 1950), p. 60.

with the operation of the suggestion system should help him see where he is wrong and where he is right. Educational psychology teaches that progress and growth of the individual depend in part on his knowledge of results. Am I on the right track? Am I doing all right? The worker likes to have answers to these questions, and when they can be given to him, he tends to grow.

The suggestion system as a communications device is related to employee counseling (see chapter 5). The suggestion system secretary may have the relation of counselor to many of the employees on the production line. He not only discusses the suggestion system but through it he is able to contact workers in their work environment and gain rapport with them. This facilitates discussion of work or home problems. The social atmosphere that is built up by the suggestion system secretary or his assistant may lend itself to the adjustive type of advising on personal problems and, also, to the nondirective counseling procedure that has been discussed in the chapter on counseling employees.

In considering the concept of the point of diminishing returns applied to promotion of the suggestion system, management might compare employee communications values with those derived from the plant publication. The plant publication, unlike the suggestion system, has little or no tangible value to offset its cost. The expenditure is purely for a channel of communication to build strong employee and public relations. It is a way of cementing the management-worker relations for a closely knit group working toward a common goal. Other forms of communication must be compared with the suggestion system in determining how much money would optimally be pumped into the suggestion system. Which device yields greatest value? When this question is answered by cost analysis in terms of values received—both tangible and intangible—it will then be possible to establish a more rigid scientific procedure in answering the question of how much emphasis is to be given to each of the several forms of communication.

Seinwerth has pointed out that employee suggestions may start at a point that the average research man arrives at only after considerable study in order to familiarize himself first with the problem.[30] Employees become researchers every time they consciously think about how to improve their performance in their jobs, the products they produce, and the machinery that they use.

[30] Herman W. Seinwerth, *Getting Results from Suggestion Systems* (New York: McGraw-Hill Book Co., Inc., 1948), p. 10.

Summary

Enlightened managements are anxious to eliminate barriers of misunderstanding. How can this be done?

Indirect media for sharing information are provided as a by-product of the several personnel methods that are discussed in this book. Some members of top management feel that personnel research development of tools constitutes in itself a major way of sharing information. They stress personnel methods as a valuable agency for communications.

The grapevine is a potent way of disseminating information, but it is difficult to control. Direct media include bulletin boards, letters, publications, attitude surveys, counseling, and suggestion systems.

If successful, a suggestion system can yield several values. Some are tangible and may result in increased production. Others are intangible. These are mainly the communications values resulting in improved management-worker relations. Intelligent planning on the part of management with special reference to employee relations is crucial to the success of a program.

Which of these channels is best? Observers of methods for establishing human understanding in the industrial social organization will agree that no one method is adequately effective by itself. If human understanding and employee good will are to be fostered, it is necessary to plan carefully the utilization of every formal and informal means at the disposal of management to establish workable two-way communications.

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7 Employee Attitude Surveys

FOR MANY years, business management has been on the opposite side of the table in grappling with labor over various issues. Both sides withhold information, withhold confidence, withhold teamwork. An elaborate guessing game has developed as to what the "other side" is up to next. The grapevine has flourished. These conditions, which seem unnecessary, can be extremely costly in productivity as well as in worker satisfaction.

The last chapter suggested several ways in which management can get factual information to employees without exaggerations and untruths. This chapter, "Employee Attitude Surveys," aims to set up a method for getting information from the employees to managements of business and of labor unions—information reflecting a free expression of opinion.

Does Management Know How Workers Feel?

It would be interesting to study workers' answers to questions as to how they feel about various issues and then compare their answers with those of potential and actual personnel managers. It would also be of interest to test foremen on their attitudes toward supervisory practice to see if some of the problems in worker-management relations might not be associated with misconceptions of supervisors.

Numerous surveys have been conducted. Workers have been hand polled on their attitudes toward their work, supervisors, and company. An interesting twist to the usual worker survey was em-

bodied in one given to groups of university trainees in personnel management who were soon to be placed as junior executives. The trainees were to try to answer a series of questions as they thought the average worker would answer them. A control group of workers answered the same questions. The results of the survey revealed that the trainees and workers did not agree. The contrast (see Table 7.1) is revealing because it shows how far we have to go to break down misconceptions on the part of potential executives.

The third column of Table 7.1 reports a survey of graduate personnel students, many of whom were also employed full time as supervisors or personnel workers. Their views appear to be farther from those of the workers than do the views of the undergraduate personnel trainee group.

What does the worker want? Studies of various items which the worker selects as most important on his job throw some light on the question of what the worker wants. One study [1] of this kind conducted by the National Industrial Conference Board listed 71 factors. In this investigation, nearly 6,000 workers were asked to select in the order of importance the 5 factors which each believed had the greatest effect on his attitude toward his job and his company. Workers tend to mention most frequently job security; next, chances to get ahead; and third, wages. It is interesting to note that the amount of pay is not the most important thing in the eyes of the workers.

When the data are broken down to show the percentage of the workers listing each item as first in importance, job security again ranks first, having been indicated by about 31 per cent of the workers. Wages rank second, mentioned as most important by 8.7 per cent of the workers. The type of work performed ranked third, mentioned as first in importance by 7.2 per cent.

In another study by Wyatt, Langdon, and Stock [2] 10 factors were ranked in order of importance by 325 factory workers. The results are shown in Table 7.2. In this study it is seen that the amount of wages or high pay ranks sixth.

Kolstad [3] administered questionnaires to 660 sales employees

[1] National Industrial Conference Board, Inc., "Factors Affecting Employee Morale," *Studies in Personnel Policy No. 85*, November, 1947, p. 9.

[2] S. Wyatt, J. F. Langdon, and F. G. L. Stock, "Fatigue and Boredom in Competitive Work," *Industrial Health Research Board Report*, No. 77, 1937.

[3] A. Kolstad, "Employee Attitudes in a Department Store," *Journal of Applied Psychology*, XXII (1938), pp. 470–79.

TABLE 7.1

WHAT DO WORKERS FEEL?*

Question	Employees of 150 Companies	Undergraduate Personnel Students *N = 332*	Graduate Personnel Students *N = 21*
	Per Cent	*Per Cent*	*Per Cent*
1. Would you say that the average American worker today really enjoys his work and takes pride in what he does on the job?			
YES	60	25	14
NO	37	72	86
DON'T KNOW	4	3	0
2. How much do you think the average worker worries about being laid off?			
MOST OF THE TIME	25	28	19
OCCASIONALLY	46	59	71
VERY SELDOM	20	13	10
NOT AT ALL	9	—	—
3. Does the average worker feel that the Company he works for think he is important to them?			
YES	40	17	10
NO	54	76	90
DON'T KNOW	6	7	0
4. Does the average worker think that wages are increased because			
EMPLOYEES ARE ABLE TO DEMAND IT	26	40	38
THE COMPANY CAN AFFORD IT	16	31	43
HE IS ABLE TO PRODUCE MORE	16	5	5
HE NEEDS MORE TO LIVE	42	24	14
5. Does he feel that the Company will grow and prosper whether he does his work well or not?			
YES	28	64	53
NO	67	25	33
DON'T KNOW	5	11	14
6. Does the average worker feel that the Company's investment in new labor-saving equipment makes it possible for him to earn more money?			
YES	41	20	5
NO	45	70	85
DON'T KNOW	14	10	10
7. Does he think that he should be advanced according to his seniority or because of his ability?			
SENIORITY	27	59	76
ABILITY	60	32	19
DON'T KNOW	2	9	5

TABLE 7.1 *(Continued)*
WHAT DO WORKERS FEEL?*

Question	Employees of 150 Companies	Under-Graduate Personnel Students *N = 332*	Graduate Personnel Students *N = 21*
	Per Cent	*Per Cent*	*Per Cent*
8. Should the average worker in a plant turn out as much work as he can or should he do no more than the average or less than the average?			
AS MUCH AS HE CAN	64	33	0
NO MORE THAN THE AVERAGE	30	55	100
LESS THAN THE AVERAGE	—	9	0
DON'T KNOW	6	3	0
9. Does the average worker feel that his work is important to the Company's customers?			
YES	75	42	38
NO	22	50	52
DON'T KNOW	3	8	10
10. Does the average worker believe that everyone on the job would benefit if each did the best he could?			
YES	80	49	43
NO	19	43	52
DON'T KNOW	1	8	5
11. Does the average worker feel he receives fair and impartial treatment from his supervisors and the management?			
YES	36	21	24
NO	56	69	71
DON'T KNOW	8	10	5
12. Check each thing you think the average worker wants from his work in addition to improved wages, hours, and working conditions.			
MORE RESPONSIBILITY	8	8	8
SECURITY	1	1	1.5
FEELING OF PRIDE	7	6	6
RECOGNITION	3	3	1.5
FEELING OF IMPORTANCE	6	5	3
ADVANCEMENT	2	2	4
MORE KNOWLEDGE	4	7	7
ENJOYMENT	5	4	5

* Source: The questions included here and responses were part of an American Worker's Opinion Poll conducted by Fact Finder Publication, *Industrial Relations*, V, No. 3 (1947), 9, 10, 39. Data for undergraduate personnel and graduate personnel students were collected by M. F. Estep, for comparison purposes.

TABLE 7.2

JOB FACTORS RANKED IN ORDER OF IMPORTANCE BY 325 FACTORY WORKERS*

Rank	Factor
1	Steady work
2	Comfortable working conditions
3	Good working companions
4	Good boss
5	Opportunity for advancement
6	High pay
7	Opportunity to use your ideas
8	Opportunity to learn a job
9	Good hours
10	Easy work

* Source: S. Wyatt, J. F. Langdon, and F. G. L. Stock, "Fatigue and Boredom in Competitive Work," *Industrial Health Research Board Report.* No. 77, 1937. Reprinted by permission of the Controller of His Britainnic Majesty's Stationery Office.

and 740 nonsales employees of a large department store. Forms were filled out and handed in anonymously. The data as shown in Table 7.3 reveal that the most important item was promotion. Again, the amount of pay does not seem to be most important to the worker. In Kolstad's study this item appears fifth in rank.

TABLE 7.3

RELATIVE IMPORTANCE OF FACTORS PERTAINING TO JOB SATISFACTION IN A LARGE DEPARTMENT STORE*

Rank	Factor
1	Promotion of best qualified person
2	Help to get results expected
3	Encouragement to offer new ideas
4	Fair hearing and square deal on grievances
5	Pay increases when deserved
6	Invitation to offer suggestions when plans are being made
7	Freedom to seek advice on problems
8	Reasons given for changes ordered in work
9	Information about plants and results
10	No contradictory or conflicting orders

* Source: A. Kolstad, "Employee Attitudes in a Department Store," *Journal of Applied Psychology,* American Psychological Association, Inc., XXII (1938), pp. 470–79.

Jurgensen,[4] who studied job preference of 1,189 men and 150 women employees, found that men were more interested than women in security, advancement, and benefits. Women were relatively more interested in type of work, co-workers, supervisor, hours, and working conditions. Perhaps the typical woman is interested in working for a relatively short period. He found that marital status had comparatively little effect on job preferences;

[4] Clifford E. Jurgensen, "Selected Factors Which Influence Job Preferences," *Journal of Applied Psychology,* XXXI (1947), pp. 559–61.

however, single men tended toward the preference direction shown by women. His data indicate that, as the number of dependents increased, greater importance, proportionately, was attached to security, company, co-workers, supervisor, and benefits; and less importance was given type of work, pay, hours, and working conditions. Contrary to popular opinion, he found desire for job security did not increase in importance with advancing age.

Jurgensen concluded:

> Job preferences were affected more by extent of education than by most of the other variables. Advancement, type of work, pay, and working conditions became more important as extent of education increased; and security, company, co-workers, supervisor, hours, and benefits became less important. Changes were not always gradual, the points of high school graduation and college attendance being particularly important.[5]

Analysis of viewpoints of foremen. Most of management's communications work must be handled through channels such as the foreman or department supervisor. Unfortunately, executives do not realize the extent to which false ideas concerning good personnel practices are held by the supervisors in their establishments. In an industrial firm in which a study[6] was conducted to ascertain the over-all value of individual foremen to the company, a test, *How Supervise?*[7] was given to 169 foremen. Data on several questions selected from the test point out the inadequacies of the personnel knowledge of the foremen. See Table 7.4. One of the findings showed that one-fourth of the men felt that the best way to handle tough men was to be tougher than they were. This might mean constant friction and increasing tension, resulting in low morale and uncooperative attitude of the employees in the department. The opinion that most employees do a better job if they get an occasional bawling-out is expressed by about 12 per cent of the foremen. The technique of handling workers is mostly a study in human understanding, but part of the problem can be solved by giving praise when deserved and supplying incentives for good work rather than punishment for poor work.

One of the questions on the test revealed that about 40 per cent of the supervisors erroneously believed that, in general, workers are

[5] *Ibid.*, p. 561.

[6] An unpublished study conducted by Roger M. Bellows and Don H. Palmer, 1948.

[7] Quentin W. File and H. H. Remmers, *How Supervise?* Published and distributed by The Psychological Corporation, New York.

little interested in what others think of their job so long as the pay is good. Another question showed that foremen did not possess elementary facts of worker ability. For example, over one-fourth of the foremen believed that fast workers usually make more mistakes than slow workers. About 1 out of 6 of the foremen indicated that they thought if a worker was good on one job, he tended to be poor on others. One-third felt that less intelligent workers tend to resent monotonous tasks more than the average individual. Evidence, of course, is to the contrary.[8] In fact, industrial personnel technicians have found it advisable to place dull or near feeble-minded adults in the repetitive jobs. The less intelligent workers are not only likely to be steadier but tend to enjoy repetitive work.

TABLE 7.4

MISCONCEPTIONS OF SUPERVISORS*

Misconceptions held by 169 foremen, as indicated by the per cent of wrong responses to questions relating to supervisory practices. (Questions selected from HOW SUPERVISE? *test.)*

Misconception	Per Cent Having Misconception
Any supervisor who really has the company's interest at heart can do his job well	59
The average worker cares little about what others think of his job so long as the pay is good	38
Job evaluation is unnecessary if the supervisor knows his men well	34
Less intelligent workers tend to resent monotonous tasks more than the average individual	33
Fast workers usually make more mistakes than slow workers	27
The best way to handle tough workers is to be tougher than they are	24
Workers who are good on one job are usually below average on most others	15
A good supervisor can tell what a worker is worth the first time he talks with him	15
So-called "mental fatigue" is actually nothing but laziness	14
Using production records alone to determine which worker to recommend for promotion	12
Most employees do better work if they get a good bawling out every so often	12

* Source: An unpublished study by Roger M. Bellows and Don H. Palmer, 1948.

With such confusion in the minds of supervisors, it is little wonder that there is bungling in their daily dealings with workers. In this connection, it may be pointed out that much of the resentment against management is not directed against top management, itself. Few workers ever see top management—might not even recognize the company executives if they saw them. The "management"

[8] Morris S. Viteles, *Industrial Psychology* (New York: W. W. Norton & Co., Inc., 1932), pp. 512–59.

to the average worker is his immediate supervisor. New policies passed along via this key man are often distorted because of the personal bias of the foreman. It is here that trouble is either forestalled or brewed. If "management is unfair," it may be that immediate supervisors themselves have misunderstood. It is amazing to top management sometimes to hear the things workers say about them. "They're not true," says management. "Where on earth did the employees get such ideas?"

This points to an important use of the employee attitude survey. By its very nature, it enables cross comparisons of the effectiveness of supervision to be made from department to department. A department that has poor supervision (that is, one which has fostered low morale) stands out as a trouble or danger area when tabulations are completed. Management can conduct remedial treatment in the form of supervisory training.

No matter how fair and reasonable they attempt to be, managements will never know how well their messages get across to the employees unless there is some means of keeping them informed. Employee attitude surveys are one of the direct means of getting information on a plant-wide basis directly into the hands of the managers who need it.

The Nature of Attitudes

The industrial manager is frequently concerned with how his employees will react when a certain policy is introduced. Since he does not know in advance, he generally guesses or estimates his best course of action under the circumstances. He operates blindly in the absence of valid information about what his workers want. What he would like to know is the employee "attitude" toward any specific topic. However, since he cannot "see an attitude" and therefore finds it difficult to conceive its measurement, he operates without knowing. What he really needs, of course, is some prediction as to the probable reaction of his group to a proposed policy or procedure. This potential reaction or potential behavior pattern can be called "attitude." An attitude is made up of an accumulation of information and experience that predisposes an individual to certain behavior.

In point are the election polls. People are asked how they think they will vote in a coming election. Persons so polled can express merely an opinion as to how they will vote; this "opinion" is their

best estimate of their probable behavior (attitude) at election time. Whether or not they actually follow through and vote the way they declared they would, depends in part upon intervening events that tend to modify their potential behavior pattern. Opinions are but the overt expression of the individual's best estimate of his attitudes.

Suppose management is considering the installation of an incentive pay plan. Employees may have a considerable range of opinions about the desirability of this pay plan. Before the procedure is installed, management might find it useful to examine the attitudes of the workers in order to know the present status of receptiveness of the worker group toward such plans or toward alternate plans. This kind of information assumes or implies a method for the measurement of attitudes.

Ways of Surveying Attitudes

Attitude surveying is of much use to the personnel manager for guidance in his administrative problems and procedures. However, not all managers have attained the degree of precision and effectiveness in the ways or methods of its measurement. These degrees or levels of method may be examined here. Unguided by formal information, management often has to make its decisions according to its best judgment of what to do under the circumstances. Management often errs in guessing at employee reaction.

For example, in a copper mining community, workers had sometimes obtained their jobs at the mines by a competitive bargaining for the jobs with the mine foreman. They "paid" for their jobs: bought the right to work in a mine for life, much as a seat is purchased in the stock exchange.

In this particular company, managers were considering a new employee benefit, a pension plan. When a worker reached the age of 65, he would be retired, and a sum of money would be set aside by the company for his support as long as he lived. It was the considered judgment of the company managers that this policy should be effected. And so it was done.

Immediately, trouble began in the mines. Miners facing retirement were incensed because they felt an injustice was being done. They had "paid" for their jobs and were entitled to them until death. A pension was not acceptable. When this worker attitude became known to management through a series of unexpected,

somewhat violent events, it became apparent that the decision to install a retirement pension plan without taking this worker attitude into account had been a costly mistake on their part. Reconsideration was necessary.

Rumored attitudes. In the foregoing discussion, it was shown that managers operated without information on employee attitudes. Other managers avail themselves of the grapevine to discover employee attitudes. The characteristics of the grapevine have been noted (chapter 6, "Communication and Suggestion Systems").[9] One aspect of the grapevine is that the information it carries becomes distorted and altered as it makes its successive stops. It is unlikely that the information that reaches management via the grapevine is representative of true employee attitude. For one thing, attitudes expressed by grapevine may reflect only the extremes. Neutral attitudes, perhaps held by the majority of workers, may never seem vivid enough to warrant a grapevine discussion. In this respect, attitudes are not fully examined by the receiver of grapevine information.

Employee dissatisfactions take the form of griping on the job, slow-downs in production, and excessive absenteeism. When the dissatisfaction reaches its peak, widespread unrest manifests itself in the form of quits, walkouts, strikes, boycotts, even violence on the company grounds. Management gets a general picture of the employee attitudes by listening to their grievances at times like this. But then, it's too late. Damage has been done to all. Also, information gathered at a time of emotional disorder may be distorted or may cover up other underlying causes. Nevertheless, in some companies, this is the only technique used for gathering information about employee attitudes.

Employee interviews. A more enlightened approach to the estimation of employee attitude would seem to be discussing their attitudes in an interview. This means that all employees might be interviewed or, if it is a large company, a specific portion might be interviewed. The interview technique may assume one of three forms:

The counseling interview. (See chapter 5, "Counseling Employees.") This type of interview does not have as its immediate goal the ferreting out of employee attitudes for management's use. However, very often worker attitudes are uncovered by the coun-

[9] See discussion in Gordon W. Allport and Leo Postman, *The Psychology of Rumor* (New York: Henry Holt and Company, 1947), p. 247.

selor in the course of the interview, and this information gets to management indirectly through counselors' reports.

The unguided interview. When the Western Electric Company's Hawthorne interviews were beginning, this type of interview was used. The employee was allowed to talk about anything that happened to be on his mind. It is thought by some that this type of interview is valuable because it does not put words into the employee's mouth by asking direct questions. He talks freely about anything he wishes.

This is a time-consuming process—from one to three hours may be needed—if the aim is to enable the interviewer to get indications of employee attitudes. The return, in terms of specific information for management, may not justify the means. It is, of course, valuable as a means of letting workers ventilate their feelings. It requires also that a trained investigator of human problems conduct the interview, inasmuch as interviews of this type can be grossly misinterpreted.

The guided interview. In the hands of a skillful interviewer, this technique may be of value. A series of pre-determined questions, covering the attitudes management would like to have probed, are kept in mind as the interviewer proceeds with his interview. He makes it a point to cover each of the topics during the conversation. Such a survey of employee attitude can be finished in a half hour or so.

A possible criticism of both types of interviewing techniques is the chance for misinterpretation of the interviewer's questions. Impromptu questions cannot be tried out before being asked. There is no check made to see if the questions are going over the head of the employee, if they are being misunderstood, or if the questions are "loaded" by the choice of words used in them.

The printed questionnaire. One way to assess attitudes is to list a series of questions (on an *a priori* basis) and score the several responses to indicate what percentage of the employees endorse each opinion. A wide variety of issues are covered within the same questionnaire. Little check is made on wording of the questions themselves, which may lead to ambiguous interpretations.

The questionnaire takes several forms. Some of the more common include the *yes-no* or *true-false* series of questions, a check list of items that affect the worker, and the more elaborate series of multiple-choice questions.

Check list. The check list questionnaire consists of a series of items that the employee checks to indicate which ones concern him on the job. The form, planned to get at attitudes on working conditions, might look something like this:

Following are items describing working conditions. Check as many items as you wish which you feel are bothering you in your work and need to be improved:

Ventilation	( )	Unpleasant noise	( )
Lighting	( )	Faulty unsafe equipment	( )
Too cold	( )	Dirty work station	( )
Too hot	( )	Lack of sanitation	( )
Drafts	( )	Too far from rest rooms	( )
Sun glare	( )	Unpleasant dust	( )
Dampness	( )	Other ————	( )
Unpleasant odors	( )		

This is a narrow investigation, designed for a specific problem facing management. Items comprising the survey may cover 20 or 30 areas such as the amount of take-home pay, fairness of the pay plan, adequacy of supervision, working hours, amount and spacing of rest pauses, adequacy of employee cafeteria, locker-rooms, rest rooms, lounges, uniforms, safety equipment, or dress regulations.

In some situations, the check-list technique has been used to find the items that are of most concern to the employees by asking for ranking. Tabulations point up the areas that cause most concern.

Check lists, as do most surveys, usually provide a space for the employee to write in additional pertinent comments, whether already covered in the survey or not. This is called the "open-end response." It is valuable because otherwise unknown problems might not be revealed.[10]

Multiple-choice questionnaire. As its name suggests, the multiple-choice questionnaire for attitude surveying poses a question, and the employee indicates the extent of his satisfaction or dissatisfaction by choosing one of 3 to 5 responses possible. For example:

Do you feel free to discuss problems with executives other than your immediate superior?

[10] In a Round Table Conference on the subject of attitude surveys, F. Bruce Gerhard, Vice-President of Prudential Insurance Company of America, stated that more than 50 per cent of their employees took advantage of the opportunity to express their own thoughts in the free comments space on the questionnaires. *Management Record,* National Industrial Conference Board, Inc., X (1948), p. 262. An unpublished study in a department store revealed that three-fourths of the employees used the comments section. Frequently comments of this sort are specific: names are used, departments are identified. The cathartic values cannot be overestimated.

———I NEVER feel free to discuss my problems with others.
———SOMETIMES I feel free to discuss my problems.
———ABOUT HALF THE TIME I feel free to discuss my problems.
———I USUALLY feel free to discuss my problems.
———I ALWAYS feel free to discuss my problems.

The questions include inquiries related to topics such as working conditions, hours, wages, product, facilities, and reputation of the company. Following are typical items:

1. How do you feel your company compares to others in the community?
2. How good do you consider your chances for advancement in the company?
3. How fair is your boss in assigning tedious or unpleasant work?
4. How up-to-date is the equipment you use?
5. How adequate is your leisure time?
6. How proud are you of the company for which you work?
7. How well do you like your present job?
8. How good is your boss in explaining new procedures to you?
9. How well do you like your co-workers?
10. How does your company's product compare to competitors'?

In a study of a typical manufacturing concern, Campbell found these six areas most likely to be the basis of worker dissatisfaction —as indicated by the number of times employees named one as the single item that "bothered them most in their work":

1. Filling higher ranking jobs by employing outsiders
2. Favoritism in assigning work
3. Being taken off a job before finishing it
4. Apprentice training
5. Understanding of promotion policies
6. Promotions of men not being in accordance with ability [11]

As was pointed out at a round-table discussion of attitude surveys,[12] responses on a printed questionnaire permit no opportunity to probe further into workers' attitudes, unless provision is made for collecting additional information. A response may be a cover-up of some other resentment, perhaps unknown to the worker himself. For example, in a survey using interview technique,

[11] James W. Campbell, "An Attitude Survey in a Typical Manufacturing Firm," *Personnel Psychology*, I (1948), p. 35.

[12] Dorothy M. Barrett, "Attitude Surveys—Purposes and Results," a round-table discussion summarized in National Industrial Conference Board, Inc., *Management Record*, X (1948), p. 266.

the worker first expressed dissatisfaction with his supervisor. Probing during the interview revealed that the worker resented primarily the number of changes introduced in his department. Since the supervisor was charged with introducing changes, he was the recipient of the worker's dislike.

One advantage of the multiple-choice questionnaire is the ease with which comparisons can be made from department to department. This is useful to management in locating trouble departments. It is of value as a training measure for the department head. Where control items are obtained, such as age, sex, and job titles, it is possible to narrow down further the groups of dissatisfied workers.

Letter-writing contests.[13] The General Motors Corporation has conducted a letter-writing contest in which nearly 175,000 employees (58.8 per cent of those eligible) participated. Considerable promotional fanfare was used to encourage participation, and many prizes (5,145, including 40 autos) were awarded.

Specifically, the company listed four objectives of the contest:

> . . . to encourage more constructive attitudes in the minds of employes by directing their attention to the positive aspects of their jobs; to place certain educational bulletins in the hands of employes that would indicate some of the benefits derived from employment with General Motors; to collect material for the enlightenment and education of supervisory and management groups; and to obtain a body of data for the analysis of employe attitudes.[14]

The contest avowedly "accentuated the positive." The general subject given the participants was "My Job, and Why I Like It." The entry form used in the contest did, however, provide for unfavorable or critical comments. Only about 7 per cent of the participants used this part of the form. It seems clear that "the typical entrant gave attention to what he considered important aspects of his experiences that might influence the judges to consider his entry favorably." [15] It is difficult for the writer to reconcile this mental set on the part of the participant with the statements that the

[13] Modified from Roger M. Bellows, "Industrial Psychology," *Annual Review of Psychology*, II (1951), pp. 187–88.

[14] C. E. Evans and L. N. Laseau, "My Job Contest—an Experiment in New Employe Relations Methods. Part I. A Unique Management Tool for Two-Way Communication," *Personnel Psychology*, II (1949), p. 6.

[15] Evans and Laseau, "My Job Contest—An Experiment in New Employe Relations Methods. Part II. Management Listens to Its Employes—the Research Job," *Personnel Psychology*, II (1949), p. 186.

technique ". . . produces a state of mind that is open and undirected. . . . When related to the source material provided by various types of structured, formalized questionnaire and personal interview approaches, MJC [My Job Contest] appeared to have great advantages in the purity of reflection of the employe's attitudes and opinions." [16]

The studies are controversial in respect to "purity of reflection of the employe's attitudes and opinions," since entrants may certainly be assumed to have had a definite, structured set to discuss favorable aspects of their jobs.

The main information derived from analysis of the essays was frequency of mention of favorable aspects of the job. A 10 per cent sample was used in the main analysis. Evidence is presented as to adequacy of this sampling. It was possible to determine, on the basis of frequency of mention, which divisions of the company were significantly lower or higher in terms of the adequacy of such facilities and conditions as: cafeteria, employee publications, steady work, medical facilities, opportunity for advancement, supervision, wages, safety, working hours, insurance plans. It was further possible, in the case of some of these items, to relate the indices based on frequency of mention to actual conditions within a plant or division. For example, one division had frequent mention of opportunity for advancement; this division had experienced considerable growth and was expanding its work force. This external consistency seems, in general, to validate the data obtained and to justify communicating the results to managements of the divisions for their information, indoctrination, and action.

Attitude scaling techniques. The printed questionnaire represents advancement in the development of techniques for approximation of attitudes, but it is a device that has serious limitations. These limitations have been known for some years by psychologists who have experimented with the attitude measurement by more precise psychophysical methods. Although technical in design and time-consuming in construction, these procedures are recommended for the best measure of worker attitude.

The Thurstone measure of "equal-appearing intervals." [17] A landmark in attitude measurement is the now famous technique

[16] *Ibid.*, p. 186.

[17] The material for this section is based on the monograph by L. L. Thurstone and E. J. Chave, *The Measurement of Attitude*. Chicago: University of Chicago Press, 1929, p. 96. See also L. L. Thurstone, "Attitudes Can Be Measured," *American Journal of Sociology*, XXXIII (1928), pp. 529–54.

that L. L. Thurstone applied to attitude measurement in the late 1920's. This method had been known for eighty years as the method of "equal-appearing intervals," although Thurstone himself spoke of it as the method of equally often noticed intervals. Inasmuch as his technique has been criticized, studied, checked, and interpreted by many investigators, it may be of interest to describe the construction of an attitude scale by his method.[18]

The first consideration is that the specific attitude must be amenable to measurement of more or less amount. This implies that attitude is viewed as a continuum and that attitudes held by various persons distribute themselves along a line from an extreme position of unfavorable attitude, through neutral, to extremely positive or favorable attitude.

A list of statements representing varying views toward the topic can be gathered for this purpose by talking with executives, or from various personnel records and reports. In some cases, it is desirable to conduct a few employee interviews, merely to let the employees talk out and express various sides of the topics. About 200 statements would be desirable. These statements should be brief and state only one aspect of the problem. By inspecting the statements, a number of the inappropriate or badly worded questions will be eliminated.

The group of 200 or so statements is then given to a group of judges, the more the better. In the early study made by Thurstone and Chave,[19] 300 judges were used. This is an unreasonable number of judges for industrial purposes, but a fair amount of reliability could probably be obtained with 10 or 20 judges. The judges are given packs of cards with a statement on each card. They are asked to sort the statements into 11 piles, pile *A* representing the most favorable expression of attitude, pile *F* representing neutral, and pile *K* the most unfavorable expression of attitude.[20] When tabu-

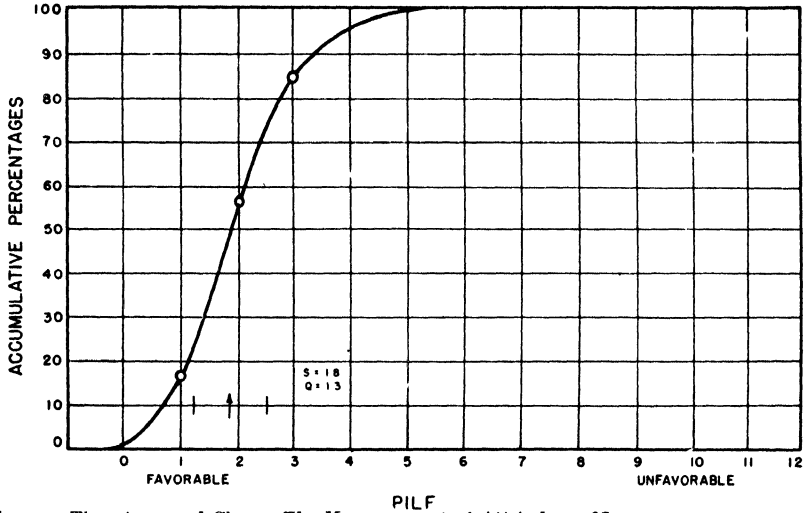
[18] Methods based on more advanced theory and statistical rationale, now in the experimental stage, are being developed. See Louis Guttman, "A Basis for Scaling Qualitative Data," *American Sociological Review,* IX (1944), pp. 139–50; and S. A. Stouffer, Louis Guttman, E. A. Suchman, P. F. Lazarsfeld, S. A. Starr, and J. A. Clausen, *Measurement and Prediction* (Princeton, N. J.: Princeton University Press, 1950), p 756 *See also* Louis Guttman, "The Cornell Technique for Scale and Intensity Analysis," *Educational and Psychological Measurement,* VII (1947), pp. 247–79 and Paul F. Lazarsfeld, "The Logical and Mathematical Foundation of Latent Structure Analysis," in S. A. Stouffer *et al., op. cit.,* pp. 362–472. These methods are not used now to any considerable extent in business and industry. They may provide needed solutions to problems in the next decade or two.

[19] *Op. cit.,* p. 32.

[20] Seashore and Hevner report a much faster method for doing essentially the same

lations are complete for the per cent of times that a statement is placed in the piles, a table is prepared cumulating the frequency of occurrence throughout the 11 piles. To obtain the scale values (quantitative scores), an ogive curve is drawn for each statement. (See Figure 7.1.)

The value for the statement is placed at the 50 per cent level or, in other words, the median position judged by the raters. Figure 7.1 refers to a statement on religion, "I believe the church is absolutely needed to overcome the tendency to individualism and selfishness.



Source: Thurstone and Chave, *The Measurement of Attitude*, p. 37.

FIG. 7.1. The Thurstone method of establishing the scale value for an item for measuring attitudes.

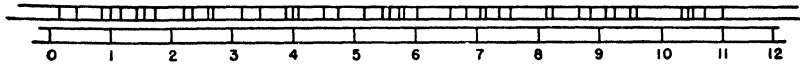
It practices the golden rule fairly well." Where the curve crosses the 50 per cent level, a perpendicular dropped to the base establishes the scale value of the item. This scale value, it can be seen, is 1.8 for this item. In this fashion, from separate ogive curves, scale values are prepared for all of the trial 200 or more statements.

One of the criteria set up to test the desirability of retaining an item is a measure of its ambiguity. If the statement is ambiguous,

thing. They presented the items in the form of a list. Each statement was preceded by A, B, C, D, E, F, G, H, and I; the rater merely indicated which letter seemed appropriate for the item. The results of this rating compare favorably to sorting that Thurstone used. The authors indicated that the method saves from 50 per cent to 87 per cent of the time involved in Thurstone's sorting procedure. Robert H. Seashore and Kate Hevner, "A Time-Saving Device for the Construction of Attitude Scales," *Journal of Social Psychology*, IV (1933), pp. 366–72.

there is little agreement as to which pile the statement belongs in. It might be placed in pile *A* by some and pile *E*, *G*, or *I* by others. A score (the Q-value in Figure 7.1) is determined to measure how far apart are judgments on any particular item. Items with lack of agreement as to their true position are discarded.

A final list of a reduced number of items can then be prepared for use by examining the data available.[21] Those items are retained that have low Q-values (are not ambiguous), that are not irrelevant (as measured by an index of similarity), and that represent a range of opinions from favorable, through neutral, to unfavorable. Thurstone and Chave selected 45 items from their initial list of 130 items. They picked about 4 items for each of the 11 intervals on the scale. The intervals appeared to be equal on the basis of the distribution of the scale values. (See Figure 7.2.) It will be noticed



Source: Thurstone and Chave, *The Measurement of Attitude*, p. 59.

FIG. 7.2. Evenly graduated scale values of the attitude items selected.

that the values of the 45 items, each represented by a vertical line in the upper row of lines in the figure, are not perfectly equidistant, but the intervals, on the whole, appear to be somewhat equal.

To score the statements endorsed by a subject for purposes of measuring his attitude, one of two methods may be used:

1. Add the scale values of the items he has checked and compute the mean value (or average).
2. Assign a rank order value to the items in the scale.

Then the mean rank score of the items he checks is computed. Inasmuch as the items were selected on the basis of their appearing to be equally distributed along the continuum, rank order values would be nearly equivalent to scale values derived.

When such attitude scales are administered to a large group of employees, a frequency distribution of their attitude scores can be prepared to show the general expression of the group.

The Likert method of "summated ratings." Just a few years after Thurstone's and Chave's equal-appearing intervals method

[21] Uhrbrock has discussed the more conventional measures of the mean and standard deviation for each item as a means to select items, instead of median values (or scale values) and semi-interquartile range (or Q-value). See Richard S. Uhrbrock, "Standardization of 724 Rating Scale Statements," *Personnel Psychology*, III (1950), pp. 285–316.

of attitude measurement appeared, Likert presented a paper describing the method of "summated ratings." [22] A series of statements are prepared that measure up to specified standards of clarity and appropriateness.[23] This list is presented to a group of subjects who are asked to place the statement in one of five categories based on their strength of agreement: strongly agree, agree, undecided, disagree, strongly disagree. Distributions in these five categories appeared to approximate a normal curve of distribution and indicated to Likert the possibility of scoring the items in a very simple manner instead of requiring a group of judges to estimate where they should fall on a continuum. The distance that a specific response fell from the mean (average) of the group was assigned a value, indicating how far from the average it was. With subsequent study, Likert developed a simpler method of scoring his items so that a weight of 1, 2, 3, 4, or 5 was assigned to the five alternate choices. The total score for an individual is the summation of all his scores according to the value of each statement that he endorses.

A method for selecting items was used. Upper and lower criterion groups were obtained (the upper and lower 10 per cent according to the summated scores on the series). Each of the items was examined to see if it discriminated between the two groups. The 20 or 25 items that showed the greatest difference between groups were retained.

The Likert method has the advantage over the Thurstone method in that it is not necessary to have a group of judges distribute the items into piles representing equal intervals.[24]

Measurement of Employee Satisfaction

The techniques that have been described above, some of them elaborate ones, are designed to get at what is wrong. They utilize items constructed for the particular situation. They can yield a composite or total score that will reflect general or over-all em-

[22] See Rensis Likert, "A Technique for the Measurement of Attitudes," *Archives of Psychology*, XXII, No. 140 (1932), p. 55.

[23] These standards are discussed in G. Murphy and R. Likert, *Public Opinion and the Individual* (New York: Harper & Bros., 1937), pp. 281–83.

[24] The two methods have been compared empirically. See Allen L. Edwards and Kathryn C. Kenney, "A Comparison of the Thurstone and Likert Techniques of Attitude Scale Construction," *Journal of Applied Psychology*, XXX (1946), pp. 72–83.

ployee satisfaction, if the coverage of areas of the total situation on which attitudes are probed is adequate.

A simpler method for obtaining over-all employee satisfaction is available,[25] developed and evaluated by Brayfield and Rothe. The method can be combined with specific attitude items or used by itself. It has the following characteristics:

1. It yields an index of general, over-all employee satisfaction.
2. It is applicable to a wide variety of situations and jobs.
3. It is sensitive to variations in attitude.
4. The items seem fairly realistic.
5. It yields a reliable index.
6. It is brief, easily used, and easily scored.[26]

Brayfield and Rothe used a combination of the Thurstone and Likert methods, described above, in construction of the scale. They began with 1,075 statements or items, ending with 18 items. For a revised form, scoring weights (Likert) for each item ranged from 1 to 5; the range of possible total scores for the 18 items is 18 to 90, with a neutral point of 54. The form, together with directions for respondents, is reproduced as Figure 7.3. For the sample studied, Brayfield and Rothe found the scores from the 18-item scale to be highly correlated (coefficient of correlation of .92) with scores obtained from the earlier Hoppock blank, Form 11.[27]

Implications to Management

It is essential that management let workers know that consideration is given to their expressed opinions and feelings. They must also let workers see that they are trying to improve the conditions pointed up by the survey. In each case in which management takes remedial action prompted by the survey, this should be made known to the employees. In one company, the employees had expressed considerable dissatisfaction with the pay setup. As a result, when the company proceeded with job evaluation plans, it informed the employees through employee participation in planning, by bulletins, and by individual letters that this move was made because of their request.

Care in follow-up will interest employees in future plans of man-

[25] A. H. Brayfield and H. F. Rothe, "An Index of Job Satisfaction," *Journal of Applied Psychology*, XXXV, No. 5 (1951), pp. 307–11. The method is being used experimentally by the writer and his associates in two situations.

[26] Adapted from Brayfield and Rothe, *ibid.*, p. 307.

[27] Robert Hoppock, *Job Satisfaction* (New York: Harper & Bros., 1935), p. 303.

JOB QUESTIONNAIRE

Some jobs are more interesting and satisfying than others. We want to know how people feel about different jobs. This blank contains eighteen statements about jobs. You are to cross out the phrase below each statement which best describes how you feel about your present job. There are no right or wrong answers. We should like your honest opinion on each one of the statements. Work out the sample item numbered (0).

0. There are some conditions concerning my job that could be improved.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

1. My job is like a hobby to me.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

2. My job is usually interesting enough to keep me from getting bored.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

3. It seems that my friends are more interested in their jobs
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

4. I consider my job rather unpleasant.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

5. I enjoy my work more than my leisure time.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

6. I am often bored with my job.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

7. I feel fairly well satisfied with my present job.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

8. Most of the time I have to force myself to go to work.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

9. I am satisfied with my job for the time being.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

10. I feel that my job is no more interesting than others I could get.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

11. I definitely dislike my work.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

12. I feel that I am happier in my work than most other people.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

13. Most days I am enthusiastic about my work.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

14. Each day of work seems like it will never end.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

15. I like my job better than the average worker does.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

16. My job is pretty uninteresting.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

17. I find real enjoyment in my work.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

18. I am disappointed that I ever took this job.
STRONGLY AGREE AGREE UNDECIDED DISAGREE STRONGLY DISAGREE

Source: Brayfield and Rothe, "An Index of Job Satisfaction."

FIG. 7.3. Revised job satisfaction blank.

agement. Neglect of this phase is likely to result in intensification of employee dissatisfaction because the workers become convinced that management is not going "to do anything about it after all.

That was just a bunch of talk." A value from attitude surveying not often discussed but nevertheless quite realistic is its public relations influence. Word soon gets around town that the management of Company A is asking its workers to tell them what they dislike about the company. Where visible improvement results, people in the community begin to feel that Company A is the place they would recommend to their brothers or sons when they apply for work.

Summary

Attitude surveys are important to employees, managements of labor unions, and managements of industrial enterprises. It is commonplace that policy decisions are usually based on scanty information about the feelings of workers. It is known that foremen and supervisors are poorly equipped to transmit workers' feelings and desires to management. By surveying attitudes—defined as potential behavior patterns—managements are able to base policy decisions on factual information. Such surveys provide a system for communications from the bottom up. They also reveal trouble spots in an organization. Their use has the value of allowing the worker to express himself and, if survey results are used, to have the feeling of participating in management decisions. He likes to know that the firm thinks enough of him to ask him how he feels.

Managements get information on how workers feel by a variety of methods: grapevine or rumor; interview, guided or unguided; check list or multiple-choice questionnaire; the attitude scale measurement method. The last method, although perhaps too cumbersome and time-consuming for some industrial situations, is the most precise method. A device for measuring over-all employee satisfaction, one that may be used readily in almost any firm, is described.

The use of employee attitude survey data may improve worker satisfaction and provide a sound basis for improvement of personnel methods.

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Part Three

The Effective Management of Human Resources

8 Development of Assessment Methods

IN HIS *REPUBLIC,* Plato wrote: "In the first place, no two persons are born exactly alike, but each differs from each in natural endowments, one being suited for one occupation and another for another." [1] Plato was concerned with much the same sort of problem as we are today. Although he did not have to worry about filling many "jobs," he was conscientiously observing that some individuals were better suited to some jobs than to others. He was thinking of ways and means of seeking out those people who had particular abilities.

This sort of early thinking laid foundations for the discovery and measurement of differences among men and eventually for the application of methods for the selection of workers for different jobs.

There has been such a need through the years for some way to assess our fellow man that any system advertised skillfully has had a good chance of being accepted by a large number of people. Generally, the public is unable to distinguish between sound selection methods and the schemes of the pseudo-scientist. The story is told of a man who was recently operating a procedure system for the selection of salesmen. He had prepared an attractive manual, written in an intellectual style, describing his selection scheme. The basis of his system was phrenology, a Victorian doctrine holding that the bumps of the skull are related to personal traits, such as personality and charm, which would be helpful in achieving suc-

[1] Plato, *The Republic of Plato,* Book II. Translated by J. L. Davis and D. J. Vaughan (New York: Burt, 1866), p. 60.

cess in sales work. These bumps can be measured, and thereby, it was claimed, the selling performance of applicants predicted. It is a desirable thing to be able to select successful salesmen, but the only success part of this story is that the man was able to sell a number of these manuals to a convention of sales managers, at a considerable profit to himself.

Early Attempts—False Starts

During the nineteenth century, numerous systems for analyzing character traits were developed and presented as personnel selection devices. Most of the systems depended on alleged relation between bodily or externally discernible traits and traits of character. The pseudo-scientist merely sat down in his armchair and "dreamed up" a new system for analyzing people. The elaborate charts and diagrams which he drew to show alleged relationships were peddled to employers.

What were the reasons for the acceptance of these charlatans who had neither seen a laboratory nor objectively evaluated a system? First of all, they impressed their eager public by use of mysterious words, such as "psycho-dynamic mesmerism" or alleged thought-transfer through hypnosis, and "phrenology," the so-called "scientific analysis" of character from a study of the bumps of the head. Insecure persons have always tended to seize upon anything which might reveal the future to them. Astrologists scan the heavenly bodies and announce that they are able to see into the future. Not only does the "well-informed astrologist" claim to foresee coming events and guide his patron, as did Merlin in the court of King Arthur long ago, but he claims also to analyze his character from knowing the juxtaposition of the stars which were attendant at his birth. This is the sort of information people want. They are told that they are kind and affectionate, that they have good taste and love exquisite things, that they have alert minds and optimistic attitudes toward life. Rarely are character analyses uncomplimentary, since the astrologist can sell most easily what people want to hear. Jastrow felt that pseudologies arise in response to human needs. Craving for the dramatic bends truth to wishful imagination. Uncritical folk-minds devised homespun beliefs summarized as superstition. In addition, the learned mind, through the ages, has reached conclusions based on the scanty available evidence, in an

attempt to adapt belief to the patterns of accredited science of the day.[2]

The rapid growth of these various schemes may have delayed the pursuit of true scientific understanding for many years. Although some of the proposals may have been sincerely conceived, it is regrettable that they were not objectively evaluated before their wide acceptance.[3]

Let us examine a few of the better known systems for personnel appraisal which have operated under the guise of science.

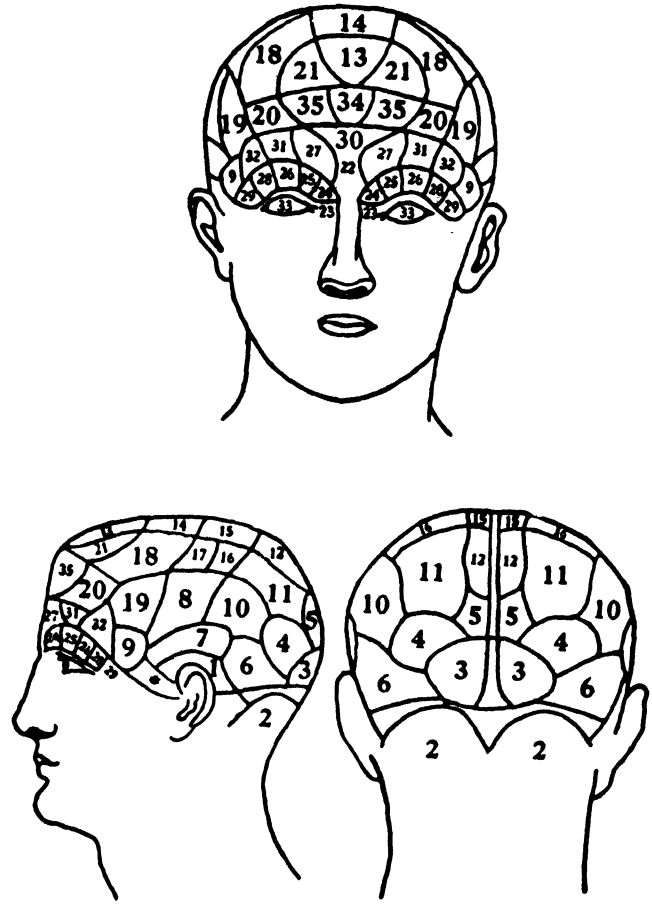
Phrenology. In the early part of the nineteenth century, an Austrian by the name of Franz Joseph Gall set forth his theory that bumps of the skull were related to traits of character. This theory has become generally known as phrenology, although Gall himself spoke of it as "crainoscopy" or "craniology."

The subjects he used for observation at first were pickpockets and lunatics whom he found in jails. He assumed that he knew their mental traits because they had been convicted of crime. After examining the skulls of many inmates, Gall deduced that there was a bump on the skull about two inches above the left ear which was related to "acquisitiveness"—that trait which "caused" the crime. Similarly, Gall observed the skulls of many of his friends and acquaintances, trying to relate the bumps on their skulls to those mental traits which he knew they possessed. He had noticed in women a slight bulge at the base of the skull. This was not present among the men he knew. He puzzled over this for some time, until one day, as he watched a female monkey playing with her offspring, he noticed that the same bump which he had seen in female humans was also present in female monkeys! Gall concluded that since this bump was not possessed by males whom he knew, it was surely related to some trait which only females possess. That trait he interpreted to be motherly love of children, or "philoprogenitiveness."

In all, Gall differentiated 37 faculties or alleged traits of charac-

[2] Joseph Jastrow, "Pseudology," *Handbook of Applied Psychology,* vol. I, ed. Douglas H. Fryer and Edwin R. Henry (New York: Rinehart & Co., Inc., 1950), pp. 41–42.

[3] An impartial, damaging critique on dianetics, a pseudo-science which its proponents claim will enable the emotionally disturbed person to become normal and even raise his intelligence level is available to the interested reader: cf. "Dianetics," *Consumer Reports,* August 1951, pp. 378–380. Of dianetics, the American Psychological Association voted to adopt a resolution that "these claims are not supported by empirical evidence of the sort required for the establishment of scientific generalizations." *The American Psychologist,* V (1950), pp. 548–49.



Source: E. G. Boring, *History of Experimental Psychology.* New York: The Century Company, 1929, p. 52. According to G. Spurzheim, *Phrenology, or the Doctrine of Mental Phenomena,* 1834.

FIG. 8.1. The "Powers and Organs of the Mind" according to Gall's theory of phrenology.

ter. (See Figure 8.1.) Gall declared that such faculties could be traced to a certain area of the brain. With the help of his student, later his collaborator, Spurzheim, he constructed elaborate charts showing the location of the seat of each faculty. Protuberances of the skull over these areas could be measured by using some suitable instrument, such as calipers, or by passing the hand over the skull, thereby determining the degree of a trait which a person possessed. These were the basic assumptions upon which phrenology depended. The doctrine was immensely popular. Here was a device

which any person could use to analyze himself and his fellow human beings. The charts showing the location of the faculties were precisely drawn, and the words labeling the traits were fashionably high-sounding, scientific names—philoprogenitiveness, alimentiveness, amativeness. A number of esteemed intellectuals on the Continent supported the cause, although it was not encouraged by the men of science of the period.

Physiognomy. Closely allied to phrenology is physiognomy, the appraisal of personality traits from discernible physical characteristics such as the shape of the chin or ears, the length of the nose, or the color of the hair. The acceptance of this belief was easier because of our tendency to associate a person's behavior with other characteristics we notice. If we see our red-haired friend display signs of anger, we shrug and say, "What else can you expect? He's a redhead!"

Such association of physical traits with personality traits is not uncommon in employment offices today. In a company which was recently seeking traveling salesmen, an apparently desirable applicant was dismissed from consideration by a person who had about fifteen years' experience in hiring men. When asked what prompted him to refuse the man, the employment manager replied that he had noticed that the applicant had a short upper lip. It had been his experience, he said, that men with short upper lips could not be trusted with company funds. Therefore, although the man was otherwise well qualified for the position, he was unwilling to hire him. In the employment situation, many people hire on "hunches." These are often simply guesses based on the physical impression which the applicant makes.

Physiognomy manifests itself, too, in the frequent request of companies for photographs of applicants. There is a good reason for this request in some cases. It may serve as an identifying device to aid the executive in connecting names with faces. Or, if the position under consideration requires that the person be neat and attractive, it is quite possible that these traits might be apparent in a photograph. To the extent that a photograph will be obtained which is representative of the applicant's habitual manner of dress and grooming, there is probably no reason to take exception to its use. The main trouble is that commonly too much is interpreted from the picture. There is little value in using the photograph as a basis of judgment for the selection of workers if one is attempting to determine personality traits from it.

In point are the several studies of Anderson [4] and McCabe [5] in which men were asked to judge several traits of character from looking at photographs. These photographs were then turned face down and the judges were asked to make guesses on the same traits without reference to the pictures. When the resulting data had been treated statistically, it was found that looking at the blank side of a photograph was just as effective in determining the likely traits of the person as was careful study of his photograph.

We may enumerate several points which result from data collected on the use of photographs as a selection device:

1. Judgments could be made as accurately with closed eyes.
2. Two or three judges working together are no more accurate than a single judge.
3. So-called professional character analysts are no better than other judges.
4. Women judges are no better than men, the old no better than the young, and the intelligent no better than the stupid.

Experimental results by competent psychologists such as Landis and Phelps,[6] Cleeton and Knight,[7] Viteles and Smith,[8] lead one to question the advisability of depending merely upon observation of physical characteristics as a reliable means of selecting employees.

Graphology. A procedure in common use by some concerns for determining the fitness of an applicant is the judgment from handwriting, so-called "graphology." The graphologist claims that he can tell what a person is like from his handwriting. For example, a person writing with neat, small letters is judged to be neat and precise in his bearing. Bold handwriting with many flourishes suggests that the writer has imagination of the sort that is particularly valuable in advertising work.

Some of the graphologists go even a step further than this. They claim that the fineness of a line, the length of the cross on a *t*, or the fact that an *a* is open or closed will reveal further information

[4] L. D. Anderson, "Character Judgments from Photographs," *Journal of Applied Psychology,* V (1921), pp. 152–55.

[5] F. E. McCabe, "The Relations between Character Traits and Judgments Based on Photographs," cited in C. L. Hull, *Aptitude Testing* (Yonkers-on-Hudson: World Book Co., 1928), pp. 114–19.

[6] C. Landis and L. W. Phelps, "The Prediction from Photographs of Success and of Vocational Aptitude," *Journal of Experimental Psychology,* XI (1928), pp. 313–24.

[7] G. E. Cleeton and F. B. Knight, "Validity of Character Judgments Based on External Criteria," *Journal of Applied Psychology,* VIII (1924), pp. 215–31.

[8] M. S. Viteles and K. R. Smith, described in M. S. Viteles, *Industrial Psychology* (New York: W. W. Norton & Co., Inc.), 1932, pp. 186–90.

about a person's character. A person who uses little circles instead of dots for an *i* is likely to be impressionable, one who follows every fad. The person who uses extravagantly long crosses on a *t* is extravagant in fact. It might seem that personal characteristics are revealed in handwriting, but actually there is not enough proof to substantiate it.

Some years ago Hull,[9] with the assistance of Montgomery, made a classic study of this problem. They conducted a series of experimental studies to discover what foundation there was for the claims of the graphologists. Their goal was to examine the relationship between the lines and slopes and shapes of letters and the traits which graphologists assigned to them. The experimental group was composed of members of a medical fraternity, and each man was well acquainted with each of the others. These men were asked to rate each other on such traits as forcefulness, pride, bashfulness, ambition, and perseverance. After the ratings were completed, each man submitted a sample of his handwriting. According to the graphologists, there should have been a direct relation between the judged traits and the handwriting. These samples were subjected to careful examination but the results were not conclusive enough to bear out the claims of the graphologists. Generally, the agreement between traits and handwriting was no better than chance.

Crider had two graphologists judge handwriting samples on some of the same traits which several standardized psychological tests were developed to measure. He found that the judgments of the two graphologists did not agree with test scores on the several traits, that the graphologists did not agree with each other, but that the graphologist with twenty years of practice in graphology agreed consistently with himself.[10]

The work of Edwin Powers,[11] of Dartmouth College, is evidence in favor of the graphologists. The technique of his experiment was to have personality sketches prepared on ten persons, emphasizing such features as habits, interests, and attitudes. The sketches of these persons and photostatic copies of their unidentified hand-

[9] C. L. Hull and R. B. Montgomery, "An Experimental Investigation of Certain Alleged Relations between Character and Handwriting," *Psychological Review*, XXVI (1919), pp. 63–75.

[10] Blake Crider, "The Reliability and Validity of Two Graphologists," *Journal of Applied Psychology*, XXV (1941), pp. 323–25.

[11] Edwin Powers, *Graphic Factors in Relation to Personality*. Hanover, N. H.: Dartmouth College Library, 1930. For a condensed summary of Powers' work see P. E. Vernon and G. E. Allport, *Studies in Expressive Movement* (New York: The Macmillan Co., 1933), pp. 212–23.

writing samples were given successively to a group of undergraduate students, a group of faculty members, and a group of graphologists. The problem was to match the handwriting sample with the proper personality sketch. The outcome of the experiment was that the group of graphologists and the group of undergraduates matched the samples with a greater degree of accuracy than would have been possible from chance alone; the faculty group did not show such accuracy. The graphologists as a group appeared to give better judgments than either of the other groups.

In evaluating the evidence on both sides of the picture, one feels obliged to conclude that, if techniques were further developed, there might be some usefulness in the graphological approach. At present, there is not sufficient evidence to warrant its adoption. It is important to point out that available results of graphology do not, in general, compare favorably to the higher degrees of value which have been attained by properly validated selection tests.

Early Attempts—Sound Beginnings

For a long time, speculations about why men thought as they did or how they felt under various circumstances had been important to the philosophers and early students of human nature. In their writings they discussed man's reasoning, his volition, his emotions, and, later, his behavior. During the latter half of the nineteenth century, some of the philosophers ventured away from the armchair and entered the laboratory. Piece by piece, various phases of philosophy were taken over by biologists, physicists, and physiologists, who established laboratories for the more exact description and measurement of natural phenomena. Still another slice of the philosopher's domain was taken over by a group of thinkers who believed that human nature itself could be described, measured, and predicted by laboratory—or experimental—techniques. The early psychologists during this time concerned themselves with problems of general laws of mental processes. It was not until the late nineteenth century that much significance was attached to the differences between individuals.

Discovery of the personal equation—differences between workers. Something portentous happened in 1796. The royal astronomer of Greenwich Observatory felt obliged to dismiss an employee who was his laboratory assistant. Astronomer Maskelyne had been interested in the problem of the measurement of the time for passage of stellar bodies. His method, the so-called "eye and ear" method

in vogue at that time, presumed that the ear could be attuned to the beatings of the seconds of a clock, so that the exact moment at which the stellar body crossed a wire in a telescope could be visually noted and accurately determined.

Maskelyne and his employee, Kinnebrook, recorded the stellar events together. At first Maskelyne was satisfied that their observations coincided, but in time he became convinced that Kinnebrook was deliberately recording a different set of observations from his own. He warned Kinnebrook that this error of difference in their observations was serious and was not to be tolerated. Probably Kinnebrook tried to correct his error. At any rate, he did not succeed, and he was fired when the difference in observations persisted.

Another astronomer, Bessel, happened to read of the event in a scientific journal, and mused over the "error" of a presumably conscientious person like Kinnebrook. Because Bessel was puzzled, he began a few experiments of a nature similar to those of Maskelyne and Kinnebrook. If Kinnebrook's error had been large, Bessel discovered even larger ones. He found that there was so much difference between the observations of people that he was able to present the data in terms of an equation:

$$\text{Recorded time of Observer A} - \text{recorded time of Observer B} = \text{time in seconds}$$

This equation became known as the "personal equation," and during the 1830's astronomers corrected for it.

The problem was now out of the realm of astronomy for it had become a study of the differences between individuals. The psychologists later took the problem into their laboratories to study the nature and extent of such differences. The development of methods for personnel selection stems historically from these early studies.

Some indirect contributions. Wilhelm Wündt was recognized not because he set up basic patterns of thinking but because he was the acknowledged leader of a group that broke away from the philosophic masters and defined psychology as an experimental science. This school of thought founded by Wündt was implemented in 1879 at Leipzig by the establishment of the first laboratory specifically devoted to psychological problems. In 1881 the first journal for the publication of experimental studies in psychology appeared.

Experimental psychology tended at first to shift the emphasis away from differences between people and toward specific descriptions of how the human mind works. However, its chief contribution was that it demonstrated that psychological phenomena can be objectively and quantitatively analyzed in the laboratory.

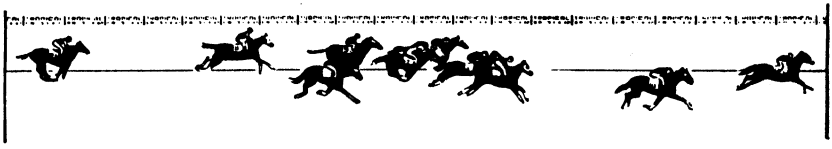
Perhaps more valuable eventually to applied and personnel psychology was the behaviorist doctrine, which changed the whole appearance of the field of psychology for many people. Psychology under the behaviorists was objective, observational. They said that behavior could be impersonally observed and measured. They said, "We do not believe in looking within one's self for an explanation of behavior. That is imaginary. We will watch how a person behaves in a work situation or a social situation and record and measure his behavior." They were interested, too, in the learning process and the conditions under which learning takes place. Tests were gradually developed to measure human behavior and differences in aptitude and performance. These tests form an integral part of present day personnel methods.

Examples of direct contributions. The rise of psychology as an experimental science did not immediately make it useful in practical situations. Industrial psychology is primarily interested in people in work environments. All of these people are complex individuals with different habits, abilities, and goals in life.

A man who recognized the importance of measuring the individual was Sir Francis Galton. Galton had been much impressed by the work of the Belgian statistician, Adolph Quetelet, who kept many records on social data such as births, deaths, marriages, crimes, diseases. Quetelet demonstrated that this sort of information gathered from an unselected population tended to form a definite symmetrical pattern of distribution, called by the statisticians a *normal* or *Gaussian* curve. Quetelet explained such a distribution by saying that nature seemed to have been trying to achieve an average ideal man, *l'homme moyen,* but successive attempts to hit the mark had resulted in a few shots falling short of or exceeding the common mark.

An interesting example of such a distribution is to be found in the photograph in Figure 8.2, showing horses at the race track just before the finish. A few are in the lead, an equally small number lag behind, but the majority are grouped in intermediate positions. The relative position of the horses furnishes a vivid demonstration of the normal distribution of performance.

Sir Francis Galton was so impressed by the theories of Quetelet that he set up his own laboratory in 1882 in order to measure many individuals. Galton's brilliant mind invented statistical tools which are among the most important of our present day techniques: the method of correlation, with which he attempted to explain the closeness of relationship between human variable traits; the rating-scale method; the concept of the median; the use of standard scores. He is responsible for the development of several mental tests, vestiges of which are still in use, by which differences between individuals are measured. He also formulated a questionnaire devised to measure personal and social adjustment.



Courtesy of the Crowley Camera Co., Hempstead, N. Y.

FIG. 8.2. Illustration of individual differences: horses at finish of a race at Tropical Park.

To industrial psychologists, recognition of this variation from one individual to another is of prime importance, and the measurement of that variation for selection, adjustment, and retention of workers is one of the goals of the personnel technician.

Foremost among Wündt's students to aid the growth of industrial psychology was James McKeen Cattell. He observed in 1903 that "the nineteenth century witnessed an extraordinary increase in our knowledge of the material world and in our power to make it subservient to our ends; the twentieth century will probably witness a corresponding increase in our knowledge of human nature and in our power to use it for our welfare." [12]

In Cattell we see two movements in psychology combined: the experimental method and the measurement of individual differences. While at Columbia University, he pioneered plans for the systematic testing of freshmen and senior students.[13] This series included typical tests of that time, such as the rate of arm movement, reaction time to sound, and strength of grip.

A variety of tests were devised and checked to see if they reliably

[12] M. S. Viteles, *The Science of Work* (New York: W. W. Norton & Co., Inc., 1934), p. 53.

[13] J. M. Cattell and L. Farrand, "Physical and Mental Measurements of the Students of Columbia University," *Psychological Review,* III (1896), pp. 618–48.

differentiated persons from one another and to determine how a given individual scored with reference to the rest of the group. Cattell was instrumental both in showing how psychology could be usefully applied and also in establishing, in 1921, an agency, the Psychological Corporation, for stimulating interest in this direction.

Cattell's early work in America with mental tests for college students set the pattern for further research in the same area. Independent groups devised innumerable mental tests; they circulated many of their results and methods in journals of the day, and corresponded with others who had tried out their systems. It was not long before the scientists themselves saw the need for collating their findings. Finally, in 1906, the American Psychological Association founded a permanent committee whose function was to control the development of psychological tests and measurement devices.

Meanwhile in France, Alfred Binet was laying the foundation for what we now call intelligence tests.[14] He recognized that intelligence is developing in childhood and he sought to measure these changes by controlled laboratory methods. About 1905 Binet constructed the first scale for the measurement of intelligence. He perhaps had more to do with the development of mental tests than any other individual, although there has been much improvement in tests now used in business and industry. Binet-type tests are used rarely, if ever, in these situations today.

Another of the students from the Wündtian laboratory who directed the course of the new personnel technology was Hugo Münsterberg, originally a German psychologist who spent the latter part of his life as director of the Psychological Laboratory at Harvard University. Münsterberg was the first to formulate the role of psychology in promoting the adjustment and efficiency of a worker in an industrial situation. He indicated that in industry the psychologist can serve by: *first,* finding the men whose mental skills and abilities make them best fitted for the work they have to do; *second,* determining the physical and motivational conditions under which the most satisfactory output can be obtained from every man; and *third,* fostering worker and executive attitudes toward these problems which are desirable for the interest of business

[14] For an excellent review of Binet's experimental work see Edith J. Varon, *The Development of Alfred Binet's Psychology. Psychological Monographs, No. 207,* XLVI (1935), p. 129.

and industry. For the attainment of these objectives Münsterberg outlined definite proposals involving the use of tests in the selection of workers; the applications of findings on learning in training industrial personnel; the study of psychological techniques of conditions of work, the motives of workers, and factors producing fatigue.

Not only did Münsterberg advance his theories but he performed experiments that proved the value of scientific selection of workers. His well-known street railway motorman experiment was primarily designed to assist in lowering the number of accidents by locating the human weaknesses which contributed to them. By constructing a device which approximated the conditions of driving a streetcar, Münsterberg was able to weed out most of those drivers who were predisposed to accidents. However, Münsterberg pointed out that much work needed to be done by both science and industry before the classification of workers by such devices would be wholly trustworthy.

Contributions of World War I

This, then, was the state of affairs at the beginning of World War I. The military war plans officer realized that psychologists were in a position to make strategic contributions toward the war effort. The psychological service in the army was originally planned as an aid to the medical officers in rejecting those unfit for service.

Mental tests. Mental testing received immediate attention. The war presented psychologists with a huge laboratory of subjects upon whom to test the worth of their selection techniques. Up to this time it had been possible to test only individuals, or, at best. small groups. There were few examiners skilled enough to administer the cumbersome individual tests which had been prepared up to that time. It was necessary to devise a test that many people inexperienced in testing could administer and which could be scored with ease and rapidity. A tentative test was drawn up on the basis of earlier tests of Binet and others. It was tried out on a thousand men and then revised. The final form is known as the original *Army Alpha Test.*

By January 31, 1919, the Army mental tests had been given to 1,726,966 men, plus 42,000 commissioned officers. Of the total, 7,800 (0.5 per cent) were recommended for immediate dismissal. This psychological examination showed them to be so inferior mentally that attempts to train them were unjustified. An additional

10,014 (0.6 per cent) were assigned to labor battalions because of low intelligence. There was also a group of 46,347 men identified with a mental age under 10 years; it was considered improbable that these men were worth what it cost to equip, train, and maintain them as soldiers. Of the men given the *Army Alpha Test,* it was found that 25.3 per cent were unable to read newspapers or write simple letters home. These men were also given the *Army Beta Test,* a nonlanguage test for illiterates. A total of 1.75 per cent were found to be unfit for military service.[15]

Trade tests. During World War I there was a great demand for skilled personnel to carry on the specialized tasks of the Army. To meet these demands and to increase production on jobs, it was apparent that men should be sifted carefully by Army interviewers in order to find the man best suited to a task. America discovered what Plato had known centuries ago: that each man has special "endowments" which fit him to a job and that it was up to us to "choose out, if we could" those special qualities which fitted him to the job.

Whatever devices were constructed, they had to be administered easily to many men by interviewers who were generally unskilled in the occupations for which they were selecting men. It became clear that before such tests could be constructed, it was necessary to have some knowledge of the duties and skills required by the jobs to be filled. Tables of military occupations were drawn up. In addition, the physical, educational, intellectual, and leadership specifications for each job had to be shown.

The sifting device which resulted was the *trade test,* designed to measure proficiency on certain elements of a trade by measuring skill or technique in performing operations and by measuring knowledge or information. The questions of the test were so constructed that they yielded an objective appraisal of a man in a very short time. It permitted recognition of the education or skill possessed before induction, and it shortened the training period by making use of such knowledge.

Various contributions to the utilization of manpower resulted from the efforts of the personnel technicians, largely from the use of an intelligence and trade skill index which was assigned to each soldier:

[15] National Academy of Science, "Psychological Examining in the United States Army," *Memoirs of the National Academy of Science,* XV (1921), pp. 99–100.

1. The dangerously unfit were eliminated, saving innumerable dollars.
2. Mentally inferior men were gathered into labor battalions.
3. Uniform mental strength within and between battalions was made possible.
4. More accurate selection was made for training in colleges and technical schools for military occupational specialties.
5. A more adequate selection of men for special assignments resulted.

Personnel Research Following World War I

When the end of the war reduced the need for this type of research on a wide scale, work on refinement of the methods was slowed down. Personnel techniques had made strides. A considerable amount of groundwork had been laid by Army personnel technicians. Later, as these men went into industry, industrial men became interested in research in personnel methods. Individuals set up laboratories for further exploration in their various fields of interest. Steadily, interest in the applications of personnel techniques increased.

Cooperative programs between universities and industry began, such as the Bureau of Salesmanship Research, which was founded at the Carnegie Institute of Technology in 1922. A number of firms contributed funds so that this Bureau might do research for member companies in the area of selection of salesmen.[16] A psychologist was kept on the staff of the Bureau with the idea of improving sales by making use of psychological techniques in selecting salesmen. A job-satisfaction form was developed for surveying the job attitudes of the sales agents. Improvements in the interview procedure were studied.

Such interest in personnel research, while not widespread, allowed a measure of hope that sound methods might be forthcoming. By and large, efforts to improve selection techniques proceeded on an individually sponsored basis. One reason for this might be that each company felt its problems were unique in one way or another —a salesman for a soap company requiring a somewhat different array of talents than a salesman for a machine tool manufacturer. Some industrial firms, the Procter and Gamble Company and the Philadelphia Electric Company, developed their own personnel re-

[16] Terry Armstrong, "The Life Insurance Bureau: What It Is, How It Operates," *Sales Management*, LIII, Part 2, No. 23 (1944), pp. 83–89.

search facilities. Such beginnings were quite worth while in that there was formed a nucleus of programs which could lead to substantial saving as the methods for selection and use of personnel improved.

With the pinch of the depression during the 1930's most plans for development of research, not only personnel research but investigations in product and marketing problems as well, were stalled. All over the country, bread lines formed, as man after man was deprived of the security of a job. Many men took any kind of work that would yield them some income. Welders became sweepers; stone masons became WPA painters or riprap men; a man who had been a skilled draftsman eagerly went to work as a ditchdigger to eke out an existence for his family.

A group of people at the University of Minnesota were interested at this time in several aspects of the unemployment situation. Assuming that the most skilled or most valuable employees had been retained by the firms in a period of layoffs, what were the particular skills and abilities of the group still employed as compared with the group which was laid off? If one of two men must be laid off, what was the basis for determining which man must go? And, what was the particular makeup of the occupations themselves that caused certain ones to increase in importance and others to disappear from the work scene? A summary of the results of that research is found in *Men, Women, and Jobs,*[17] the report on results of the project of the Minnesota Employment Stabilization Research Institute.

Part of the analysis necessary in answering the questions posed by this Institute was supplied by the Occupational Research Program of the United States Employment Service. For some time, it had been thought that cooperation between industry and government agencies might produce valuable information for use in employment and training situations. In 1934, a start in cooperative research in matching men and jobs was realized in the creation of the Occupational Research Program. This program called together the combined resources of knowledge of universities, private and public employment agencies, and the collaboration of many industries.[18]

[17] D. G. Paterson and J. G. Darley, *Men, Women, and Jobs* (Minneapolis: University of Minnesota Press, 1936), p. 129.

[18] Up to June, 1940, the Program used $2,618,158.30 for personnel research. It was financed by the Spellman Fund, the National Occupational Conference, the United

The chief objective of the Program was to initiate essential development work in the field of occupations related to the needs of the United States Employment Service itself, as well as of other agencies. One of the major results of the research was the *Dictionary of Occupational Titles,*[19] which contains definitions of about 21,000 occupations and serves daily as a reference guide in employment and counseling situations. During World War II the *Dictionary* was used by draft boards in helping to determine which occupations were to be classed as "essential" or "nonessential." The *Dictionary* was also used in the Army reception centers to help verify civilian occupations claimed by recruits. It was a kind of informal interview aid. It made possible a system for the classification of civilian occupations and assigning a military counterpart (Military Occupational Specialty) where indicated. Uniform codes and titles facilitated handling soldiers from one service center to another.

Job descriptions were prepared on special occupations of the major industries, such as the automobile, textile, and meat-packing industries. In addition, several selection aids, such as trade tests and aptitude tests, were constructed, which would enable the United States Employment Service to supply more accurately selected applicants for positions in industry. Thus, although many of the devices were not directly available to industry, many benefits from them were received through the increased knowledge and methods which resulted from the Program.

Personnel Research in World War II

It is difficult at this time to evaluate the contributions of personnel research during World War II (the history of this large-scale personnel research will be written during the next decade), but at least a few of the areas developed during the war may be highlighted.

The Army was faced with several unique problems in the allocation and use of personnel. First of all, there were tremendous numbers of men who varied greatly in mental ability, physical characteristics, and emotional makeup. In some way, these men had to

States Employment Service, the National Re-employment Service, the Works Progress Administration, and the American Youth Commission of the American Council on Education.

[19] United States Employment Service, Division of Occupational Analysis, *Dictionary of Occupational Titles. I. Definitions of Titles,* 2nd ed. (Washington: Government Printing Office, 1949), p. 1518.

be sorted into usable classifications and matched against the kinds of specialties that exist in the military establishment. Experience in World War I had shown that waste would result from placing men on jobs for which they were not suited and that, on the other hand, valuable increases in efficiency per man would result from using talents and skills which were already possessed. There was also the matter of time, important in terms of saving human lives.

At the 96 Army induction centers, recruits were put through a rough screening process. Here the Army was concerned only with the simplest skills required of a basic soldier. From a personnel technician's point of view, these were "rejection centers" where men were identified as:

1. Those men extremely low in mental capacity and reading ability, classed as feeble-minded (such men were unfit for military service);
2. Those men illiterate in measurement but who had a capacity for training (these men were called pre-literate and were sent to special training units to learn to read at the equivalent of fourth grade level);
3. Those men tested and rated as trainable (they were passed on to the next station, the reception center).

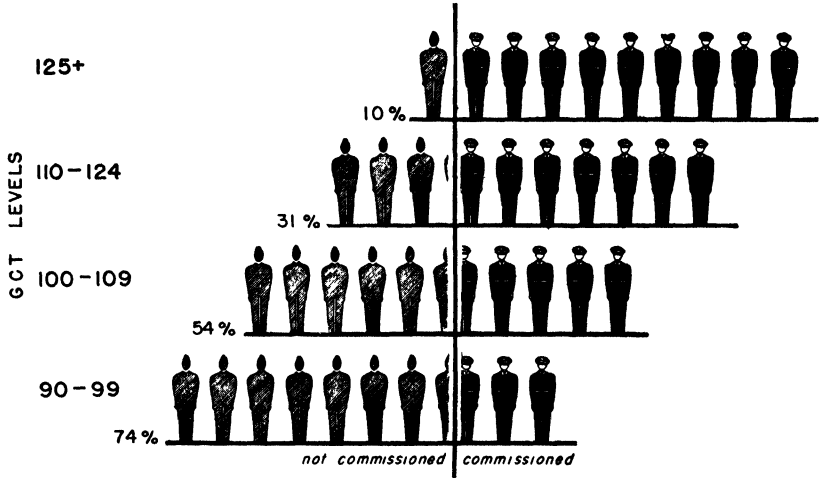
One of the most significant measures for the allocation of men was the *Army General Classification Test,* administered at the reception centers. (It was made available for use in business and industry on April 9, 1947.) [20] One of its four equivalent forms has been given to more than 13 million Army personnel. It was found early in the war that the *Army General Classification Test* had dependable validity for selecting trainees for officer candidate schools. For this reason, a critical or "knockout" score was set at a standard score of 110. This eliminated the lower 69 per cent of the Army population or selected the most promising group comprising the top 31 per cent. Results of one of the many studies on the efficiency of this test in predicting success in Officer Candidate School are shown in Figure 8.3.

Also at the reception centers, the interviewer was aided in identifying and appraising the recruits' experience in peacetime occupations by using the *Dictionary of Occupational Titles.* The men were given a general battery of tests covering verbal, reasoning, and space abilities. Special aptitudes and abilities, such as clerical,

[20] *Army General Classification Test,* First Civilian Edition (Chicago: Science Research Associates, 1947).

mechanical, radio code-learning aptitude, night vision, and language aptitude were measured in some cases for sorting the men for assignment to schools for further training. By locating men with aptitude or some previous training, the Army was more nearly able to make maximum use of its manpower.

Information, both occupational and personal, was entered on the Soldier's Qualification Card of more than 14 million G. I.'s. At the Basic Training Centers the inventories of skills of these men were



Based on a study of 710 students in the Engineer, Ordnance, Signal Corps, and Coast Artillery Officer Candidate Schools. This chart shows the proportion of men who failed in OCS. For example: Of those men whose standard scores on GCT were between 110 and 124, about 31% did not make the grade. More than half of those who were accepted with GCT scores under 109 failed.

FIG. 8.3. Scores on the Army General Classification Test and failures in Officer Candidate School.

lined up against the requirements of the different military occupational specialties of the Army. Typical was the discovery of an overabundance of lawyers but too few cooks and bakers to match the tables of requirements rates of the Army. Actually, although the classification system of the Army sounds as if it were foolproof in screening and allocating men, it has been estimated that 10 per cent or more of the men were misassigned, owing to the need for speed and the existence of an unwieldy quota system.

The heritage for industry from military personnel research is voluminous. Short cuts in statistical techniques were developed. Literally thousands of validity indices of tests were computed. In addition, various manuals, such as the *Technical Manual of Per-*

sonnel Classification Tests,[21] were of considerable use in explaining the theory and application of personnel methods. A survey has been made of the various implications of armed services training, including the selection and allocation of men. In a booklet by Chambers [22] there is a bibliography that relates to the various aspects of the impact of war training on our peacetime living. These articles might furnish the basis for future applications and interpretations of wartime training. The techniques learned will carry over not only into industry but also into education fields. Particularly can personnel research be valuable in trainee counseling situations where the aptitudes of an inexperienced person should be channeled into interesting and productive work according to his individuality and according to the condition of the occupational markets.

Events Important to Personnel Technology

Events in divergent areas have implications for a complete description of the evolution of personnel technology. It is difficult sometimes to sharply separate the field of personnel from economics, sociology, or psychology. Certain major events which highlight the development of personnel technology are presented in a timetable inside the cover of this book.

Basic Steps in Evaluating Procedures

The characteristics of applied personnel science may be identified by the general steps that a personnel psychologist takes in the development and evaluation of a tool. These steps have come as a heritage from the laborious work that comprises the history of personnel science. The personnel psychologist:

1. Surveys the situation
2. States the problem
3. Studies methods used by others
4. Formulates a tentative method
5. Gathers data on the problem
6. Analyzes the data
7. Reports the results

Surveys the situation. Suppose that the personnel psychologist has been called in to set up a training program. Management has been

[21] *Technical Manual of Personnel Classification Tests,* TM 12-260 (Washington: War Department), 1944.

[22] M. M. Chambers, *Opinion on Gains for American Education from Wartime Armed Services Training* (Washington: American Council on Education, 1946), p. 78.

spending large amounts for training employees, yet the results have not been satisfactory. The problem may not be poor training so much as poor initial selection of workers for the training program. For instance, men who have low mechanical aptitude or little interest in becoming machinists may have been given mechanical training. Thus, the personnel psychologist may find by surveying the situation that the problem is not the original training problem brought to him for remedy, but a problem in selection screening.

In another case, the company may have had disputes with labor and may feel the need of a better wage administration system. The research psychologist finds, upon inspection of available records and from talking with management, that he will be unable to formulate such a wage plan until job analyses have been prepared, a job evaluation has been made, and the going community wage rates for similar jobs surveyed.

Inspecting the situation, the research psychologist finds out what records are available for his use, talks with managers about what they think the problem is, and decides whether the suggested problem lends itself to technical analysis from the standpoints of cost, time, and expediency.

States the problem. If the psychologist believes the situation lends itself to development, he presents the problem as he sees it. As discussed above, it may not be what management has suggested. He prepares a program outline or proposal of research, in which he designates the records he will need from the files, the people he might need to work with, the tentative methods with which he proposes to approach the study, the kinds of assistance and cooperation he will require from the company, the approximate cost of such a program, and a timetable showing anticipated progress stages.

At this point, the company may refuse the proposal, and further study will not be undertaken. Cost, of course, is a major consideration to management. The cost of the project will tend to vary directly with the length of time it takes. Frequently personnel studies take a long time. In fact, management often complains on this score. "I am in a hurry for a solution," they say. "It may take a year for you personnel psychologists to get an answer. I can't wait." A research project might very well take a year to complete. In some studies, for example, where at least two periodic merit ratings are desirable in order to develop and verify a new tool, time must be available to enable making careful observations of employees during two periods of at least six months each. Because the verifi-

cation of a tool requires that the tentative device be tried out several times before being called dependable, it may take considerable time to apply it to a sufficient number of experimental situations.

Management may shelve a study because it will appear to interfere with their first job, production. For example, managers may consider unreasonable a plan to conduct a comprehensive attitude survey of 500 employees. In such a case, the personnel psychologist must find less involved sampling methods for gathering information, or else the research will be abandoned.

If the proposal is approved, the research proceeds.

Studies methods used by others. As interest in personnel research has increased, more and more "case" studies are reported in publications. Valuable time may be saved by looking in *Psychological Abstracts* and similar sources for references to related work. Often industrial problems are written up in trade journals under specific types of industries—the chemical industry, the garment industry, the department store. The striking contribution of the technical literature in any field is that it not only prevents people from making the same mistake twice but also provides positive approaches, thus saving money and time.

Formulates a tentative method. Guided by his own previous experience, the experience of others, and the information he has gathered from surveying the situation, the psychologist may now advance a tentative method for conducting the study—tentative, because he may find some stumbling block to his original plan of action, or he may contrive a short cut which eliminates more extensive research. The tentative plan is a basic guide but can be revised as the necessity arises.

Gathers data on the problem. Gathering basic data bearing on the problem is the next step. If an attitude survey is being carried out, the psychologist issues questionnaires or conducts interviews. If his objective is a wage administration plan, he must begin by making analyses of all the jobs, preparatory to making an evaluation of them. He may be able to get enough information from records already available in the files. The personnel psychologist may enlist the aid of supervisors in making job analyses and merit ratings. Additional time may be saved by using several psychologists for a short time in place of one psychologist working alone over an extended period of time.

Analyzes the data. The personnel psychologist now begins to ana-

lyze his material, usually by statistical methods. For example, in a problem of employee selection, he wants a measure which will predict whether an applicant is likely to be a good worker or a poor one. Such a predictor could well be scores made on objective tests. By separating his men into two groups, those known to be "good" and those who are "poor" on the job, he can discover the characteristics distinguishing each group. He does not do this purely on the basis of inspection; he uses statistical techniques which establish whether the differences between the two groups are meaningful.

A tool developed in this fashion can be evaluated on the basis of whether or not it actually works in the practical situation. Does it always work? Does it work in 90 per cent of the cases? Does it work 50 per cent of the time? After analysis of the data by statistical techniques, the psychologist can say how efficient his tool was in performance.

Reports the results. Whatever his results might be, he reports them to management, usually in a nontechnical summary of the objectives, methods used, and results of the experimental trials. In discussing the tool itself, he will say, "In the experimental situation, I found. . . ." He uses the past tense. He says, "The tool was successful a certain percentage of the time. If the situation is similar in the future, the dependability of the tool is known. However, I recommend checking on the tool frequently to make sure that it continues to achieve its purpose."

Management is sometimes appalled by the seemingly imperfect results presented by the personnel psychologist. Why spend all this time and money on a tool that works only part of the time? The answer is that, whereas in the past, managers rarely, if ever, knew the accuracy of their judgments, now they have some foundation for their judgments and know the degree to which they are accurate. The savings that result from only a slight per cent decrease in the turnover rate, for example, are very tangible. The improved employee relations which result from placing employees on jobs for which they are best fitted are less discernible. Worker satisfaction in his job may be said to be of prime importance in effecting long-time personnel stability. The personnel psychologist can answer the questions which the logician in the armchair cannot answer: "How do you know it will work? What evidence do you have to support your decision?" He has presented his results in such a way that they can be checked and verified by another person. He

has made available a statement of his evaluation so that the resulting method will form the basis of further study and subsequent improvement.

Summary

As far back as Plato, the need was felt for a way to judge our fellow man and appraise his suitability for a certain job. Several false starts were made to devise systems for making judgments. Phrenology, a pseudo-system of the nineteenth century, depended upon measurement of the bumps on the skull; physiognomy related outwardly discernible personal characteristics to personality traits such as receding chin, indicating lack of aggressiveness; graphology supported handwriting as an index of character. These systems have never proved to be as worth while as many of our present day selection techniques even though they may persist in the minds of many people.

It was not until the nineteenth century that beginnings were made in the laboratories for the development of sounder methods for measurement and description of the nature of man. It had been discovered that there were great differences between individuals. Galton concerned himself with measuring these differences and devising statistical techniques to describe their relationship. Binet was instrumental in making tests which measured mental alertness. Münsterberg contributed to personnel technology by showing that psychological techniques could be applied to the industrial situation.

At the outbreak of World War I, personnel psychologists were called upon to assist in classifying men according to their various abilities. During the 1920's and 1930's there followed a period of personnel research fostered by industrial concerns. The research activity followed diverse lines, according to the needs as felt by different companies. The Occupational Research Program of the United States Employment Service was a major project undertaken to broaden knowledge in the field of occupations. Personnel specialists participated in World War II, directing sound selection and classification systems; today large scope *program research* is being undertaken. The research attitude has been established fairly well by emphasizing the need for verifying systems as they are devised, for trying them out before they are installed and used with confidence.

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9 Job Analysis: A Basic Tool

TO ACHIEVE the first part of management's goal, effective utilization of personnel, a number of tools are available. These will be discussed throughout this and the following chapters. Basic to other personnel tools is the job analysis procedure, by which management acquires accurate knowledge concerning individual jobs. *Job analysis* is a method whereby the duties, requirements, and skills of jobs are studied in an orderly way.

A survey made in 1930 of the status of personnel procedures in widely diverse concerns across the country showed that job analyses were made by 39 per cent of the firms participating. By 1947, this figure had risen to 66 per cent.[1] With the growth of large industry, management generally has been unable to keep in touch with evolutionary changes in job content. Seldom do executives enjoy up-to-date recorded information on jobs. Why hasn't job analysis been universally accepted and used in industry? The notion has been widespread and persistent that the information which job analysis yields is already known. The assistant controller of one of the world's largest department stores said dryly, "We have informal job descriptions—they are very informal."

Job Analysis Terminology—A Working Vocabulary

"Job analysis" as it is now known is a fairly new term. Fifteen or twenty years ago there was no such field of study. The term has been used to describe the time studies of F. W. Taylor, the motion

[1] Walter Dill Scott, Robert C. Clothier, and William R. Spriegel, *Personnel Management* 4th ed. (New York: McGraw-Hill Book Co., Inc., 1949), p. 587.

studies of F. B. and L. M. Gilbreth, and related studies made by industrial engineers. Taylor, the father of "scientific management," recommended that a job be broken down into its simplest operations, such as "load bricks on skid," in order to time these operations, with the idea of speeding up workers through work simplification and wage incentives. The Gilbreths broke the job down into finer motions, *therbligs* (their name spelled backwards), such as "tighten screw," "place washer in position," which they analyzed in order to arrange the movements of the worker more efficiently, to find the "one best way" of doing a job. The Gilbreths pioneered the work that is now accomplished in greater detail by use of micromotion cameras.

During World War II, the terms "human engineering," "biomechanics," and "biotechnology" began to be used to refer to adapting the machine to the operator, instead of selecting men to fit the machines.[2] The approach differed from motion and time study in that the motion and time engineer treats the machine as the constant and the man as the variable.

Nearly every kind of study made of a job has at one time or another been called "job analysis." The kind of job analysis considered here is broader in scope than the studies of Taylor or the Gilbreths. It relates to the tasks that comprise the job and to the skills, special abilities, and requirements for successful performance that differentiate jobs, described from the viewpoint of worker characteristics.

In the industrial vernacular, the words "job," "position," "task," and "occupation" might be used synonymously to describe work done. It is difficult to discuss job analysis meaningfully unless these terms are clearly differentiated. To this end, a brief glossary of terms will be helpful: [3]

Task: a unit of work or human effort exerted for a specific purpose. For example, setting up a turret lathe is a task. Tending the machine is another task. Cleaning the machine is still a third task. When enough tasks accumulate to justify the employment of a worker, one person, a position has been created.

[2] Jack W. Dunlap, "Men and Machines," *Journal of Applied Psychology*, XXXI (1947), pp. 565–79; A. Chapanis, W. R. Garner, and C. T. Morgan, *Applied Experimental Psychology* (New York: John Wiley & Sons, Inc., 1949), p. 421.

[3] These terms were developed in the course of the Occupational Research Program. They are discussed more fully in Carroll L. Shartle, *Occupational Information*, 2nd ed. (New York: Prentice-Hall, Inc., 1952), pp. 65–70.

Position: indicates the service of one worker who accomplishes a set of duties or several tasks. Thus, a turret lathe operator's position may consist of the tasks of setting up the machine, tending and operating it, and cleaning it. Such duties comprise the individual's entire working obligation. There are as many positions in the plant as there are employees.

Job: a group of similar positions within a single establishment. Several turret lathe operators, all discharging the duties of setting up, tending, and cleaning similar machines, can be said to have the same job. There may be only one turret lathe operator position in a plant or there may be many, which go to make up this job. A new job is created only when job characteristics emerge—as a result of work simplification, technological change, or mere job evolution—which are different from those that are present in any existing job.

Job analysis: an orderly and systematic study of the characteristics, duties, and responsibilities of a specific job which differentiate it from all other jobs in a firm or across the country. The job analysis yields information of four kinds; these are:

1. JOB DESCRIPTION: a statement setting forth the characteristics, duties, and responsibilities of a specific job.
2. JOB SPECIFICATION: a written record of the minimum hiring requirements or standards which must be met by an applicant for a specific job.
3. JOB RELATIONSHIP: sets forth the progression of incumbents on jobs "promoted from . . ."; "promoted to. . . ." Relationship may also be shown to jobs in remote departments of the plant but which are found to require the same or similar characteristics of skill on the part of the worker.
4. OCCUPATIONAL INFORMATION (*see below*).

Job family: a grouping of two or more jobs which require the same worker characteristics, or have roughly the same specifications, as determined by their job relationships.

Occupation: a group of similar jobs found in several establishments. Operators of turret lathes, across the country, have the same occupation.

Occupational description: a composite of a group of jobs with common characteristics; it is, therefore, a generalized, highly typical description of a group of jobs. (See sample page from the *Dictionary of Occupational Titles* presented in Figure 9.1.)

Occupational information: includes all the above specific information about job characteristics; in addition, there is included information concerning industrial trends and changing occupational patterns, in the broadest sense.

Uses of Job Analysis

Why is there any need for formalized investigation of job duties and working conditions? Is it not apparent to all that if one says

rial through strainers, feed cylinders, extrusion and rolling machines, onto conveyor belt, and into atmospheric driers. Synchronizes speed of rolling machine and belt conveyor with speed at which material is extruded to insure uniform thickness of sheets.

DIE-OUT MAN (boot & shoe) *see* DIEING-OUT-MACHINE OPERATOR.

DIE POLISHER (wire) *see under* DIE MAKER (mach. shop).

DIE PRESSER (pottery & proc.) 6-66.452. **former; tube-machine operator.** Operates screw press or hydraulic press to squeeze clay materials into shape of electrical porcelain ware, such as insulators: Inserts steel die into press. Pours proper amount of pulverized, damp body-mix into press. Operates press to form ware.

DIE-PRESS OPERATOR (any ind.) *see* DIE CUTTER.

—— (paper goods) *see* DIE CUTTER.

DIE-PRESS OPERATOR, SMALL (paper goods) 8-42.01. A LABORER. Cuts a series of circle segments (scallops) into edges of paper napkins to finish them, using a small die press: Places stack of napkins against guides of machine bed. Depresses pedal to lower die and cut scalloped edges. Binds cut napkins into bundles by hand, using gummed tape.

DIE-RACK BOY (boot & shoe) 8-61.01. A LABORER. Selects from bins the dies for upper shoe parts as indicated by order tags. Sets the dies on wheeled racks and delivers them to the shoe cutters.

DIE REPAIRMAN (mach. shop) *see under* DIE MAKER.

DIE SCRAPER (mach. shop) *see* DIE FINISHER *under* DIE MAKER.

DIESEL-CATERPILLAR-CRANE OPERATOR (any ind.) *see* CATERPILLAR-CRANE OPERATOR.

DIESEL-DINKEY OPERATOR (any ind.) 7-40.010. Operates a small dinkey engine powered by a Diesel engine [DINKEY OPERATOR] to haul loaded and empty cars upon narrow or standard gage tracks. Steps on electric-starter button, or starts auxiliary gasoline engine to start Diesel engine. Starts, stops, and regulates dinkey by manipulating throttle, gear shifts, and brake lever or pedal. Throws track switches, and couples and uncouples cars in shifting, spotting, and hauling cars. Oils, greases, and makes minor repairs to dinkey.

DIESEL-DRAGLINE OPERATOR (any ind.) *see* DRAGLINE OPERATOR.

DIESEL-ENGINE ASSEMBLER (engine & turbine) *see* DIESEL-ENGINE ERECTOR *under* MACHINIST, BENCH.

DIESEL-ENGINE ERECTOR (engine & turbine) *see under* MACHINIST, BENCH.

DIESEL-ENGINE FITTER (engine & turbine) *see* DIESEL-ENGINE ERECTOR *under* MACHINIST, BENCH.

DIESEL-ENGINE INSPECTOR, MARINE (engine & turbine) 5-76.510. Inspects Diesel marine engine parts and assemblies: Examines engine parts, such as valves and cylinders, to determine that they meet specifications, using scales and precision measuring instruments. Supervises performance of pressure tests on various parts and rejects those that do not meet established standards. Inspects assembled engines to determine that all parts are in proper alinement. Observes engines under test operations for evidence of malfunctioning. Diagnoses causes of defective operation and rejects faulty assemblies for reprocessing. Prepares reports on inspection results.

DIESEL-ENGINE OILER (any ind.) *see under* OILER II.

DIESEL-ENGINE OPERATOR, STATIONARY (any ind.) 5-72.210. **stationary engineer, Diesel engine.** Operates stationary Diesel engine that supplies power for operation of generators or other plant equipment: Starts air compressor used as auxiliary starting power for Diesel engine. Turns fuel valve admitting oil to cylinder. Shuts down air compressor after combustion takes place. Observes gages to determine operating condition of engine, and makes necessary adjustments to correct defects. May make repairs to engine [DIESEL MECHANIC]. May oil and grease machine [OILER II].

DIESEL-HOISTING ENGINEER (any ind.) *see* HOISTING ENGINEER.

DIESEL-LOCOMOTIVE-CRANE OPERATOR (any ind.) *see* LOCOMOTIVE-CRANE OPERATOR.

DIESEL MECHANIC (any ind.) 5-83.931. Maintains and repairs Diesel engines used to power large construction machinery, electric generators, and similar machines and equipment: Performs duties, such as diagnosing trouble, disassembling engine, replacing defective parts, reassembling engine, and adjusting fuel and air valves. Uses wrenches, hammers, screw drivers, and other mechanic's tools.

DIESEL OR GAS-ENGINE ENGINEER (petrol. production) *see* ROTARY-RIG ENGINEMAN

DIESEL-PILE-DRIVER OPERATOR (const.) *see* PILE-DRIVER OPERATOR.

DIESEL-PLANT OPERATOR (light, heat, & power) 5-51.122. Places in service, operates, and makes minor adjustments and repairs to Diesel electric generating plants: Starts Diesel engines and synchronizes generator with other generators in operation or with other power services. Inspects equipment periodically, making minor repairs and adjustments to maintain efficient operation. Reads indicating and recording instruments and records operating data on log sheets. Executes switching orders to open, close, and tag electric circuits [SWITCHBOARD OPERATOR].

DIESEL-POWER-SHOVEL OPERATOR (any ind.) *see* POWER-SHOVEL OPERATOR.

DIESEL-ROLLER OPERATOR (const.) *see* ROAD-ROLLER OPERATOR.

DIESEL-TRACTOR OPERATOR (any ind.) *see* TRACTOR OPERATOR.

DIESEL-TRUCK-CRANE OPERATOR (any ind.) *see* TRUCK-CRANE OPERATOR.

DIE SETTER (fabric. plastics prod.) *see* MOLD SETTER I; SET-UP MAN.

—— (forging) 4-76.120. **die-set-up man; forging-machine set-up man; job setter.** Sets up dies in bulldozers, drop hammers, power brakes, power presses, and other forging machines, and adjusts them to normal operation: Removes used dies from machine by unscrewing bolts, and cleans scale or dirt from bed with a brush. Selects proper dies and lifts them to machine by hand or hoist. Bolts upper (male) die to movable block and lower (female) die in approximate center of bed or anvil of machine, using wrenches. Lowers male die to a point just above the female die and adjusts the latter until the raised impression on the male fits exactly in the corresponding depression in the female. Clamps female die in place by tightening nuts and adjusts length of stroke of male die. Operates machine to forge a few trial pieces, inspects them, makes adjustments, and turns machine over to operator.

DIE SETTER, DROP HAMMER (forging) **tool setter, drop forge; tool setter, drop hammer.** Sets up and alines the dies in a drop hammer which is used to forge heated metal parts into desired shape.

DIE SETTER, PUNCH PRESS (forging) **press setter.** Sets up and alines the dies in a punch press to shear, form, draw, assemble, or squeeze metal parts into shape or size.

Source: U. S. Employment Service, Division of Occupational Analysis (Washington: Government Printing Office, 1949).

FIG. 9.1. Page 387 of the *Dictionary of Occupational Titles*.

"turret lathe operator" the job is sufficiently and ably described? Isn't a turret lathe operator a person who operates a turret lathe?

On the surface, such thinking would seem to be warranted, but, as personnel technicians have discovered, a "turret lathe operator" to the foreman of Department No. 344 of Company A usually does not mean the same as "turret lathe operator" to the foreman of Department No. 177 of the same company. Different sets of minimum hiring requirements may be specified; incumbents of positions in the two departments usually discharge somewhat different duties; sometimes the workers perform tasks not at all similar.

There are innumerable personnel situations in which the information that job analysis yields is indispensable.[4] Job analysis is not to be thought of as a new-fangled tool for which one may some day find a use in the personnel program. There need be no hocus-pocus

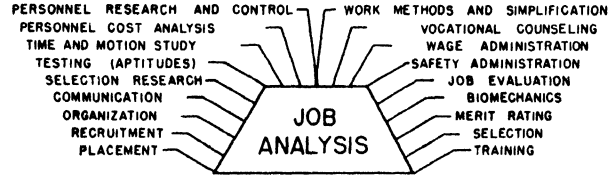


FIG. 9.2. Job analysis in its relation to other personnel methods.

in job analysis. The values derived from it will be small unless there is first a full cognizance of the areas which will benefit from applications of such a program. The best job analysis program is one which fulfills several recognized needs. These needs, as based on job analysis, are shown in Figure 9.2. It can be seen that nearly all personnel policy formulation and action relies to some degree upon job analysis.

Managements generally think of job-analysis products for a specific purpose, such as job evaluation. It is regrettable that job-analysis plans do not often include all the potential uses to which the job-analysis products may be put. Job analysis may be valuable, for example, in contributing to training program development; however, managements usually do not keep these various uses in mind when they first initiate and plan a job-analysis pro-

[4] See Shartle's discussion of the uses of occupational information: Carroll L. Shartle, *Occupational Information*, 2nd ed. (New York: Prentice-Hall, Inc., 1952) especially chap. I, pp. 1–27.

gram. For this reason, many programs have to be done again when additional needs become apparent. This goes back to the fundamental fact that not enough is known about the planning of improved personnel methods so that proper planning may take place at an early stage in the development of a program.

Job analysis aids in vocational counseling. Often the employment interviewer in an industrial personnel department is a vocational counselor, without benefit of title. Men who appear before him, possessing few or none of the skills or abilities required for the occupation they seek, may be counseled into accepting a more appropriate company job, thereby making full use of the manpower available to the firm. However, if the applicant is persistent in his desire to enter a certain occupation, the employment interviewer may furnish him with suggestions for additional schooling or training courses he must master before he can be considered for employment. In another way, the employment interviewer plays the role of vocational counselor; he often recommends that an unskilled laborer seek work in an entirely different industry which he knows needs men. For example, an interviewer for an automobile company may have an applicant apply for work in a nearby chemical company where more suitable job openings are available, and in this way establish an exchange of applicants between companies, with profit to all.

Job analysis related to selection and placement. Employment may be viewed in two ways: in one way it is "selection," the examination of the skills and abilities of many men to select one man suitable for a specific job opening; in the other way it is "placement," examination of the various job duties and requirements in order to place a specific man on a job for which he is suited. It is essential to have at hand factual information concerning jobs before employment can proceed. The misjudgments made at the employment stage govern to a great extent the personnel training cost, production wastage, turnover expense, and employee morale or worker satisfaction. Hence, in the long run, upon the success of the employment function depends, in large part, the success or failure of the organization itself. It is seen that job analysis will yield to the employment department basic operating knowledge of job duties and hiring requirements.

Job analysis in any plant often reveals common errors in standards of employment. It is not unusual to find that higher standards

for employment have been required than are actually necessary. For example, it has been found that 58 per cent of the jobs in the United States require no education for successful fulfillment of duties. This might be compared to the number of jobs for which a firm nevertheless may specify a minimum of 8th grade education. Although many graduates are released yearly from high schools, only 11 per cent of jobs specify high school graduation as a prerequisite for employment.

Job analysis and training. The tie-in of job analysis to training is easily seen. To train a worker for a job, the specific skills or habits desired must be known. To use an extreme example: if the man is to tend a production machine, it is not important to train him in the tasks of sales auditing. There should be an orderly presentation of the duties which the job incumbent will be expected to perform —the minimum essentials which he must grasp in training. Training may be highly formalized, as in a classroom, or it may be informal, such as a neighborly hint on how to make machine adjustments more quickly. In either case, the help is directed toward improvement in the performance of known job elements. (See chapter 9.)

Job analysis is basic to job evaluation. For various personnel decisions, it is desirable to evaluate jobs to determine their relative worth in the company. Job evaluation may be incident to transfer of workers to equally rated jobs, or it may be used to implement wage and salary administration. Job evaluation relies upon job analysis (see chapter 18) for describing the duties and requirements of all jobs. Without such information, careful evaluation, supported by written definitions available to all members of a job evaluation committee, is not feasible.

Job analysis and employee evaluation. Job analysis deals only with characteristics and demands of jobs themselves, not the men who are performing the jobs. Just as job evaluation measures the worth of the job, so does employee evaluation gage the value of the performance of the worker on the job. It is one source of criteria of success. Unless the specific performance obligations are known through job analysis, it is not probable that a meaningful merit evaluation of workers will be achieved. As a worker's job becomes clarified through job descriptions, items for rating him can be listed on a merit rating form, and his performance can be appraised in terms of his success in discharging these duties. (See chapter 17.)

Methods of Gathering Job Analysis Information

There are three general methods of gathering the information that is basic to job analysis:

1. By questionnaire survey of supervisors and employees;
2. By interview with foremen or employees;
3. Observations made by job analyst.

Questionnaire method. Employee, as well as supervisory, participation in the job analysis program has several advantages. The worker takes pride in being consulted and is also, thereby, kept informed of the plans of management. Shartle advises, "Get everyone on the team." An employee should not be turned loose to fill out a questionnaire without explanation, however. Attached to the form should be a letter telling why the information is sought, or else a meeting should be held by the supervisor to describe the form, so that there will be no misapprehensions or feelings that management is "snooping." Figure 9.3 shows a suggestive sample of a memorandum which could be issued.

MEMORANDUM TO ALL SALARIED PERSONNEL OF THE PLANNING AND CONTROL DIVISION:

As you may know, the Company has undertaken a job classification program which is intended to develop uniform position descriptions, outline various job requirements, establish an equitable system of evaluating positions, and assist in placing employees so that their training and experience can be used to the maximum benefit of both themselves and the Company.

The program will be conducted by the Job Analysis Section of the Industrial Relations Division and will be entirely concerned with the review and classification of positions, not individuals.

I will appreciate it very much if you will cooperate and assist in every way possible.

Signed:
Director of Planning and Control

FIG. 9.3. Memorandum used to announce job analysis program.

In filling out the questionnaire, the worker brings out small but sometimes important details about his job which the supervisor may never have noticed. If untrained in the proper use of the form, however, the worker may overrate the importance of these details of his job. Therefore, instructions should accompany the form, and it might be advisable to have the supervisor work with him and edit his replies.

Job analysis by interview. In the interview procedure for gathering job analysis data, the needed information is acquired by the job analyst in contacts with the workers and the supervisor. He asks questions designed to bring out the job duties as they see them. Often this is not a good method to use, inasmuch as the terms of the analyst are apt to be misinterpreted by the employees, and vice versa. The interview is useful, however, in obtaining supplementary information and as a means of verifying information. All information received by word of mouth must be carefully checked before it can be regarded as accurate. The checking is done by making so-called desk audits or work-bench audits which are observations of the work performed. Such audits make of the interview procedure a combination interview and observation method.

Observations by job analyst. Usually the best method for most situations is to have a job analyst observe the job as it is performed. Questions which arise concerning the technique or reasons for some phase of the work may be referred to the worker or the supervisor as the point arises. The job analyst is trained to observe details which may escape the notice or attention of those close to the job. A typical schedule, used by an analyst to describe the job of Distribution Clerk in a women's apparel company is shown in Figure 9.4. An important feature is the Occupational Characteristics Check List. Notice, too, the page included for checking the working conditions and kinds of physical activity involved in the job.

Actually, although the analyst may conscientiously observe the operations before him, taking notes as he watches, there may be several tasks pertaining to the job being analyzed which do not lend themselves to observation. A highly repetitive job presents no problem; however, if a task is performed only once a week or once a month, the job analyst may miss the operation entirely. Therefore, unless the analyst is free to ask questions, he may not obtain vital information. For this reason, job analysis is usually performed partly by observation, partly by interview.

Selection of the Job Analyst

The job analyst should be selected with care. Much of the success of the program depends upon his work. He may come from nearly any level in the organization, but he should have support of a member of top level management to assure that the program will be endorsed until sufficient study has been made to warrant evaluation of the project.

Several kinds of educational background have been satisfactory for success in the position of job analyst. Contrary to what might be supposed, as job analysts in industrial plants, engineers have not been shown to be superior to other groups of equal interest and intelligence.[5] A vocabulary test of technical industrial terms showed

JOB TITLE Distribution Clerk DATE

ALTERNATE JOB TITLE

NUMBER OF EMPLOYEES: NORMALLY 1 MALE 1 FEMALE
PEAK 1 MALE 1 FEMALE

LOCATION OF JOB General Offices Receiving Room and Dress Dept. HOURS OF WORK 40 hrs. per wk.

JOB ANALYST NO. OF SHEETS

APPROVED BY NO. OF SHEETS

JOB SUMMARY: Assists in segregation of merchandise to stores, allocating segregation by size and color; keeps perpetual inventory and other sales and stock records; prepares ditto forms and performs other miscellaneous duties in department.

I. *WORK PERFORMED*	% of Time	Importance of Duty
Keeps Dress Daily Guide Sheets by price range, type, size, and color, which are prepared by transposing figures from store inventory and applying sales, transfers and mark downs daily to show current stock picture at all stores; works with supervisor in the segregation of merchandise, segregating from Size and Color Sheet after total number of pieces for distribution has been determined; may also assist in moving stock in warehouse in preparation for following day's segregation.	60	1
Makes entries on Perpetual Inventory, Weekly Return Record, Selling Record by size and price range, Dress Recap showing stock, selling, and warehouse inventory by price range and type; prepares Weekly Recap of same; assists in preparing Back-order list weekly; assists in taking Warehouse Inventory weekly; types, dittos and sends weekly inventory forms to stores, also prepares and dittos all other forms for department; performs other miscellaneous clerical duties as required.	40	2

Courtesy of Winkelman Brothers Apparel, Inc., Detroit, Michigan

FIG. 9.4. Job analysis of a distribution clerk.

[5] Shartle, *Occupational Information*, 2nd Edition. New York: Prentice-Hall, Inc., 1952, p. 43.

II. *PERFORMANCE REQUIREMENTS*

a. *Responsibilities:* Is responsible for allocating dresses to stores, making proper distribution during segregation to control size and color stock in all stores; is also responsible for various supporting records kept.

b. *Job Knowledge:* Must know procedure in segregation of merchandise in keeping stock and sales records; must know how to use calculator (for adding) and ditto machine.

c. *Mental Application:* Must be mentally alert in handling segregation work; must use good judgment in distribution of size and color of merchandise.

d. *Dexterity and Accuracy:* Must be accurate in making all records and reports.

e. *Machines or Tools Used:* Burroughs calculator for adding (speed not required); Typewriter (speed not required); Ditto Machine

III. *MINIMUM HIRING REQUIREMENTS*

(not an entry job; incumbent promoted from within the organization)

a. *Experience Required:* None

b. *Experience Desirable But Not Necessary:* Distribution of merchandise for retail multiple unit operation and general clerical experience.

c. *Training Data*—(Minimum training time):

1) On-the-job training: 6 months
2) Technical or Vocational training: None
3) Formal education: High school graduate

d. *Age & Sex:* Age: 22–35 Sex: Male

e. *Relation to Other Jobs:*

Promotion from: Stock Records, Stock Handler Clerk
Promotion to. Assistant Department Head
Job Combination: Assistant Department Head, Retailing and Inspecting Clerk

f. *Supervision:*

From: General Supervision—Department Supervisor and Assistant (2)
To: None

FIG. 9.4. (Cont.) Job analysis of a distribution clerk.

some relation to success as an analyst.[6] The *O'Rourke Vocabulary Test* has also shown some validity.[7] Certainly this seems reasonable since the job analyst must be able to use words fluently. A background in occupational or industrial psychology is helpful to the job analyst. A person who can readily understand machines and

[6] *Loc. cit.*

[7] An unpublished study conducted in the Occupational Research Program. A significant correlation was found between the *O'Rourke Vocabulary Test* and merit ratings of the job analysts in the field.

PHYSICAL ACTIVITIES

x	1. Walking
	2. Jumping
	3. Running
	4. Balancing
x	5. Climbing
	6. Crawling
x	7. Standing
x	8. Turning
x	9. Stooping
x	10. Crouching
	11. Kneeling
x	12. Sitting
x	13. Reaching
	14. Lifting
x	15. Carrying
	16. Throwing
x	17. Pushing
x	18. Pulling
x	19. Handling
x	20. Fingering
	21. Feeling
x	22. Talking
x	23. Hearing
x	24. Seeing
x	25. Color Vision
	26. Depth Perception
x	27. Working Speed
	28.
	29.
	30.

WORKING CONDITIONS

x	51. Inside
	52. Outside
	53. Hot
	54. Cold
	55. Sudden Temperature Changes
	56. Humid
	57. Dry
	58. Wet
x	59. Dusty
x	60. Dirty
	61. Odors
x	62. Noisy
x	63. Inadequate Lighting
x	64. Inadequate Ventilation
	65. Vibration
	66. Mechanical Hazards
	67. Moving Objects
	68. Cramped Quarters
	69. High Places
	70 Exposure to Burns
	71. Electrical Hazards
	72. Explosives
	73. Radiant Energy
	74. Toxic Conditions
x	75 Working with Others
x	76. Working around Others
	77. Working Alone

FIG. 9.4. (Cont.) Job analysis of a distribution clerk.

industrial techniques would be preferred. A good memory for details would also be important. Ability to get along with supervision and tact in dealing with people are further basic considerations.

There may be several job analysts gathering data in the same plant at one time. In this case, a chief job analyst will coordinate

JOB TITLE Distribution Clerk SCHEDULE NO.

OCCUPATIONAL CHARACTERISTICS CHECK LIST

Indicate the amount of each characteristic required of the worker in order to do the job satisfactorily by putting an "X" in the appropriate column. Following are the definitions of each level:

O—The characteristic is not required for satisfactory performance of the job.
C—A medium to very low degree of the characteristic is required in some element or elements of the job.
B—An above average degree of the characteristic is required, either in numerous elements of the job or in the major or most skilled element.
A—A very high degree of the characteristic is required in some element of the job.

When in doubt between A or B, rate B; when in doubt between B and C, rate B; when in doubt between C and O, rate C. If some characteristic not on this list is required, write it in, rate it, and define it briefly at the bottom of the form.

AMOUNT				CHARACTERISTIC REQUIRED
O	C	B	A	
		X		1. Work rapidly for short periods
	X			2. Strength of hands
	X			3. Strength of arms
	X			4. Strength of back
	X			5. Strength of legs
X				6. Dexterity of fingers
X				7. Dexterity of hands and arms
X				8. Dexterity of foot and leg
	X			9. Eye-hand coordination
X				10. Foot-hand-eye coordination
X				11. Coordination of both hands
X				12. Estimate size of objects
	X			13. Estimate quantity of objects
X				14. Perceive form of objects
X				15. Estimate speed of moving object
	X			16. Keenness of vision
	X			17. Keenness of hearing
X				18. Sense of smell
X				19. Sense of taste
X				20. Touch discrimination
X				21. Muscular discrimination
	X			22. Memory for details (things)
X				23. Memory for ideas (abstract)
	X			24. Memory for oral directions
X				25. Memory for written directions
	X			26. Arithmetic computation
	X			27. Intelligence
	X			28. Adaptability
	X			29. Ability to make decisions
X				30. Ability to plan
	X			31. Initiative
	X			32. Understanding mechanical devices
	X			33. Attention to many items
X				34. Oral expression
X				35. Skill in written expression
X				36. Tact in dealing with people
X				37. Memory for names and persons
	X			38. Personal appearance
		X		39. Concentration amidst distractions
	X			40. Emotional stability
X				41. Work under hazardous conditions
X				42. Estimate quality of objects
	X			43. Unpleasant physical conditions
	X			44. Color discrimination
X				45. Ability to meet and deal with people
X				46. Height
X				47. Weight

FIG. 9.4. (Cont.) Job analysis of a distribution clerk.

and supervise their activities. He will be particularly important in establishing liaison at several management levels. A job description and specification for a chief job analyst are presented below. These qualifications are higher, of course, than are considered essential for a job analyst who works under close supervision of a chief analyst.

JOB ANALYSIS OF JOB ANALYST [8]

TITLE: Occupational Analyst.

B. ALTERNATE TITLES: Job Analyst, Personnel Studies Assistant, Employment Service Analyst, Personnel Technician.

C. DUTIES: Analyzes jobs and prepares descriptions and specifications; prepares or revises trade tests; supervises subordinates in compiling material; performs other functions. (Occupational analysts sometimes specialize in job analysis or in aptitude or job performance testing work.)

Detail of above:

(1) Analyzes jobs and prepares descriptions and specifications. Studies jobs in plants, describes work performed, analyzes abilities and training required and writes descriptions largely in form of specifications for the use of employment interviewers, counselors, and other personnel workers for use in employment, in-service training, transfer, and job evaluation.

(2) Prepares or revises trade tests. Prepares trade test questions and administers them to workers for standardization purposes. May analyze results and select questions which show highest validity.

(3) Supervises subordinates in compiling material. May direct others in making job analyses, developing trade questions, and in related work.

(4) Performs other functions. May be required to contact employers and workers to obtain their cooperation and to explain the value of the techniques developed. May assist in one or more phases in the development of aptitude test batteries or in the preparation of surveys of jobs in plants using the *Dictionary of Occupational Titles*. May assist or train other staff members in the use of the techniques developed.

D. QUALIFICATIONS:

(1) Educational—College graduation or substitution of experience year-for-year is generally required as a minimum. However, in specialized fields, such as test development, an M. A. may be required. Courses in industrial psychology, tests and measurements statistics are most often required. Persons with a year or more of graduate training sometimes enter this work without previous experience.

(2) Training—

a. On-the-job: Knowledge of the industry if employed in private industry or familiarity with the practices of public employment offices if so employed. This varies from two weeks to six months.

b. Prior: Some experience in job analysis, employment interviewing, or use of testing techniques in industry is usually required. Amount necessary depends on amount of college training. Generally four or five years or its equivalent in college training is required.

(3) Personal—Ability to meet and get along with others is essential. Must write clearly and concisely and have ability to supervise others.

E. PROMOTIONS: From Employment Interviewer to Senior Analyst or Section Chief in charge of test development.

[8] Adapted from Carroll L. Shartle, "Occupational Description for Positions in Psychology" A Report submitted to Emergency Committee, Division of Anthropology and Psychology, National Research Council, Columbus, Ohio, 1945.

F. RELATION TO OTHER POSITIONS: Related to positions of Employment Counselor or Interviewer and Industrial Psychologist.

The Skill Inventory

There is a trend toward use of the skill inventory. A skill inventory is simply a set of 5 × 8 cards on which are entered the job qualifications of the incumbents of the various jobs in an organization. Let us consider a hypothetical company. There are 500 employees, in this organization, and 50 jobs. Let us say each job has 10 incumbents. Each of these 10 job incumbents has certain definable characteristics, enabling him to fit into other jobs. These make it possible for him to be transferred to other jobs at the same level of skill.

We may illustrate how a skill inventory will work in utilizing manpower and cutting down turnover. We assume of course that our hypothetical company has a centralized employment office. Primitive companies, those that have not yet developed personnel methods, do not have an employment office that is centralized. These more primitive companies perform the hiring operation through department heads, foremen, and supervisors in their various departments. While Department A is laying off men, Department G is taking them on. Some of those employees that Department A is dismissing because of lack of work load could—if centralized personnel records and a skill inventory were kept—be transferred, thereby saving a loss of $50 to $500 per dismissed employee in turnover costs. This illustrates but one use of the skill inventory.

The skill inventory includes up-to-date records pertaining to work efficiency as well as potentiality, knowledge, skill, and physical characteristics of the employee. Where technological change or the retirement or promotion of an employee creates openings, the skill inventory enables finding a man who is best equipped to handle the job, an employee already in the organization. This regularizes the practice of advancement and promotion-from-within, which virtually all managers at least say is a desirable practice.

One department store of 11,000 employees has a centralized employment office. However, the hiring is done in a decentralized way by departments, the employment office acting merely as a recruiting agency and a preliminary screen. The screening is done by a three-minute interview. If an employee is let out of a department, he does have a nominal exit interview in the employment office, but

no attempt is made to transfer that employee to another, more suitable, department. A central skill inventory would enable utilization of employees across departments for transfer as well as for promotion purposes.

Managerial records are closely related to skill inventories. Managerial records for personnel control include the skill inventory. They include also data pertaining to objective and subjective evaluations of the individual worker from the standpoint of his relationship to the foreman or supervisor, and from the standpoint of his relationship to the efficiency of his department. Managerial records give information regarding the attitudes of employees. They enable top management to spot departments where personnel are not being effectively used. They further the study and analysis of the situation, leading to better approaches in the selection and maintenance of an efficient and satisfied personnel force.

The raw data for records of this kind are generally available in situations where wage incentives are used. This is because standards have been set up, making possible at least an approach to an objective, quantitative evaluation of the performance of the individual worker and supervisor. Managerial records for personnel control tie in with the skill inventory and also with personnel cost analysis.

Job Analysis Procedure

The following summarizes the procedure for obtaining good job analysis data and maintaining desired relationships while studying the jobs:

1. The proper official is contacted to get permission to make the study, and his assistance is requested in planning the program of the study, deciding the jobs on which to start, the personnel to work with in each department, and the order to be followed.
2. The official notifies the heads and the foremen of the departments affected and holds an indoctrination meeting with them to describe the purposes of the study.
3. The names of all the analysts engaged in the study are submitted and, when necessary, arrangements made for them to accomplish the work.
4. The foreman is consulted regarding the best job stations to observe typical tasks and on which there are workers who will not be disturbed by being observed. The foreman explains to the workers the purpose of the observation.
5. Prior to observing the job, the analyst obtains an over-all picture

of the operations and, in a preliminary way, determines each job's relationship to other jobs.

6. The analyst also
   a) Notes and differentiates between what the worker does and what the machine does.
   b) Does not confine the analysis to work done by the best worker in the job. The new analyst is apt to try to write up the job in its most favorable light.
   c) Shows the worker that he (the worker) is helping to find facts and is interested in the information the worker gives. The same applies to relations with foremen.
   d) When possible, observes the tasks of the worker from the time a unit of work has been begun until it has been completed; that is, a work cycle.
   e) Talks to the worker only with the permission of the foreman and then as little as possible, in order not to disturb him.
   f) Unobtrusively takes a minimum of notes while observing the job and expands them as soon afterwards as possible; repeats the observation if necessary.
   g) Observes the job before obtaining from the hiring official the qualifications, information on job relationships, and other information which cannot be obtained from observation.
   h) Checks job data, especially technical or trade terminology, with the foreman or the department head.
   i) Verifies the completed analysis with the proper official.
   j) When reporting on the analysis, confines himself to statements of fact as observed. Does not inject his opinion unless instructions call for it.[9]

An Illustrative Job Analysis Program

In the General Motors Corporation, a job analysis program was started in 1940 as a basis for job evaluation. The program had lukewarm acceptance but was adopted and retained in several divisions during the war. By and large, most divisions had drifted away from the 1940 plan and had not reinstated it during the retooling, reconversion period.

On December 18, 1945, there was a company-wide strike. Twenty thousand foremen were idle on the premises. It was proposed that these foremen be utilized in revitalizing the job analysis program. A policy committee directed the foremen to write up analyses of the jobs they supervised. In this way about 600 to 700 descriptions

[9] War Manpower Commission, *Training and Reference Manual for Job Analysis* (Washington: U. S. Government Printing Office, 1944), p. 103. Several items were also used from Walter B. Pimm, "Ten Years of Occupational Research," *Occupations*, XXII (1944), p. 395.

were written for some jobs, for example, drill press operator. The chief job analyst worked over the analyses, keeping in mind local requirements and condensing them as much as possible. Only five drill press job analyses were retained. The same jobs with different titles or different classification numbers were re-grouped on the basis of the analyses. The chief flaw in the program was that too few of the foremen were able to write the job analyses, although a simplified form had been provided to help them. Personnel directors of each plant were responsible for gathering the forms and editing them before they were sent to the headquarters office. In this way, about 18,000 job descriptions, locally reviewed, were obtained.

The job analyses have been tied in with the union contract. Every job must be covered by a job analysis. New job analyses are coming in all the time, and the manuals are kept up to date automatically. The machinery is set up for keeping the data current.

Critical Job Requirements

Job analysis can yield, with a change of emphasis, a list of the critical requirements for the job. In this way, the job requirements which are not critical to success or failure in the job are eliminated from consideration.

In obtaining lists of critical requirements for a job, the job analyst asks a supervisor, foreman, or department head these two questions:

> In the past six months have you transferred (or fired) an employee from this job?
>
> This employee did a lot of things that caused you to have him transferred (fired), but what was the last thing he did to make you act—what was the last straw? [10]

Replies to such questioning provides a list of on-the-job behavior items or incidents which are critical to the success or failure of the employees working in that job. From the list of critical incidents, the critical psychological requirements for the job can be inferred. Thus, the method is supplemental to the Occupational Characteristic Check List procedure illustrated above in Figure 9.4. Lists of

[10] Adapted from John C. Flanagan, "Job Requirements," in *Current Trends in Industrial Psychology*, by Wayne Dennis, *et al.* (Pittsburgh: University of Pittsburgh Press, 1949), p. 46.

critical requirements may be used as confirming the estimates of the job analyst who fills out the Occupational Characteristics Check List. Future experience and research may show that the method of critical job requirements is more useful than the check list procedure. Flanagan says:

> In summary, it is proposed that a new approach to the problem of job requirements be adopted. Rather than collecting opinions, hunches, and estimates it is suggested that observed on-the-job behavior be recorded and reported by those in the best position to make the necessary evaluations of the observed performance. The collection and tabulation of these observations for a representative sample of workers makes it possible to formulate the critical requirements of the job in terms of observed job behavior. Such a list of requirements provides a sound basis for making inferences as to the critical requirements of the job in terms of aptitudes, training, and other worker characteristics.
>
> It is believed that the development of the field of job requirements on a sound scientific basis is just beginning. Much remains to be done, but it is hoped that this work will provide a more stable foundation for procedures in personnel psychology.[11]

Job Analysis, Synthesis, and Organization [12]

By job analysis, overlap in job duties is often revealed; by the same procedure, it sometimes becomes apparent that responsibility has not been fixed for certain tasks. Job analysis complemented by job synthesis enables shredding out overlapping segments, reassigning duties to the lowest practicable level of management, and makes possible building up new jobs, giving attention to cohesion of job duties and assignment of duties at appropriate levels of management.

In a business employing about 130 people, management jobs were studied with a view to preparing an organization chart and management guides. At the time the study was begun, no organization chart existed on paper; the lines of organization and channels of communication were informal. All department heads had entree to the president-owner-general manager or the assistant general manager, at any time, on management problems, not bypassing the assistant general manager but duplicating discussions with both persons. The president personally handled many details

[11] *Ibid.*, p. 53.

[12] Roger M. Bellows and M. Frances Estep, "Job Re-Synthesis: One Way to Achieve Economy in Management," *Personnel,* American Management Association, XXIX (1953), pp. 113–115.

of the business, overlapping in interests with his department heads. The firm was staffed with an inordinately large number of managers, some of whom appeared to be performing semi-clerical work, neglecting the more managerial aspects of their jobs.

The president of the company asked his department heads to participate in the program of job analysis, job resynthesis and reorganization of the management jobs. Each manager was requested to write his own job description as he saw it.[13] When the forms were completed, each manager was interviewed by a personnel specialist. They talked about the entries on the job analysis form in order to clarify the ideas and also to make the replies consistent from one person to another. All forms were then edited, and the edited copy submitted to the individual for approval before the forms were shown to the president and the assistant general manager.

A committee of four—the president, assistant manager, and two personnel specialists—met to review the forms. After studying each of the management job descriptions, tentative organization charts were made. Several suggestive kinds of organization charts were prepared: (1) a concentric organization chart; [14] (2) a line organization chart which showed the president at the top level, the assistant general manager on the second level, and all department heads at the same level below him reporting to the assistant general manager; and (3) an organization chart prepared and modified during discussions to include staff functions such as the personnel and training director, the controller and treasurer, the office manager, and the manager of the sales office.

The job descriptions were reviewed and compared with the third organization chart which had tentatively been drawn up and approved. A number of discrepancies were noticed, particularly in the number of clerical and fairly routine tasks being performed by the department heads. Operating on the principle that all job duties should be placed at the lowest practicable level of management within acceptable limits of responsibility and delegation of authority, these tasks were earmarked for lower level jobs. It soon became apparent that the task would be confusing unless a simple method was devised to facilitate "shredding out" the tasks which were uneconomically performed by department heads. Accordingly, every

[13] The job analysis form was the one illustrated above in Fig. 9.4.

[14] C. G. Browne, "The Concentric Organization Chart," *Journal of Applied Psychology*, XXXIV (1950), pp. 375–77.

separate task appearing on the job analysis forms, usually a phrase or one sentence description of a task, was placed on a 3 × 5 card. When all jobs had been broken down into tasks and the tasks typed on cards, the cards were given to the president, the assistant general manager, and then to two personnel specialists. Each of the four members of this committee placed the task cards into categories for each managerial job.

Discrepancies among the four raters were then reconciled through discussion. When the group had decided what tasks belonged in each job title, the pack of cards for each job title was synthesized into a new job description. When the four committee members had satisfied themselves that each task was appropriately assigned to the new job groupings, the personnel specialists rewrote the job descriptions. The form used included

1. *The function of the job:* a two or three sentence summary of the responsibilities, authority, and function of the incumbent of this job
2. *The job duties:* including the responsibility for material, responsibility for money, responsibility for personnel, responsibility for public relations, and responsibility for sales volume
3. *Job relationships:* showing supervision by and of others and relationships to other department managers.

In this form, the jobs were then reviewed by the four members of the job synthesis committee. Modifications were made in the interest of clarity and consistency. When agreement was reached on the new jobs, a final form of the organization chart was discussed and prepared.

A looseleaf notebook was used for the final form of the product to facilitate future revisions. It was indexed for each job description. When opened, the organization chart was shown on the sheet on the left side. The box on the chart which related to the particular job to be described was edged in red pencil with a line leading to a box below outlining the function of this job. On the facing page was the job description for this management position.

The final step in the program was to go over the results of the job synthesis with the department managers, describing their reorganized duties and training them in the use of the guides in their daily activities.

As a result of the discussions and partly as a result of other company influences, extraneous to the job synthesis program, three management jobs were eliminated. The office manager job was

abandoned, and the tasks previously performed by the incumbent were subsumed under the job of controller of the company. Many of the more routine job duties which had been handled by the sales manager were placed under the supervision of the manager of the sales office, to be handled by his clerical staff. Many of the job duties of the assistant general manager were delegated to various department heads, releasing the assistant general manager for direct supervision. More responsibility was placed on the department heads for the supervisory activities within their departments.

Summary

Job analysis is a basic personnel tool. The various tools for maximum use of manpower—recruiting, selection interviewing and testing, training, safety administration, personnel managerial records and inventories, and especially job evaluation and merit rating—depend either directly or indirectly upon the products of job analysis.

There is some need for clarification of job terms in use by management:

task:—a unit of work

position:—the work of one worker on a set of tasks

job:—a group of similar positions in a firm

job analysis:—an orderly and systematic study and record of duties, responsibilities, and characteristics of a job. The job analysis yields a job description, job specification, job relationships, and occupational information.

The products of job analysis may be used with considerable profit to management if the job analysis is realistic, comprehensive, and properly conducted. The basic data are collected by three general procedures: the questionnaire method, interviews with foremen and employees, and observations—desk or work-bench audits —made by the job analyst. A combination of the last two has been found satisfactory. The job analysts must be selected with great care. A background in industrial psychology and/or engineering is favorable. Other desirable specifications are a good general working vocabulary and knowledge, especially familiarity with shop terms and techniques, memory for details, and facility for working with people, both management and workers.

In conducting a job analysis program properly, a planned promotion and indoctrination course for supervisors and employees is

necessary. Maintaining good working relations with all concerned has been found to make possible optimum conditions and full use of the resulting information. After the program is completed and its products are in use, it is essential to maintain the information in up-to-date condition by periodically noting job changes and transmitting such changes to the employment interviewers, job evaluation committee, and others who routinely make use of the job descriptions and specifications.

Subsequent chapters dealing with tools for effective use of manpower and engendering worker satisfaction will make reference frequently to job analysis.

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10 Recruiting

RECRUITMENT is the preliminary phase of the employment procedure which aims to attract people to the company to be reviewed for possible employment. The number of people and their quality depend in part upon two external conditions. The first of these is the condition of the labor market. There are times when labor is plentiful and there may be as many as ten or twenty applicants for any particular opening. A depression period is typically a "free" labor market. In contrast to the free labor market is the "tight" labor market, evident at times when jobs are plentiful and labor is hard to attract. A wartime period is typical. Recruitment officers talk of "scraping the bottom of the barrel." In either a free or tight labor market, knowledge of its composition will aid in locating general sources of employees.

Composition of the Labor Market

The number and kind of companies in U. S. According to the U. S. Department of Commerce,[1] in 1939 there were 3,305,600 firms in the United States. During World War II the number decreased by 8 per cent; in 1948 the number increased to 4,000,000, an increase of over 18 per cent from 1943. Contract construction firms showed the greatest increase (102 per cent), reflecting the postwar building boom. Small firms in which fewer than 4 employees are on the payroll make up about 80 per cent of the companies. Retail trade is the

[1] U.S. Department of Commerce, Bureau of Business Economics, "The Business Population," *Survey of Current Business*, XXX, No. 2 (1950), pp. 31–32.

largest single industry group. The percentages among industry groups in 1949 are shown in Table 10.1.

TABLE 10.1

THE PERCENTAGE OF FIRMS IN SEVERAL INDUSTRY GROUPS AS OF 1949 *

Industry Group	Percentage of Firms
Retail trade	42.9
Services	21.6
Finance, insurance and real estate	8.8
Contract construction	8.2
Manufacturing	7.6
Wholesale trade	5.2
Transportation, communications, and public utilities	4.8
Mining	.8

* Courtesy of Alton W. Baker, Bureau of Business Research, The Ohio State University, Columbus, Ohio.

Jobs and their requirements. Employees are recruited from many sources. As certain occupations become obsolete through technological change or decadence of an industry, the employees of the decadent industry are channeled into an expanding one which offers them opportunity for using skills and abilities already possessed.

Transfer cannot be achieved by haphazard tactics but requires a cooperative program of wide scope, cutting across the complex lines of industry. The basis of such a program is information concerning each occupation affected by the transfer of workers, derived from the Occupational Characteristics Check List (called the "Worker Characteristics Form" by the United States Employment Service). This form, illustrated in the Job Analysis chapter as Figure 9.4, lists about fifty worker characteristics, with a four-point scale to evaluate the amount of the characteristic required on any specific job. Viteles had done early work with a similar device which he called a *job psychograph,* consisting of 32 worker characteristics. The form is reproduced in his book, *Industrial Psychology.*[2]

One value of the Occupational Characteristics Check List is that it makes possible the sorting of jobs into *job families.* These are hierarchies of jobs requiring the same basic worker skills. The 1949 revision of the *Dictionary of Occupational Titles*[3] contains definitions of 22,028 jobs, which are known by 40,023 titles. A sample

[2] Morris S. Viteles, *Industrial Psychology* (New York: W. W. Norton & Co., Inc., 1932), pp. 150–55. The form is also available in J. L. Otis and K. R. Smith, "The Job Psychograph in Job Analysis," *Occupations,* XII (1934), pp. 47–56.

[3] Division of Occupational Analysis, USES, *Dictionary of Occupational Titles. I. Definitions of Titles* (Washington: Government Printing Office, 1949), p. 1518.

page of the 1949 revision is shown in the chapter on job analysis. The revision encompasses two volumes. In volume I are the definitions of the jobs, the statements of what the worker does, how he does it, why he does it, and usually an indication of the skill involved in doing it. It is estimated that actually about 30,000 occupations exist in the U.S.

Volume II has five sections. The first section is the occupational classification structure arranging the jobs according to code numbers. The second section contains an index of the common commodities sold in retail and wholesale trade, to assist in classifying persons engaged in the various sales jobs. The third section is a glossary which clarifies technical terms used in the job definitions. Many job definitions include complicated technical processes and involved concepts, making it necessary at times to use technical terminology with which the lay reader may be unfamiliar. The fourth section contains definitions of industrial designations used to show in which industries jobs defined in volume I are usually found. The industry definitions are followed by lists of job titles contained in the *Dictionary* which are found in these industries. An alphabetical index of these designations makes up the fifth section.

Shartle estimates that about 3,000 of the 30,000 occupations in the United States are military occupations; about 60 per cent of military occupational specialties are quite similar to civilian occupations.[4]

"Labor force" as defined by the United States Census means the economically active portion of the population fourteen years of age and over.[5] Table 10.2 shows the number and per cent distribution by census of major occupational groups.[6] Operatives and kindred workers are the largest group for the total and for men. The largest category in which women were employed was clerical and kindred classifications. The report indicated that about 5.5 million of the employed persons were on vacation. Unemployment was estimated at 3.2 million. According to the estimate made the week ending July 8, 1950, total employment was 61,214,000.

Table 10.3 presents a list of job or work factors, such as years of

[4] Carroll L. Shartle, *Occupational Information,* 2nd ed. (New York: Prentice-Hall, Inc., 1952), p. 220.

[5] A. J. Jaffee, "The Application of Attitude Research Methodology toward the Problem of Measuring the Size of the Labor Force," *International Journal of Opinion and Attitude Research,* I (1947), p. 47.

[6] U.S. Department of Commerce, Bureau of Census, *Current Population Reports,* Series P-57, No. 97, August 4, 1950, pp. 1–12.

TABLE 10.2

MAJOR CENSUS OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX FOR THE UNITED STATES: WEEK OF JULY 2–8, 1950 *

(Thousands of persons 14 years of age and over)

Major Occupation Group	Number of Employed Persons			Per Cent Distribution		
	Both Sexes	*Male*	*Female*	*Both Sexes*	*Male*	*Female*
Total employed	61,214	43,582	17,632	100.0	100.0	100.0
Professional and semi-professional workers	4,213	2,554	1,659	6.9	5.9	9.4
Farmers and farm managers....	4,603	4,326	277	7.5	9.9	1.6
Proprietors, managers, and officials, except farm.....	6,538	5,463	1,075	10.7	12.5	6.1
Clerical and kindred workers...	7,720	3,112	4,608	12.6	7.1	26.1
Salesmen and saleswomen.....	3,797	2,385	1,412	6.2	5.5	8.0
Craftsmen, foremen, and kindred workers	7,963	7,758	205	13.0	17.8	1.2
Operatives and kindred workers	12,231	8,993	3,238	20.0	20.6	18.4
Domestic service workers	1,925	196	1,729	3.1	0.4	9.8
Service workers, except domestic	4,640	2,472	2,168	7.6	5.7	12.3
Farm laborers and foremen	3,662	2,480	1,182	6.0	5.7	6.7
Laborers, except farm and mine	3,926	3,846	80	6.4	8.8	0.5

* Source: U. S. Department of Commerce, Bureau of Census, *Current Population Reports*, Series P-57, No. 97, August 4, 1950, p. 11.

necessary education and the percentage of their occurrence as a hiring requirement. The list of hiring specifications is based on the statements of minimum requirements given by employers for 7,955 occupations in 87 industries and was compiled by the United States Employment Service.[7]

Horizontal job classification. Most recruiting has been done by thinking of specific plants, without regard to what is happening in neighbor plants and in neighbor industries. Horizontal classification

[7] Carroll L. Shartle, *Occupational Information*, 2nd ed. (New York: Prentice-Hall, Inc., 1952), p. 186.

of workers versus industrial classification—for using workers trained in other and decadent industries who fit in particular occupational families in a firm—is just beginning to be thought of by managements. Managements are beginning to come to grips with the job-information problem.

TABLE 10.3

JOB AND WORKER FACTORS*

Job and Worker Factors	Percentage of Occupations
Male required	79
Female required	11
Either sex	10
No formal education (absolute 0)	58
Education range (0 to some)	17
Formal education required	25
Grammar school minimum	13
High school minimum	11
College minimum	1
Special knowledge required	11
No experience (absolute 0)	35
Experience range (0 to some)	15
Experience on same job	33
Experience required	50
Experience on similar job	31
Experience on other job	10
No training on job (absolute 0)	11
Training range on the job (0 to some)	7
Training on job required (definite)	82
Training minimum—1 week or less (but not 0)	50
Training minimum—more than 1 week—up to 1 month	12
Training minimum—1 month up to 6 months	16
Training minimum—6 months and over	4
Unusual source of workers in recruiting	2
Seasonal job	24
Special measuring devices used in the job	14
Graphic instructions used in the job	13
No machines used	47
Machines used	53
Machine feeding	4
Machine tending	6
Machine operating	43
More than one machine used	10
Worker sets up machine	13
Fine accuracy required in the job	47
Tools used	48
Personal tools required	15
Repetitive job	32
Teamwork required	6
Supervisory job	12
Public contacts involved	8

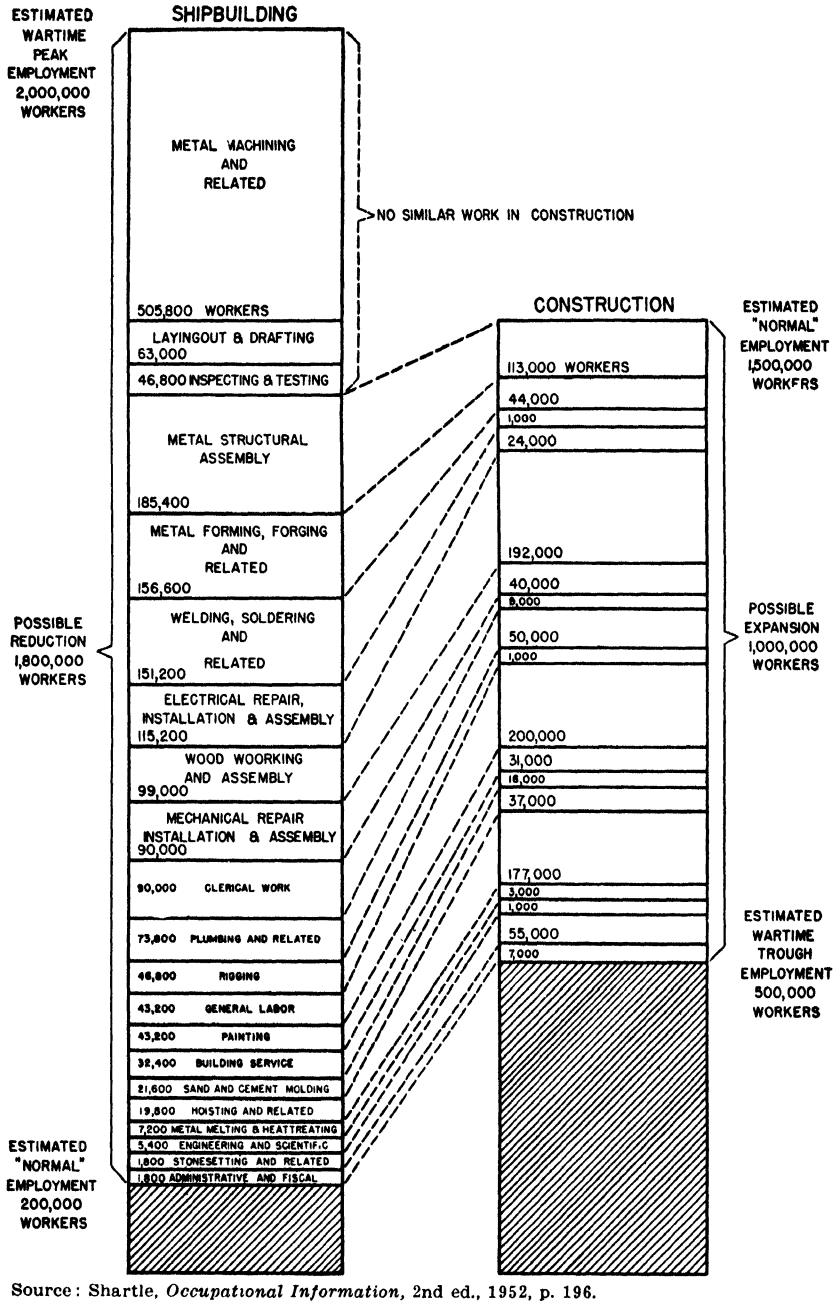
* Source: Carroll L. Shartle, *Occupational Information*, 2nd ed. (New York: Prentice-Hall, Inc., 1952), pp. 188–89.

TABLE 10.3 (Continued)

JOB AND WORKER FACTORS

Job and Worker Factors	Percentage of Occupations
Estimated Abilities Required (Unusual Amount)	
Work rapidly	24
Strength of hands	24
Strength of arms	31
Strength of back	19
Strength of legs	6
Dexterity of fingers	22
Dexterity of hands and arms	37
Dexterity of feet and legs	2
Eye-hand coordination	42
Foot-hand-eye coordination	7
Coordination of independent movements—both hands	6
Estimate size of objects	7
Estimate quantity of objects	4
Perceive form of objects	14
Estimate speed of moving objects	2
Keenness of vision	21
Keenness of hearing	2
Sense of smell	1
Sense of taste	1
Touch discrimination	5
Muscular discrimination	11
Memory for details (things)	17
Memory for ideas (abstract)	5
Memory for oral directions	3
Memory for written directions	2
Arithmetic computation	8
Intelligence	10
Adaptability	4
Ability to make decisions	7
Ability to plan	9
Initiative	7
Understand mechanical devices	11
Attention to many items	14
Oral expression	2
Written expression	1
Tact in dealing with people	8
Memory of names and persons	2
Personal appearance	3
Concentration amidst distractions	2
Emotional stability	3
Work under hazardous conditions	13
Estimate quality of objects	9
Work under unpleasant physical conditions	21
Color discrimination	4
Ability to meet and deal with people	5
Height	*
Weight	*
Additional characteristics	2
All "C" jobs (none of above characteristics required in unusual degree)	9

*Less than .5 per cent



Source: Shartle, *Occupational Information*, 2nd ed., 1952, p. 196.

FIG. 10.1. Hypothetical example of horizontal transfer of workers, utilizing occupational mobility data.

Knowledge of job families facilitates horizontal transfer of workers from one industry to another, allowing fullest utilization of skills already possessed. Shartle [8] describes a potential application of horizontal transfer using occupational information. (See Figure 10.1.) A picture is presented of the estimated wartime peak employment of 2,000,000 workers in the shipbuilding industry; of these, it is estimated that 1,500,000 can be absorbed into similar jobs in the normal, peacetime construction industry. About 500,000 workers, whose work consisted largely of metal machining, would not find similar work in construction. Their skills can be utilized in several other industries.

Another use of job information for recruitment may be exemplified by the experience of one company whose management planned to open a new branch plant. The estimated labor force was 10,000, of whom one-tenth must be professional, technical, and executive personnel. A survey of the labor market in the desired location revealed that only half of the total number needed were available. Most of the new force to be recruited and brought to the new location were to be machine operators, conveyor-belt assembly operators, and office workers. Where would they recruit such a large body of personnel if none were available in the locality? Tables of horizontal transfer of workers, based on occupational family studies, were constructed for use in identifying industry and job titles of workers who could be utilized with a minimum of retraining.

One large motor car corporation prepared to meet a similar problem by distributing questionnaires to all employees, asking for information about their present job duties, skills, and responsibilities, and personal items such as age, sex, ownership of property, draft status, and other similar items. In addition, the supervisors checked each questionnaire and indicated which jobs they felt could be done without training, jobs which could be done satisfactorily with about two months' training, jobs which could be performed only after formalized training for three or four months, and jobs which could be done only after formalized training of over five months. The information was punched on cards at the home office, to facilitate handling by machine methods. This comprised a company-wide inventory of workers' skills. From the group could be pulled those workers who had the skills that required the least amount of adjustment or training to fill similar jobs planned in the new plant.

[8] Carroll L. Shartle, *Occupational Information*, 2nd ed. (New York: Prentice-Hall, Inc., 1952), pp. 196–97.

The inventory also aided in selecting people who could be spared from their old work situation without severely crippling operations.

The second condition which contributes to the number of applicants and their quality has to do with the reputation of the company within the community. The personnel department has partial control over this reputation. If personnel management has been successful in allocating personnel to jobs for which they are suited, it is quite likely that it has contributed to the over-all job satisfaction of the employee group. This, in turn, reaches the listening ears of the community. Policy affecting working conditions, wages, employee services and benefits may also be influenced directly by the personnel manager.

The reputation of the company in a community reflects rapidly in the kind of personnel who are attracted there for work. A company is described at the worker's dinner table as "the last place I'd ever see a friend of mine work"; or, if the attitude is favorable toward a company in a community, it is "a good outfit to work for." When there is a condition of tight labor market, this reputation assures that applicants for work will go first to the company in which they think they would like to work.

The position of the company within the community is considered here because if there are no applicants, or only poor applicants, the company suffers in its ultimate selection of a working force.

Sources of Available Labor

Good selection starts with recruitment. For any particular company, one source of labor may be better than another. For example, the large pharmaceutical companies which employ college graduates and graduates with master's or doctor's degrees may appropriately find that their most effective sources of new employees are universities and colleges. On the other hand, companies using many unskilled laborers, such as the sugar beet industry, might never approach a university except to fill a few executive positions. The company's requirements, as defined by job analysis, predetermine the labor source to use. Within these limits, however, one source may be better than another. A method by which various sources may be evaluated will be presented.

Friends of present employees. In industrial firms, 78 per cent of the companies use this source.[9] The organization presumes that a

[9] W. D. Scott, R. C. Clothier, and W. R. Spriegel, *Personnel Management*, 4th

good worker's friends are good workers too. There is also another assumption made. It is that a new worker will be happier in his job situation if he is working around people he knows.[10] An applicant referred by a present employee will probably find his new working environment congenial. This effect of working relationships was discussed in chapter 2, "Industrial Social Psychology." The assumption may be a valid one. Perhaps there would tend to be higher morale where there is a friendly atmosphere pervading. It is also of importance to consider the pride a present employee feels when someone he has recommended is hired.

Opponents of this source point out that it is very bad business to "inbreed." They say that cliques will develop, that the workers begin to think they can run the place if they have enough friends backing them up. Foremen say the clannish workers can agree among themselves to hold back production, or they may "try to run the show as they like." These small groups, say the antagonists, are the trouble-making minority groups. In some companies, there is so much fear of this possibility that friends of present employees are not considered for openings.

Perhaps neither side of the question is completely right or completely wrong. The source should not be overlooked, but should be experimented with for its appropriateness in any specific company.

Some workers might hesitate to cooperate in recommending their friends. They may feel that although they like the fellow personally, off the job, they are not quite sure how he will perform after he is hired. Rather than take this responsibility, they will refuse to suggest possible applicants.

Public employment services. Public employment services had been handled within the Bureau of Immigration and Naturalization from the time they began in 1907. Their function, as might be imagined, was then concerned with getting jobs for new immigrants when they arrived in this country. It is no wonder that an unsavory reputation grew up for the public service which could supply only unskilled, usually illiterate, employees. Another specialized service soon to appear was the distribution of farm labor. The early Fed-

ed. (New York: McGraw-Hill Book Co., Inc., 1949), p. 575. This figure increased to 85 per cent in a similar, later survey reported in W. R. Spriegel and Alfred G Dale, "Trends in Personnel Selection and Induction," *Personnel*, American Management Association, XXIX (1953), pp. 169–75.

[10] In an unpublished study of turnover by the writer and Carl H. Rush, Jr., in Winkelman's Apparel, Inc., it was found that relatives of present employees tended to remain a long time with the company.

eral Employment Service, within the Department of Labor, was organized in 1918. During World War I this unit had as its chief duties recruitment of civilian workers for war industries. Immediately after the war it helped war veterans find new jobs in industry.

During this early period it was said that the public agency was dominated by political influences. Employment managers turned their back on this service and began to look elsewhere for applicants. If employees were obtainable in no other way, after long search, then and only then would an employer call upon the federal service for whatever unskilled help might be available.

When the Wagner-Peyser Act was passed in 1933, it created the United States Employment Service (USES) within the Department of Labor.[11] The new USES was provided with funds to assist state employment agencies in their programs, provided the state agencies adhered to federal standards in record-keeping, selection and referral procedures, and freedom from political influences. The new Social Security Act in 1938 put the USES under the Social Security Board to furnish work tests to workers applying for unemployment compensation. All unemployed persons, to be considered eligible to draw unemployment compensation, had to be registered with the local state employment offices as "able and available" for new work. Furthermore, they had to accept new "suitable" work, at least theoretically, when it was offered to them by local offices. The public agency found it necessary to develop its potential employer list and to improve its relations with industrialists. The federal agency, USES, by presidential request on January 1, 1942, drew all state employment agencies under its power. The USES was soon transferred to the War Manpower Commission when that agency was set up to handle the war manpower problem of World War II. This increased the power of USES in manpower control. Falling back on job information gathered in the Occupational Research Program initiated in 1934, USES was primarily responsible for determining which jobs would be classified as "essential" and "nonessential." Later, the War Manpower Commission made it necessary for a worker who left his job to have in his possession a USES statement of availability before he could be rehired by another company. This was done, in part, to control the migration of workers to more attractive war industries without sufficient cause

[11] See Dale Yoder, "Reorganizing the Public Employment Service," *Bulletin of the Harvard Business School Alumni Association,* XI (1935), pp. 81–87.

other than the attraction of higher pay. State agencies were transferred to the Department of Labor on November 15, 1946, and on July 1, 1948, were returned to their former status under the Social Security Administration.

Today, the State Employment Services have a considerable amount of expertness in dealing with applicants and in referring them to potential employers. They are considered a source for unskilled and skilled help. Because of their relationship with the Unemployment Compensation Program, they have adequate sources for recruitment, since all workers who are laid off for any reason whatsoever have to report to the office.

In a recent study made by the Yale Labor and Management Center of the hiring practices of employers in Charlotte, North Carolina, and New Haven, Connecticut, the state employment service ranked high as a popular source in both cities. Most frequently it was used for shop workers, but in New Haven it vied with "other employees" as the most important source of clerical workers. New Haven employers used the source most frequently for skilled service and maintenance workers, Charlotte employers used it for common labor. Some of the advantages of the service as a source of supply of new workers are:

The Service has a large list of available applicants.
It endeavors to do a good job for the employer and therefore save him much time.
It is cooperative and tries to send good people.
It gives quick service.
Its recommendations are unbiased.
It gives the unemployed worker the feeling that at least someone is looking out for his interests.[12]

About 85 per cent of all companies covered by surveys make use, at least occasionally, of this source.

Private employment agencies. Agencies which charge a fee for the placement of applicants on jobs are usually privately owned and operated for profit. Their business is finding applicants and presenting them as attractively as possible to potential employers. About 39 per cent of firms use this source occasionally.

There have been times when a fee agency has been operated in a dishonest way. This is the way it worked: An agency referred an

[12] E. William Noland and E. Wight Bakke, *Workers Wanted* (New York: Harper & Bros., 1949), pp. 111–12.

applicant for a particular opening. The man was "hired." He paid the agency a small fee for having found his job for him. In a short time, the foreman found some reason for discharging the new employee. Both the foreman and the agency profited: they split the fee paid by the worker. A new man was referred, was "hired," and discharged. In this way, handsome sums were raked in by the participants. Such practices led to severe governmental control over the operations of fee agencies. They are now required to report activities in much detail; malpractice, as a result, has been virtually eliminated. Most of the old-time employment agency racketeers have been run out of business.

The private agency usually tries to specialize in a particular class or type of employee. One agency will place only secretaries, another only cooks and other domestics. Some specialize in placement of advertising personnel; others, accountants. The advantage to this specialization is that, in time, a sizable roster of qualified people for any particular skill is available. Applicants who are referred to a company, and who are hired, are required by contract, in the case of some agencies, to pay a portion of their salary to the fee agency for having obtained the work for them. The size of this fee may run from the equivalent of one week's to as much as one month's salary.

Schools and universities. Widely used for certain types of recruitment is the school or university source. For apprentices and skilled jobs, trade schools are combed. A recruitment officer appears before classes or interviews individuals, pointing out attractions of his company. This source is used by 70 per cent of companies.

Depending upon the nature of the company's work, high schools and even grade schools are valuable contact points. High school girls are obtained each year for positions as clericals, typists, file clerks, and salespeople. This source must be used with caution where it is demonstrated by company records that there is high turnover from young people on a particular job. For example, a high school education was once required of girls doing routine inspection in a pharmaceutical manufacturing company. High turnover resulted because this was a dead-end job, found overly monotonous by high school graduates.

Whether or not the company is viewed by the students as a potential employer depends a great deal upon whether or not it has taken steps to become known as a desirable place to work in the community. Public relations techniques for selling the company to the community run the gamut from infrequent appearances at the

schools with lukewarm appeals for applicants to large "family picnics" sponsored by the company. "Bring your friends" is the invitation extended.

Recruitment from universities and colleges has progressively become a highly formalized procedure. A National Industrial Conference Board survey [13] of 142 companies and 60 placement offices describes in some detail the jobs for which college graduates are used, the number of trainees currently on the payrolls, and the programs for approaching the college. College graduates are used for technical, supervisory, sales, and executive-administrative work. (See Table 10.4.) About 70 per cent of the companies report that

TABLE 10.4

JOBS FOR WHICH COLLEGE GRADUATES ARE TRAINED BY 142 COMPANIES *

Training Area	*Number*	*Per cent*
Executive-Administrative	34	12
Technical	67	24
Supervisory	52	18
Sales	52	18
Accounting	19	7
"All"	33	12
Miscellaneous	26	9
Total	283	100

Note: Most companies indicated more than one training area for college graduates.
* Source: National Industrial Conference Board, Inc., "College Graduates in Industry," *Studies in Personnel Policy No. 89,* 1947, p. 5.

they are able to retain college graduates once they are attracted to their staffs.

College placement staffs [14] indicate their reaction toward the practices of company recruitment officers, most desirable of which is the practice of providing the placement office with illustrated booklets which describe opportunities for college graduates. Placement offices also like the companies which use their students during summer holidays, until graduation, and then hire the students on a permanent, full-time basis. They frown upon the company which prefers only "big name" students or campus leaders. Also disliked is the recruitment officer who "drops in" to look over the graduating class without announcing his trip.

A program of college recruitment developed in one of the largest of the general insurance companies included ample preparations

[13] National Industrial Conference Board, Inc., "College Graduates in Industry," *Studies in Personnel Policy No. 89,* 1947, p. 32.
[14] *Ibid.,* p. 29.

before visits to the campuses.[15] From a potential list of 1700 schools, 100 were selected for visits. These colleges were circularized by mail, both by letter and brochures. Personal follow-up by both home office and local representatives tended to offset the somewhat cool reception experienced at first to requests for insurance salesmen. Pictorial literature and a motion picture accented the job for which the company was recruiting. Before visits to the campuses, the company wrote letters to the placement directors and insurance professors and also forwarded posters for bulletin boards announcing the time and place for meeting with the company's representatives.

Advertisements. Advertisements, in either newspapers or trade journals, are of two kinds: the "open" advertisement which identifies the name of the company seeking workers, and the "blind" ad in which the applicant is asked to write to a box number in care of the newspaper. There is controversy over which type of ad is better, but generally the answer seems to be that the company should be identified if a high quality applicant is desired.

Proponents of the signed ad say that the name of the company itself is the drawing card and should be played up. If the company is viewed favorably in the community, this may be quite true. The attractive aspects of the company's working conditions can be cited specifically—the length of the workweek, the nature of the working conditions, even the amount of pay is mentioned in some instances. This is an above-the-board approach in announcing the company's offerings. It can be highly specific only when the company is prepared to follow through with its word.

On the other hand, even some of the "good" companies do not like the open ad. Because of the company's extremely favorable reputation in the community, unsuitable applicants try to obtain positions. This makes for a heavy work load on the employment office when such ads appear. The way to circumvent part of this difficulty is to delineate precisely the qualifications necessary for the work. This may screen off a portion of the unsuitable applicants.

Embarrassing experiences can be told of the employee who is dissatisfied with his present position and answers a blind ad only to discover that he is applying to his present employer! This situ-

[15] H. Paul Abbott, "A College Recruitment Program," *Personnel Journal,* XXVIII (1950), pp. 367–71.

ation evidences distrust on both sides. The employee learns that his work has been unsatisfactory and that the boss is looking for new applicants to replace him. The employer also learns that his employee has been so dissatisfied that he is willing to respond to an unsigned ad for new work.

Organizations. In addition to the foregoing more or less formal channels for obtaining recruits, there is the sometimes useful source of the social organizations in the community. Church organizations, fraternal orders, and civic groups may be called upon to refer new applicants to a company. Chambers of commerce and similar businessmen's groups are usually well informed of job-seekers within the community.

The personnel man himself can do much to encourage applicants from the community by making himself known to them through his participation in community and fraternal affairs, in church organizations, or in school activities.

Professional organizations can refer members for various levels of jobs. Such organizations as the American Society of Tool Engineers, the American Chemical Society, the American Psychological Association, and the American Medical Association have extensive memberships of professional men.

Labor unions are organizations which are often helpful. Of course, in some unionized shops, there is a regular referral system of union members to new positions. This may be done through the union's "hiring hall." Where companies use the hiring hall, as in carpenters' or riggers' unions, the employer furnishes a requisition for new employees. If the hiring hall cannot supply a new man within a certain time limit, the employer uses other means for recruitment. Union men like to see others in their trade fill these new openings, although it is possible that, if the union controls such activity severely, the employer does not have sufficient opportunity to screen off undesirable employees. This may very well have been an aim of the Taft-Hartley Act in easing unions' restrictions over employment.

Promotion from within the company. A recommended rule is to promote from within. Recruiting new personnel at lower levels simplifies the recruiting problems. The question, "Do you promote from within?" receives an almost uniformly affirmative reply from managers. This is sometimes found to be somewhat untrue when the operating situation is surveyed. Promotion from within implies that present employees are reviewed first when advanced positions

become vacant. Managers sometimes squirm out of complying with this policy stating that they have reviewed their present staffs and have found no persons suitable to fill the vacancies. However, this may be traced to the fact that they do not have adequate records to demonstrate the skills and abilities possessed by their present employees. This record is in the nature of a "skill inventory," without which an employer can hardly be expected to know the abilities of his present staff.

Although a man may be working efficiently on the job title of punch press operator, he may also possess adequate skill and training in blueprint reading, drafting, or other shop operations which would qualify him for better work. Unless this kind of information is a matter of record, this man's additional skills become lost. If he is never recognized for his greater abilities, he may become dissatisfied.

Skill inventories furnish another service in case the company plans to expand or open another branch operation. The various abilities of present employees can be surveyed for utilizing special skills without damaging present operations. This sort of information is invaluable at a time of technological change or obsolescence when it is desirable to retain present employees but transfer them to a different job title. Skill inventories and their usefulness as records for promotions or transfers within the organization will not remain of value unless there is a system providing for their maintenance. As employees go to night school or receive auxiliary plant training, records should be kept through automatic channels.

It is suggested that promotion from within is a powerful device for maintaining morale of the workers. If the employees discover that they are reviewed first for new advances, they are more likely to put their best foot forward on the job, in order to be ready for advancement. Employers stand to profit from such internal promotions because they are upgrading workers who have already had the benefit of much investment in terms of indoctrination training, experience, and records. These values are lost if an outsider is brought in.

There are some jobs within any company which can be filled only by persons having a specific kind of background or training for the work. The experience of the Johnson and Johnson Company in 1950 is illustrative, for they found that their policy of promoting-from-within actually was put into practice for 86 per cent of the supervisory positions, 70 per cent of the technical positions, 90 per

cent of the executive positions, but only 19 per cent of the professional positions.[16]

Miscellaneous sources. In addition to the previously discussed sources, there are unusual ways of attracting small groups of workers. The condition of the labor market during World War II caused personnel managers to seek new employee groups. Housewives by the thousands were attracted to industrial jobs. Many job duties had to be revamped to accommodate female abilities; jobs requiring occasional lifting had to be re-styled so that women were not lifting more than 35 pounds or one-fourth of their body weight. In some job duties, the slighter build of the female worker was an asset —as in jobs in airplane wings.

Blind workers were pressed into war service. During World War II about 5,000 blind men and women were employed in various production industries.[17] About 8,000 men and women, classifiable as "employable," become blind each year; of these about 2,000 are industrial workers. When a worker loses his sight, employers are quick to discontinue his service. It is not generally recognized that blind workers, when trained for some jobs, perform as acceptably as before they lost their sight. Some jobs do not require vision. An employer is wise to examine his job requirements to see whether he can utilize this potential source. He may do a service to a community of men and women who appeal for recognition as competent and loyal employees.

A similar group are the amputees or otherwise disabled workers, both veteran and nonveteran. The Veterans Administration uses effective procedures for rehabilitating the disabled veteran. The employer is approached and asked if he can place such workers in his plant. Only occasionally have employers initiated the use of disabled workers. This seems inexplicable to observers who are familiar with job analysis information. Of about 30,000 occupational titles in the country, there are few calling for use of all limbs. Because most disabled persons face squarely their limitations, they are content to learn a job and remain on it; they are not so likely to attempt selling their services on the open market. From this

[16] "Briefs on Personnel Practices," *Management Record,* National Industrial Conference Board, XIII (1951), p. 397.

[17] The case for use of blind workers in industry is well presented by the Chief of Services to the Blind, Federal Security Agency; see Joseph F Clunk, "Employment of Blind Workers in Industry," *Personnel,* American Management Association, XXIV (1948), pp. 280–83.

viewpoint, if no other, managers should be willing to employ members of this group.

A special device which is common to emergency labor conditions is use of a part-time labor force. During World War II this was called the "Victory shift." Workers already employed full-time on one job were encouraged to come in for a few additional hours in the evening on another job or to work overtime on their own jobs. Additional man-hours were accumulated in this way. This has long been a technique in seasonal industries such as the canning industry for which large numbers of people are needed for a relatively short period of time. Also typical is the department store "Christmas rush" when part-time employees are used.

A Method for Evaluating Sources

It can be assumed that a certain amount of evaluation of recruitment sources can be done "from the armchair," that is by a priori decisions as to the worth of various sources. A more formal method has to do with the record-keeping and analysis of the effectiveness of the sources on a regularized, systematic basis. Obviously, the work of the personnel department is centered around employment of the best possible working force. Recruitment officers are concerned with getting good employees. There is little reason for hiring employees who are known in advance by adequate analysis to have few of the characteristics necessary for good workers, unless the condition of the labor market precludes any other course.

It should be the duty of the personnel officer in charge of recruitment first to examine his present employees with respect to their job success. The procedures discussed in chapter 16, "Criteria of Performance," may be analyzed for usefulness. Records pertaining to turnover of employees may play an important role in the audit of recruiting practices. After he has identified his good workers, he can determine the source from which they were recruited. It may be found, for example, that a large per cent of the good long-term workers on a specific job title were recruited from a certain school. Where this proportion becomes significantly more important than other recruitment sources, it should be developed more fully.[18] This

[18] For a statistical discussion of similar procedures see Dale Yoder, *Personnel Management and Industrial Relations*, 3rd ed. (New York: Prentice-Hall, Inc., 1948), pp. 173–178. An item analysis procedure which may be used is described in Charles H. Lawshe, Jr., *Principles of Personnel Testing* (New York: McGraw-Hill Book Co., Inc., 1948), p. 187.

sort of evaluation of sources can only take place job title by job title. What is a good source for one job title may be extremely unsatisfactory for another. Again an assumption is made that there are enough applicants for a job title, over a period of time, to reflect a trend.

Undue dependence upon any single source, to the exclusion of others, may leave the company without recruits when the source fails to supply, as in labor emergency conditions. However, particularly for large companies, it is a money-saver and a time-saver to know where good employees come from and to spend more of the personnel department budget tapping these sources.

Summary

The procedure of employing efficient, satisfied workers begins with recruitment. Unless recruitment sources are deftly tapped, it is difficult to achieve effective selection of available manpower. In the consideration of recruitment sources, the composition of the labor market is of considerable importance. Horizontal classification—the classification of workers on the basis of the psychological characteristics they possess, without regard to lines of industry—has much promise. It can help locate qualified workers who are leaving decadent industries or who have lost their original job because of technological changes within their former industry.

Of many possible sources of obtaining new employees, a favored one is referrals from present employees. Other sources include agencies, both public and private, schools and colleges, advertisements, promotions from within the company, and several miscellaneous sources.

It is important to know the relative effectiveness of sources from which applicants are attracted. A simple method can be set up for determining which source is best for a specific job title. It seems desirable to identify the good and poor workers and compare the sources from which the two groups were obtained.

The work of the recruiting officer will be considerably facilitated if other policies in the company have been favorably received by the community. Public relations are important. If the company has "a black eye," the recruitment officer can do little to induce workers to apply.

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11 Interviewing

THE INTERVIEW is the "most used and least scientific" of the several ways of selecting employees. When used by itself, it usually has little reliability or validity. When used with supplemental selection items (chapter 12) and with psychological tests (chapter 13), good employee selection can be accomplished. This and the next two chapters are intended to provide facts, methods, and results on the important task of matching applicants with jobs.

The interview is of use in ways other than acceptance or rejection of applicants. As Bingham and Moore define it: "The employment interview exemplifies three distinct functions . . .: securing information, giving information, and establishing a friendly relationship." [1] Friends that a company makes during the interview tend to do a public relations job of great value to the company by spreading by word of mouth a favorable report of pleasant reception and treatment while dealing with the company. In periods of tight labor market conditions, this might mean the difference between little available manpower and sufficient numbers of applicants for work at the company. This is particularly true in organizations such as department stores, where every applicant is a potential customer.

"Asking him" is the oldest method of interviewing a worker for a job. It is almost universally used in American industry. According

[1] W. V. Bingham and B. V. Moore, *How to Interview* (New York: Harper & Bros., 1941), p. 102.

to a survey [2] of 325 concerns made in 1947, the selection interview was used by 98.5 per cent of the companies. Uhrbrock reported that in one company in 1944 there were 5.45 interviews per hire.[3] If this could be used as an approximate ratio of the number of interviews to the number of people hired, it would seem that about 170,000,000 interviews take place annually for selection of personnel alone. The Bureau of Labor Statistics says that about 30,000,000 workers change jobs each year.

The interviewer does not necessarily rely upon the art of the interview exclusive of other personnel methods. He is constantly depending upon materials developed for other specific uses in the personnel program. One of these is job analysis, which prepares in advance the information that the interviewer must have before he can proceed intelligently in hiring. For example, he is aided by job descriptions developed through job analysis. He also has available another product of job analysis: hiring requirements or specifications of the man who will be acceptable on the job. The interviewer keeps these minimum requirements in mind while examining each applicant.

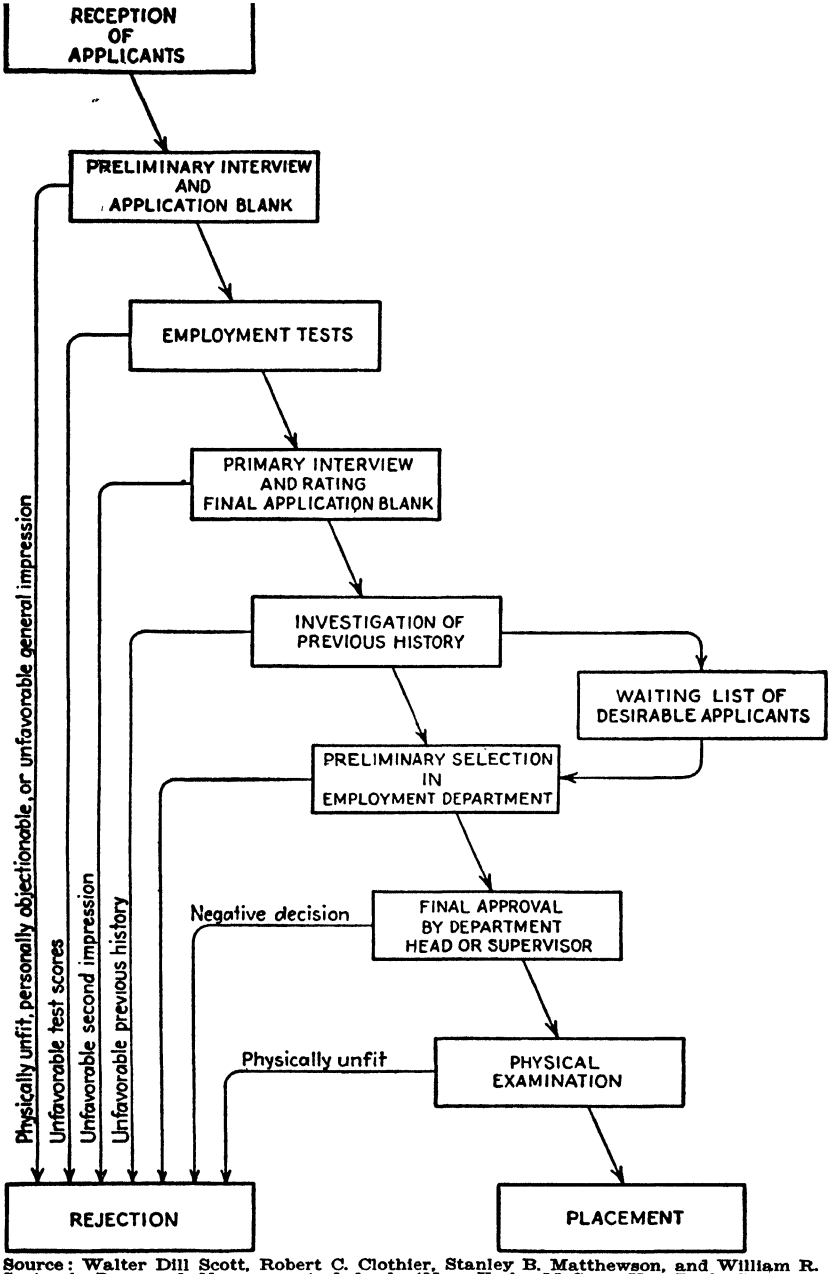
The Interview and Related Methods

Uhrbrock has described the selection procedure by means of a flow chart, showing the steps leading from "reception of applicants" to "placement." [4] (See Figure 11.1.) He shows that the steps in the selection procedure include a preliminary interview, filling out an application blank, administration of employment tests which may include trade tests, a formal interview by the employment department interviewer, checking on the previous history of applicants, preliminary selection of applicants in the employment department, interview by the department supervisor or foreman who makes the decision to hire, physical examination, and finally, placement of the new employee. It is to be noted that there are three interviews in this selection procedure, two of them in the employment office and one by the department supervisor.

[2] W. D. Scott, R. C. Clothier, and W. R. Spriegel, *Personnel Management,* 4th ed. (New York: McGraw-Hill Book Co., Inc., 1949), p. 575.

[3] Richard Stephen Uhrbrock, "The Personnel Interview," *Personnel Psychology,* I (1948), pp. 275–76.

[4] Richard Stephen Uhrbrock, "Mental Alertness Tests in Selecting Employees," *Personnel,* American Management Association, XII (1935), p. 231.



Source: Walter Dill Scott, Robert C. Clothier, Stanley B. Matthewson, and William R. Spriegel, *Personnel Management*, 3rd ed. (New York: McGraw-Hill Book Co., Inc., 1941), p. 60.

FIG. 11.1. Procedure followed by some concerns in employing men. (Adapted from a chart appearing in the article, "Mental Alertness Tests for Employees," by Dr. Richard S. Uhrbrock, *Personnel*, May 1936. Published by the American Management Association.)

Common Pitfalls of the Interview

It has been mentioned that the interview has been severely criticized, even to the point of suggesting that the interview, as it is now generally conducted, is almost worthless. Incredible waste must result from turning away potentially valuable employees or from making erroneous judgments in placing men on jobs for which they are not psychologically fitted.

Let us consider a few of the errors or limitations of the interview, so that these can be examined and studied more fully with reference to the employment situation.

Personal bias of the interviewer. One of the most prevalent pitfalls in the interview is the tendency of the interviewer to make a decision about the applicant on the basis of some personal mannerism or characteristic which he observes. We are not likely to confess that we make judgments on the basis of personal appearance or manner alone, but this may very well be the case:

> I do not love thee, Dr. Fell,
> The reason why I cannot tell,
> But this alone I know full well,
> I do not love thee, Dr. Fell.

Many applicants at employment offices, today, meet with a whimsical grudge of the same kind that prejudiced the speaker in Thomas Brown's poem. It would be interesting to speculate about the number of employees who are fully qualified for positions but who are turned away because the employment interviewer has said to himself, "I have a hunch about the man. I don't like his looks. I don't think he would work out well in our organization."

Which applicant gets the job is sometimes decided by personal appraisal of the man, the worth of the judgment running the gamut from the hazy dislike for old Dr. Fell to a supposedly analytical rating of applicant qualifications. These likes and dislikes are difficult to erase from the personal make-up of the interviewer; indeed many of them are carry-overs from the old physiognomists who alleged they were able to judge traits of a person's character by studying his physical features.

From three interviewers, not trained against pitfalls, lists were obtained of ten traits which would influence their judgments against persons possessing them. (See Table 11.1.)

It can be seen that these traits probably are not related to job

success, since they are common to many people. It would be just as easy to obtain lists of favorable characteristics that would influence untrained interviewers to hire an applicant.

TABLE 11.1

OBJECTIONABLE PERSONAL TRAITS LISTED BY THREE UNTRAINED INTERVIEWERS*

Interviewer A	Interviewer B	Interviewer C
Biting fingernails	Chewing and snapping gum	Short arms
Talking with cigarette in mouth	Being jittery or fidgety	Bad breath
Interrupting you	Non-stop talking	Shifty-eyed
Playing with articles on person	Too aggressive	Too well-groomed
Smoking chain fashion	Loud clothing	Sloppy
Being pretentious or bragging	Not meticulous about personal hygiene	Ugly
Using "I" continuously	Mousy and bashful	Jiggling legs continuously
Inconsideration	Fresh and "smart-alecky"	Tapping
Avoids looking you in the eye	Making gestures with hands	Doodling
"Alibi"	Foreign-looking	Acne

* Source: American Management Association, *Manual of Employment Interviewing*, Research Report No. 9, 1946, p. 15.

Contagious bias. Stuart A. Rice [5] reported a now classic study which disclosed that the interviewer may distort his findings in the interview according to his personal prejudice and may even transfer his bias to the interviewee. This he named "contagious bias." In 1914 the commissioner of public charities of New York had requested that a study be made of the characteristics of the destitute men who applied for lodgings repeatedly at charity centers. The interviewing group consisted of twelve male social workers, each assigned a random sample of the destitute men. All interviewers were requested to use a guide of questions when asking about the men's social and industrial background (data of a mental and med-

[5] Stuart A. Rice, "Contagious Bias in the Interview: A Methodological Note," *American Journal of Sociology*, XXXV (1929), pp. 420–23.

ical nature were gathered by other staffs from former employers, friends, and relatives).

When the results of the interviews were analyzed, it became apparent that the interviewers' interpretation of answers, and even the answers of the men themselves, followed a pattern of personal bias attributable to the interviewer. Although each investigator was assumed to be impersonal and objective, personal bias crept into his report of the interview and even prompted him to put words into the mouth of the interviewee, so that he, the interviewer, heard the words he wanted to hear. For example, among the interviewers was one man who was alleged to be a Socialist. The reports turned in by this worker showed that the destitute men whom he interviewed tended inordinately to owe their present plight to adverse industrial conditions. By the same token, an avid prohibitionist found that alcohol was the chief factor contributing to the downfall of the destitute men whom he interviewed. (See Table 11.2.)

It can be seen from the table that not only did the bias of the interviewer creep into the findings but that either of these two sets of interviews used alone would have given a twisted picture of what the real cause of destitution was. Perhaps neither alcohol nor industrial conditions were so much at fault.

TABLE 11.2

Illustration of Contagious Bias: Causes of Destitution of 2000 Men as Reported by Two Interviewers of Different Interests and Beliefs *

Interviewer	Per Cent Allegedly Ascribing Their Destitution to Liquor	Per Cent Allegedly Ascribing Their Destitution to Industrial Conditions
A. (Prohibitionist)	34	42.5
B. (Socialist)	11	60

* Source: Adapted from Stuart A. Rice, "Contagious Bias in the Interview: A Methodological Note," *American Journal of Sociology*, XXXV, No. 3 (1929), pp. 420–23.

Wording of questions. *Suggestibility.* Related to contagious bias is suggestive or ambiguous wording of the question. This results in two possible misinterpretations by the interviewee: either the question is stated poorly in such abstract or difficult words that he is not able to understand the true meaning of the question, or else the interviewer frames the question in a way that prompts an answer he wants.

Studies made by the British psychologist, Muscio,[6] indicated the

[6] B. Muscio, "The Influence of the Form of the Question," *British Journal of Psychology*, VIII (1916), pp. 351–89.

high degree of suggestion which the interviewer passes on to the interviewee because of the wording of his question. The technique of his experiment was to run a motion picture over and over until the subject had ample opportunity to grasp the details of the film. Muscio then asked different forms of questions about the film, so that by his wording and by the degree of certainty with which the subject replied, influence of suggestibility could be discovered. He found that asking a question like, "Was the book on the table?" implied that there was a book, that there was a table, and that the book might have been on the table. He found that the best form of question was, "Did you see a book?" which required more accurate reflection before answering the question.

Level of difficulty of words used. A frequent error unknowingly committed by interviewers is "talking over the heads" of their audience. The employment interviewer who has an extensive vocabulary may use words or concepts which are beyond many of his interviewees. Particularly is this true where a large number of workers are being interviewed who speak little English.

An illustration of word difficulty was brought to light during a dispute between labor and management. A group of striking workers had been unwilling to accept certain of management's proposals. As a result, the strike dragged on and on. A note that management sent to them with the question, "Are you willing to arbitrate?" brought only sullen silence. To the workers, the word "arbitrate" meant surrender—surrender to the terms of management, they would not! Agreement was delayed until this misunderstanding was cleared.

Oftentimes the interviewee is asked about something with which he is completely unfamiliar, with no definition or explanation of terms to guide him. For example, in a poll [7] to evaluate the prestige of several occupations, it was found that 51 per cent of the respondents did not know enough about the nature of the occupation "nuclear physicist" to rank it. A question designed to determine how many of those who had ranked it had only a vague or a completely mistaken understanding of the occupation showed that only 3 per cent of those interviewed had a satisfactory idea; another 18 per cent thought that it might "have something to do with the atomic bomb." Some of the wrong answers were striking in revealing how great was the degree of public ignorance of the term:

[7] National Opinion Research Center, "Jobs and Occupations: a Popular Evaluation," *Opinion News*, IX (1947), pp. 3–13.

"Assistant to a physic. His job would be on the body."
"He does something at an operation—I think he gives the anaesthetic."
"It's one of those people who reads minds and tells things by the stars."
"Studies bugs, I think."
"He's a spy."
"He's a doctor that puts you to sleep and makes you talk about yourself."

Even other occupations that are considerably more common were unfamiliar to many. Sociologist was not rated by 23 per cent; economist by 22 per cent; biologist, 16 per cent; and psychologist, 15 per cent.

Knowledge of the usual lack of understanding of the interviewee is often not sufficient, as this poll revealed. The difficulties in mutual understanding may be greater than we think. We are partially or completely misunderstood in many of our attempts to communicate with our fellow men: how unreliable must be our conversation as a true exchange of accurate, dependable information!

Halo effect. The applicant may be completely disqualified on the basis of a specific trait which the interviewer dislikes. About 1920, Thorndike [8] first named this influence "halo effect"—the tendency to judge the total worth of the man on the basis of a specific trait. The interviewer is likely to approve one trait and carry over this favorable impression into his total judgment of the man. Conversely, irritated by an unpleasing trait, such as a critical or rebellious attitude (perhaps born of the tenseness of the interview situation), he might decide that the man was unworthy. Judging the whole person by observing only one of his qualities is "invalid halo" if the trait is not necessarily a critical point in the final selection. But, as Bingham points out:

> There is a halo that need not be looked at askance. Rather . . . it signifies that the rater has not abstracted the trait from its setting within the personality pattern, and that the person, moreover, has been seen against his proper background; namely, the position to be filled.[9]

Traits that are essential to the position—tact, for example, in the position of public relations director—must necessarily be appraised and be the focal point of acceptance or rejection of the candidate.

[8] E. L. Thorndike, "A Constant Error in Psychological Ratings," *Journal of Applied Psychology*, IV (1920), pp. 25–29.

[9] W. V. Bingham, "Halo, Invalid and Valid," *Journal of Applied Psychology*, XXIII (1939), pp. 221–28.

Further studies of the halo effect have been reported by Tiffin,[10] particularly in connection with industrial merit rating, in which he finds that such traits as cooperation, judgment, and initiative weight heavily in making an estimation of the over-all job performance of a worker. Workers believed to be high in these factors are likely to receive a high rating on their job performance. In discussing studies which have attempted to identify the traits most susceptible to this halo effect, Allport [11] emphasizes the need for careful definitions of the traits being observed and for training the judges. To reduce halo effect he suggests the following remedies:

(1) specific warning against it, (2) employing distinctive and well-defined variables, (3) using alert and trained judges, (4) avoiding characterial and censorial variables, (5) varying the presentation of the qualities to be rated so that a fresh and independent consideration of each is demanded, (6) avoiding haste and perfunctoriness in making ratings, and (7) averaging together the ratings of several judges so that, to some degree, the prejudices of the several judges will cancel one another.

Stereotypes. Personal bias was shown to be founded in some cases on the old theories held by the physiognomists, such as "A person with a high forehead is brilliant." In other cases it may be traced back to early single experiences of the interviewer which lead him to associate a psychological trait with a physical one. These beliefs and experiences lay the foundations for common "mental pictures" which many of us carry today. These mental pictures are called "stereotypes." Thus, if an interviewer had known a red-haired person who had a fiery temper, he tends to stereotype all redheads as possessing tempers.

Another form of stereotyping is that of connecting nationalities with common behavior traits. For example, an Irishman is widely characterized as a burly, aggressive fellow, ready for a scrap. Motion pictures encourage this stereotype. Some interviewers might hesitate to hire Patrick O'Boyle because of their feeling that he would likely stir up trouble on the job. However, to another group of people, the Irish are pictured as a fun-loving people, good-natured, and healthy; interviewers adhering to this stereotype of the Irish would approve Patrick O'Boyle as an employee.

[10] Joseph Tiffin, *Industrial Psychology*, 3rd ed. (New York: Prentice-Hall, Inc., 1952), pp. 330–37.

[11] Gordon W. Allport, *Personality: a Psychological Interpretation* (New York: Henry Holt and Co., Inc., 1937), pp. 435–47. In this connection, see also W. J. E. Crissy and James J. Regan, "Halo in the Employment Interview," *Journal of Applied Psychology*, XXXV (1951), pp. 340–41.

It should be noted that in some instances there may really be a relationship between nationality or racial stock and success on certain jobs. One study [12] reported considerable success on a machine-tending job if the employee had foreign-born parents. Racial background (indicated on the application blank) was correlated with success on the job, and in this way it was discovered which group of applicants were most likely to succeed on the job of tending a machine: 63 per cent of all the Austrian, German, and Scandinavian girls hired were successful on this machine; 50 per cent of the Czechoslovakian and Polish girls and 43 per cent of the Italian girls were successful.

Lack of rapport. It is up to the interviewer to establish a friendly relationship with the applicant. He does this by casual talk at the beginning of the interview, to put the person at ease. This is known as "establishing rapport," or establishing a relationship of mutual confidence. Sometimes contributing to unreliability of findings of the interview is the lack of rapport between the two participants. This can be spotted by evidences of tension or by a general lack of communicativeness in the applicant.

An applicant, fresh out of school, is likely to be apprehensive of what to do and say in an interview. He finds it difficult to volunteer information or to talk freely about himself to a stranger. This awkwardness is noticed also if the applicant has held one job for many years and has had little or no experience in employment procedures. The interviewer will find it difficult to obtain sufficient information until he can put such applicants at ease.

One employment manager received a letter from a girl whom he had hired some time previously. She began her letter: "In case you don't remember me, I am the girl you told to go walk around the block until I got rid of my nervousness." The employment manager used this way of putting the girl at ease by relieving her nervousness through exercise. Often applicants have been forced to wait long hours before they appear before the interviewer. During this time, they phrase over and over in their minds what they are going to say and how they are going to act until they have worked themselves into a state of tense apprehension. The interviewer must be skilled indeed to break through this cloak of suspicion and fear which is present in varying degrees in most applicants whom he meets. A casual word, a comment about the weather—these are

[12] W. V. Bingham and B. V. Moore, *How to Interview* (New York: Harper & Bros., 1941), pp. 97–98.

little ways in which the interviewer might help ease the initial discomfort of the applicant and establish rapport.

Research Evaluation of Selection Interviewing

Where scientific investigations have been conducted, it has been shown almost without exception that informal selection interviewing lacks meaningfulness. The interview, because it is a personal contact between only two people, is elusive; it is difficult to make a complete record of what transpires during the interview, taking into full account the surroundings, the inflection of voices, the impressions made by appearance, the physical conditions influencing the general trend of the conversation, or indeed of the personal well-being of both parties. Unless these various conditions be isolated and controlled experimentally, it is not easy to subject the procedure to true scientific investigation by other observers with a view to improvement. Improvement of methods would benefit industrial managers, since they are the ones who can realize the savings resulting from better selection of personnel. In order for any substantial progress to be made in improvement of the interview procedure, the leadership will have to be assumed by the industrial managers themselves, in developing better techniques within their own interviewing situations. Hepner points the way toward achievement of this goal:

> . . . Any executive or employment manager who wishes to improve his hiring technique can do so by standardizing his procedure, keeping records of his findings, and then making careful statistical studies of his records. Such an attempt will yield results more valuable than the present haphazard treatment of the interview.[13]

Early studies of the reliability of the interview were made by Hollingworth [14] in the selection of salesmen. In one study he was interested in checking the extent of agreement between judgments of independent interviewers. After the interviewers had interviewed a number of applicants for sales positions, by their usual techniques, the applicants were ranked according to the combined judgments of the interviewers. It was found that one applicant, rated best by one interviewer, was rated by the other interviewers up to

[13] Harry W. Hepner, *Psychology Applied to Life and Work*, 2nd ed. (New York: Prentice-Hall, Inc., 1950), pp. 315–17.

[14] H. L. Hollingworth, *Vocational Psychology and Character Analysis* (New York: D. Appleton & Co., 1929), pp. 115–19. Also. *Judging Human Character* (New York: D. Appleton & Co., 1923), p. 268.

57th place out of 57. (See Table 11.3.) Another was adjudged 6th, with several placing him 20th to 30th position, and even one judgment for 56th position. Evidently, the agreement of the interviewers on the same applicants was not very good. This much disagreement among interviewers affords dubious assurance that there is much accuracy in selecting employees who will succeed on the job.

TABLE 11.3

TWELVE INTERVIEWERS' RANKINGS OF APPLICANTS FOR SALES POSITIONS *

Applicant	Interviewers											
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
A	33	46	6	56	26	32	12	38	23	22	22	9
B	36	50	43	17	51	47	38	20	38	55	39	9
C	53	10	6	21	16	9	20	2	57	28	1	26

*Source: From H. L. Hollingworth, *Vocational Psychology and Character Analysis.* New York: D. Appleton & Co., 1929, pp. 115–19.

McMurry [15] takes exception to the kind of study just cited, on the basis that the experiment was not carefully controlled. He suggests that interview procedure need not be open to such severe criticism. An interview which is properly patterned, making full use of accumulated facts, can well become a dependable device for selecting employees. McMurry discusses the planned, patterned interview which overcomes some of the weaknesses found in the ordinary employment interview:

1. The interviewer works from definite job specifications, he knows what qualities each job requires (in typical studies, such as Hollingworth's, there is not sufficient evidence that the interviewers were thinking of the same job when interviewing applicants).

2. He has a plan; he knows what questions to ask. (The technique for interviewing in previous studies has been to allow the interviewer to follow his customary method of getting sufficient information upon which to base a decision.)

3. He has been trained in interviewing technique, how to establish rapport, how to obtain pertinent information. (Interviewers are frequently picked from available and willing participants, with no formalized training for the experiment indicated in the studies.)

4. Prior to the interview, he has already discovered a great deal about the applicant, from telephone calls to previous employers, etc.

[15] Robert N. McMurry, "Validating the Patterned Interview," *Personnel,* American Management Association, XXIII (1947), pp. 263–72.

5. The interviewer himself has been carefully selected for his fitness in interpreting and evaluating the information obtained from the applicant.

McMurry's criticisms seem reasonable. Certainly the planned interview which he recommends has met with success in several companies where the technique has been tried out.[16] In 1946, a study [17] was undertaken for the White Motor Company in cooperation with the Aero-Mayflower Company in Indianapolis. The project was to make predictions of the probable success of applicants for truck driver positions. Interviews were conducted by a trained psychologist, independent of the company, and ratings of the qualifications of each applicant were made as "1" (outstanding prospect); "2" (a good one); "3" (a fair or marginal one); or as "4" (an unsatisfactory one who would normally be rejected). All of 108 applicants were hired, regardless of rating. At the end of the 11-week training course, a study was made of the initial ratings and the men's success, as indicated by their length of service. (See Table 11.4.) It can be seen from the table that of those with a rating of "1," 75 per cent were still in service; in "2" rating, 38.5 per cent were still working; 26.1 per cent of "3," and only 13.3 per cent

TABLE 11.4

COMPARISON OF 108 DRIVER INTERVIEW RATINGS WITH "PASS-FAIL" CRITERION*

Success on Job as Measured by Length of Service	Applicant Rating			
	1 (*Outstanding*)	2 (*Good*)	3 (*Average*)	4 (*Poor*)
Still in Service (*Successful*)	6 75.0%	15 38.5%	12 26.1%	2 13.3%
Left Service for Any Reason (*Failure*)	2 25.0%	24 61.5%	34 73.9%	13 86.7%
Total Interviewed	8 100.0%	39 100.0%	46 100.0%	15 100.0%

* Source: Robert N McMurry, "Validating the Patterned Interview," *Personnel*, American Management Association, XXIII, No. 4 (1947), 270.

[16] The *Patterned Interview Form* developed by McMurry is reproduced in W. D Scott, R. C. Clothier, and W. R. Spriegel, *Personnel Management*, 4th ed. (New York: McGraw-Hill Book Co., Inc., 1949), pp. 87–91.

[17] Robert N. McMurry, "Validating the Patterned Interview," *Personnel*, American Management Association, XXIII (1947), pp. 270–71.

of "4." If the company had hired only the men rated as "1" or "2" by the trained interviewer, it would have reduced its turnover by 12 per cent.

Another study [18] of the validity of the interview for placement came about during 1943 within the Army Air Forces. The Assignment Division was found to be ignoring the recommendations of the classification interviewer for sending men to training schools. The classification officer requested that this survey be made to determine misplacements and the cost in wasted training time. The

TABLE 11.5

SCHOOL RESULTS OF 226 MEN ASSIGNED TO TRAINING CENTER *
Aircraft Warning Unit Training Center
Drew Field, Florida, 1943

Success in School	Men Placed by Interviewer's Recommendation		Men Placed to Fill Quota	
	Number	%	Number	%
TOTAL DROPPED	28	16	36	71
Dropped for inaptitude	0	0	11	22
Dropped, physical disability	10	6	18	35
Transferred, failing grades	18	10	7	14
TOTAL GRADUATED	147	84	15	29
Graduated—Satisfactory	25	14	8	15
Graduated—Very Satisfactory	54	31	4	8
Graduated—Excellent	61	35	3	6
Graduated—Superior	7	4	0	0
TOTAL	175	100	51	100

* Source: Richard W. Putney, "Validity of the Placement Interview," *Personnel Journal*, XXVI, No. 4 (1947), p. 145

results are shown in Table 11.5. Of the 226 men assigned to a particular school, 175—roughly three-fourths—had been recommended for school by the interviewer, and the remaining 51 had been placed merely to fill quotas, with no screening technique used. Of those recommended for school, 84 per cent were successfully graduated; of those placed by random methods, only 29 per cent graduated (half of those who graduated passed with the lowest designation, "satisfactory").

It was believed that this high degree of success with the inter-

[18] Richard W. Putney, "Validity of the Placement Interview," *Personnel Journal*, XXVI (1947), pp. 144–45.

viewing procedure would not have been possible without trained interviewers—many of the interviewers had college training, personnel experience, and extensive training in this specific area. In addition, detailed job descriptions were available to the interviewers. Supplementary use was made of aptitude and achievement test scores.

Trends in Interviewing Methods

From the last decade to the present time, an increasing amount of experimental research has been conducted for development and evaluation of new interviewing approaches. An outgrowth of the recent war is the "stress" interview, which emerged as a selection technique for military espionage personnel. It involves putting the candidate under severe emotional strain in order to observe his reactions. Military personnel research has also provided the impetus for a second technique: a selection board interview. This is not a new interview technique. In industry and in civil service groups, it has been called the oral performance test or panel interview. This interview procedure allows several members of a board to observe and rate a candidate. A third recent development is the group interview, in which about six to eight candidates are observed simultaneously in a group discussion situation. If a leader is not designated, the procedure is a leaderless group discussion. It has also been called the "group oral performance test."

The departure from the traditional type of interview is apparent. Instead of one interviewer and one applicant, one interviewer and many applicants may be together, or several interviewers and one applicant, or several interviewers and several candidates. In addition to these possible combinations, there may or may not be a leader appointed in the group discussions. There may or may not be a specific topic assigned for discussion. The conditions for creating stress may include props, tests, or unusual situations. The candidate may or may not know what he is being rated on.

None of the techniques has had sufficient history to make positive declarations about its value for selection purposes. It is hoped that a résumé of the research on the techniques will provoke fruitful new advances in methodology and application to the personnel problems in business, industrial, military, and government organizations.

The Interview Board. An interviewing technique developed

through research was standardized for the selection of officer candidates for retention in the regular peacetime Army. The interview board replaced the loose, multi-purpose, traditional Army interview board. Whereas the traditional board sought, in a rather haphazard fashion, information concerning a candidate's intelligence, physical fitness, technical competence, and personality characteristics, the interview board concerned itself only with an important qualification of Army officers—the ability to get along with people in line and staff functions. Physical fitness was left for a medical examination; intellectual fitness was determined by objective tests; and the evaluation of technical competence, background information, and some personality characteristics were the function of an objective information blank. A novel aspect of the interview board was that it succeeded in what might seem to be two mutually exclusive tasks—maintaining an air of easy informality during the interview and at the same time adhering carefully to standardized instructions. The special interview form used consisted of two work sheets upon which to record observations, candidate reactions, and ratings in three areas: bearing and manner, voice and language, and personality traits. The interview board procedure added some validity to other selection devices which were evaluated and combined statistically.[19] See Figure 11.2 for the form used.

Morse and Hawthorne sought to determine how reliably the members of an oral examination board, or oral interviewing board, could rate individuals who were being considered for positions in the Los Angeles Civil Service.[20] The candidates had already received sufficiently high grades on written tests before they were considered by the oral interviewing board, the members of which made independent ratings of a few specific personality traits.

The rating board used a form to rate these personal characteristics: appearance, maturity of judgment, ability to get along with others, effectiveness of expression, bearing and manner, alertness, and over-all evaluation of personal qualifications. Each one of these traits was scaled in units of 2 points from 60 to 100, with descriptive terms such as "unsatisfactory," 60–66 inclusive; "inadequate," 68–74 inclusive; and so on up to "superior," 94–98 inclusive, and

[19] From a paper "Evaluating Officer Performance," by Roger M. Bellows read at the joint Army–Navy–Office of Scientific Research and Development Board, August 16, 1945.

[20] Muriel Morse and Joseph W. Hawthorne, "Some Notes on Oral Examinations," *Public Personnel Review,* VII (1946), pp. 15–18.

A WORK SHEET FOR OBSERVING AND JUDGING CANDIDATE
(To be completed independently by each Board member during the interview, or immediately after)

This work sheet is designed to tell what to look for in the behavior of the candidate, and to provide a record of the impression his behavior makes on the Board member. The symbols +, O, and −, appear after each item. If the candidate's entire behavior as described in the item makes a favorable impression, circle the +. If the candidate's entire behavior as described in the item makes an unfavorable impression, circle the −. If his behavior does not impress you one way or another, circle the O. A complete observation must be made of each item separately during the interview. (It is left to the Board member to determine the way in which any instance of observed behavior affects his total impression of the candidate.)

I. JUDGING BEARING AND MANNER

1. HOW HE LOOKS Observe: Dress, features, carriage and stature	+	O	−
2. FACIAL EXPRESSIONS Observe: Movements of mouth, eyes, eyebrows and forehead, as shown in smiling, laughing, frowning, and grinning, while listening and talking	+	O	−
3. GESTURES Observe: Movements of the head, hands, arms and shoulders	+	O	−
4. SET OF BODY AND LIMBS Observe: Posture in leaning, stretching, twisting, swaying	+	O	−

II. JUDGING VOICE AND LANGUAGE

1. VOICE QUALITY Observe: Resonance, nasal and muffled qualities, pitch and loudness, inflections, slurring, affected delivery	+	O	−
2. WORD SELECTION Observe: Use of simple English, technical words, colloquialisms, slang	+	O	−
3. USE OF LANGUAGE Observe: Clarity and construction of sentences, clauses and phrases, narration and description, coherence, and directness	+	O	−
4. EMPHASIS IN SPEAKING Observe: Use of pauses, modulation, changes in rate, changes in pitch, changes in loudness, clipping and accenting of words	+	O	−

III. JUDGING OTHER PERSONALITY CHARACTERISTICS

1. BODILY COMPOSURE Observe: Presence or absence of unnecessary movements, irregularities in breathing, excessive perspiration, false laughter, tremors of face and hands, general agitation, or nervousness	+	O	−
2. SPEECH CONTROL Observe: Presence or absence of excitability as shown in increased rate of speech, rising inflections, blocking, slips, repetition, verbosity, stilted phrasing, or general excitement	+	O	−
3. EFFORT TO UNDERSTAND Observe: Requests for clarification, attempts at definition, questions of verification	+	O	−
4. RESPONSIVENESS Observe: Readiness of replies, amount of explanation, limitation of replies, not answering, effort to satisfy	+	O	−
5. OBJECTIVITY Observe: Discrimination between fact and opinion, making and accepting corrections, acceptance and rejection of superstitions, use of qualifications, hedging	+	O	−
6. REASONABLENESS Observe: Leaning on authority, bluffing, avoiding commitments, holding to previously stated opinion, consideration of opinion other than his own	+	O	−

FIG. 11.2. An Army interview board rating form.

B WORK SHEET FOR DESCRIBING CANDIDATE
(To be completed independently immediately following interview)

Describe candidate by circling all adjectives which apply to him under each of the three major classes, beginning at the left and continuing through to the right. This work sheet is for the purpose of making a record of the impression made by the candidate, and should be used only as a general guide to the completion of Work Sheet C.

I. DESCRIBING BEARING AND MANNER

cocky
colorless
disordered
droopy
fawning
forbidding
listless
sissified
slipshod
untidy
weak

awkward
eccentric
flabby
haughty
homely
immature
jerky motion
meek
odd
posed
retiring
shy
slouchy
slow motion
stiff
swaggering
wooden

amiable
coordinated
cordial
courteous
erect
neat
normal looking
orderly
respectful

appealing
animated
attractive
authoritative
clean-cut
lively
quick-moving
quick-reacting
relaxed
smooth motion

agile
arresting
cultivated
dignified
forceful
immaculate
impressive
polished
powerful
vigorous
well-bred

II. DESCRIBING VOICE AND LANGUAGE

deceptive
dissociated
doleful
dull
evasive
haggling
"idea-less"
illogical
inarticulate
incoherent
indecisive
mumbled
oily
padding
poky
superficial

ambiguous
artificial
blunt
dogmatic
exaggerated
flattering
gabby
halting
hasty
hazy
jargony
laborious
sing-songy
slow
tedious
undetailed
ungrammatical
verbose

careful
civil
coherent
conventional
definite
direct
frank
grammatical
pleasant-spoken
polite
sensible
sociable
tolerant

candid
condensing
imaginative
investigative
nimble
objective
painstaking
persuasive
resourceful
tactful
thorough

brilliant
clever
compelling
decisive
eloquent
enthusiastic
fluent
original
precise

III. DESCRIBING OTHER PERSONALITY CHARACTERISTICS

apathetic
bewildered
bluffing
bored
bossy
fearful
flustered
indifferent
insecure
intentionless
irresolute
sluggish
stubborn
timid
uncertain

anxious
appeasing
argumentative
bothered
changeable
complacent
echoing
excited
fencing
fidgety
impulsive
inaccessible
inelastic
opinionated
passive
suspicious

approachable
calm
capable
cautious
collected
communicative
controlled
deliberate
easygoing
friendly
game
good-natured
grave
methodical
natural
patient
willing

adept
appraising
broad-minded
determined
effective
firm opinion
flexible
observant
openminded
planful
spontaneous

adroit
aggressive
alert
analytical
commanding
confident
indomitable
inventive
resolute

FIG. 11.2. (*Cont.*)

"outstanding," 100. The reliability of the interview findings was determined by analysis of the ratings of a board of four members, rating 394 candidates for the position of captain in the fire department. The average of two raters chosen at random was correlated with the other two. The correlation coefficient obtained as an estimate of reliability was .86.[21] The authors suggest that this reliability is satisfactory.

Having found that oral interviewing boards rate interviewees fairly reliably, the authors then sought to study whether the ratings had validity. Now, as in many instances, the criteria used by these workers were in no sense "job success." They sought to use criteria such as written tests, training experience, and rating by a separate board. The determination of the validity of oral civil service examinations was hampered by the inadequacy of the criteria. The magnitude of correlation, of course, was in part limited by the fact that they were using a group of candidates who had been rather highly selected. As the authors said:

> If it were possible to appoint an entire group of applicants—all of those who failed as well as those who passed—full determination of the validity of our measures might be made. In the absence of such an ideal situation . . . the validity of tests must be determined either from the data at hand or by inference. As an example of the latter, general comments from supervisors might be cited on the result of a clerical examination given without an oral examination of personal qualifications. The complaints of supervisors were vociferous and numerous, so much so that any further attempt to cut down administrative expense by eliminating orals was abandoned. The fact that such complaints are not heard when an oral is added to a battery seems to justify its inclusion in the test battery. Another slightly less subjective tool which may be used as a criterion for validation is a service rating. . . . [a] variety of difficulties . . . may be encountered in the use of service ratings as criteria; nevertheless, for those jobs for which production records are not available, the service rating is the most common accepted standard against which tests are validated.[22]

The authors made an attempt in their agency to evaluate the interview as a measure of ultimate job success. Correlation coefficients of interview results by an outside board with probationary ratings were between .25 and .35.

To come back to other estimates of success, external to the rat-

[21] The Spearman-Brown formula for double length was applied.

[22] Muriel Morse and Joseph W. Hawthorne, "Some Notes on Oral Examinations," *Public Personnel Review,* VII (1946), p. 17.

ings, the authors point out that they obtained a coefficient of .39 when the oral interview board ratings were correlated against performance tests for painters and .30 when the interview ratings of the oral interview board were correlated against training experience as rated by a separate board.

These writers summarized their study by saying that the oral interview board is sufficiently reliable. It seems to have a low intercorrelation with tests used in the examination, and it is useful in raising the correlation of total test scores with the criterion. They also claimed that the oral interview board has justification in terms of its public relations value. It gives the candidates the privilege of satisfying a well-recognized desire to explain somewhere during the selective process that they are interested in and have qualifications for a particular job.

Summary

The interview demands considerable attention since it is used in nearly all companies. It is not only widely used but often is the sole device used for the selection of personnel. Studies of the worth of the selection interview in predicting those employees who are likely to be successful in job performance have left the interview exposed to considerable controversy.

Several factors contribute to unreliability in the interview. Among them are: the personal bias of the interviewer, which creeps into the interview situation and frequently distorts the results obtained; lack of rapport with the applicant; stereotyping by the interviewer; and "halo effect" operating in judgment of traits.

New trends in interview procedure include the group interview. This procedure provides for one or more observers to rate several applicants who participate as a group. Experimental results from some, but not all, studies show the group technique to have both reliability and validity.

During recent years, a number of researchers have attempted to improve the interview, feeling that it can be a technique of some value, when properly conducted. Advantages can be claimed for the patterned or standardized interview, which, in the hands of the trained interviewer, can yield satisfactory selections. In conjunction with supplemental devices for selection, such as a weighted application blank and psychological tests, the employment procedure can be vastly improved.

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12 Supplemental Selection Techniques

"NOW THAT I KNOW more about the world of work I'm glad they rejected me for the job at the Ajax Corp." This young trainee was expressing his appreciation for indirect vocational guidance service rendered through the selection procedures of a large company. Accurate selection not only contributes to the efficiency of a company, it indirectly helps job seekers find work for which they are suited.

Accurate employee selection methods include use of the interview (however feeble in validity), supplemental techniques, and psychological aptitude tests. This chapter is concerned with supplemental techniques; the next one, chapter 13, treats psychological aptitude tests.

Supplemental selection techniques include application blank items and trade tests. The procedure called "item analysis," by which the usefulness of such items can be determined, is strongly recommended. It will be illustrated on page 256.

Construction of Application Blanks

Nearly every company uses some form of an application blank. Of 325 firms participating in a survey in 1947, 99.5 per cent used application blanks.[1] These application forms range from a brief

[1] Walter D. Scott, Robert C. Clothier, and William R. Spriegel, *Personnel Management*, 4th ed. (New York: McGraw-Hill Book Company, Inc., 1949), Appendix A, p. 574. A series of surveys reported by these authors shows the use of the application blank has increased from 89 per cent in 1930 to 99 per cent in 1940 and to 99.5 per cent in 1947.

3″ × 5″ preliminary interview card to an elaborate folder containing hundreds of questions about the applicant's personal and work history. Some companies use a different application blank for office, technical, factory, supervisory, and sales jobs. In this section, a general discussion of problems involved in development of application blanks will be given with a view to improvement of the use of application blanks in specific situations; in the following section, methods for analyzing items are treated.

In view of the variety of job duties in a company, it might seem

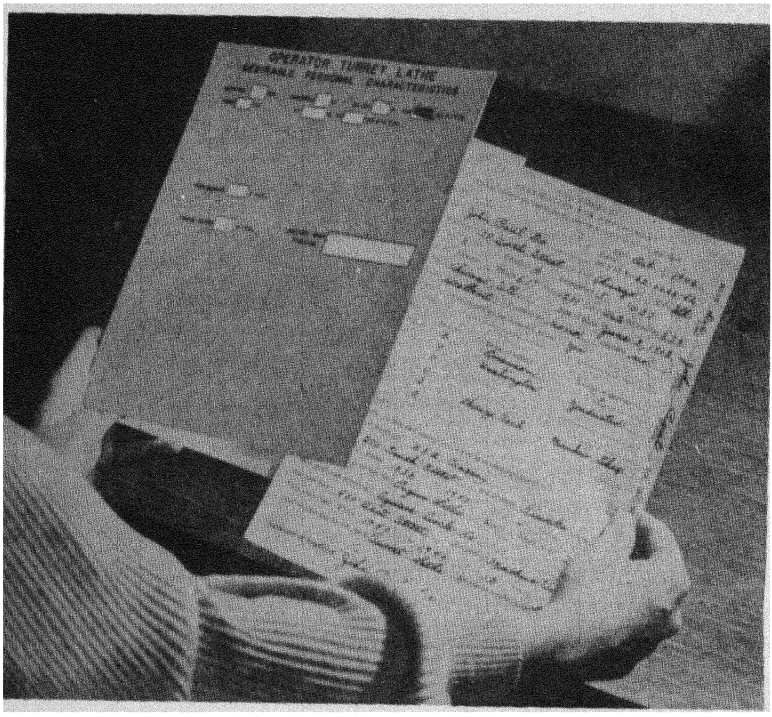
(N) Special skills and experience

Estimate your ability in each of the following:	Check One			
	None	Novice	Skilled	Expert
(a) Job Analysis				
(b) Counseling and Interviewing				
(c) Test:				
1. Administration and Interpretation				
2. Construction				
(d) Filing (alphabetically and numerically)				
(e) Drafting and Layout				
(f) Motion and Time Analysis				
(g) Attitude, Morale and Opinion Surveys:				
1. Interviewing				
2. Form construction				
3. Analysis and interpretation				
(h) Library:				
1. Preparation of bibliography				
2. Cataloging				
(i) Technical Writing and Editing:				
1. Publications				
2. Layout and typography				
(j) Calculators:				
1. Monroe				
2. Friden				
3. Marchant				
4. Others (specify) _____				
(k) I. B. M.				
1. Sorter				
2. Key Punch				
3. Verifier				
4. Tabulator				
5. Others (specify) _____				
(l) Mimeograph				
(m) Recording Machines:				
1. Dictaphone				
2. Soundscriber				
3. Wire Recorder				
4. Tape Recorder				
5. Others (specify) _____				

Source: Application blank of Roger Bellows and Associates, Detroit, Mich.

FIG. 12.1. Illustrating the type of form used to aid in selection of assistant personnel research technicians.

at first that a different application form is necessary for each job family.[2] In fact, some companies have a different type of blank for office and clerical applicants, salesmen, supervisory and technical applicants, and for production or hourly-paid workers. In Figure 12.1 part of a form is shown which is used to aid in the selection of assistant personnel research technicians. The part shown provides space for the applicant to estimate his ability in the several special skills applicable to the job.



Source: Wood, "A New Method for Reading the Employment Questionnaire," p. 13.

FIG. 12.2. Application blank being inserted into template folder.

To circumvent the problem of a separate form for each set of job duties, a general form may be prepared for all jobs. Wood has suggested as a selective device a template to superimpose on the application form to shield out all but the information that pertains to the particular job being considered.[3] (See Figure 12.2.)

[2] A job family is defined as a list of jobs, all of which require, for successful performance, the same or nearly the same psychological characteristics.

[3] Wendell F. Wood, "A New Method for Reading the Employment Questionnaire," *Journal of Applied Psychology*, XXXI (1947), pp. 9–17.

Wood cites the following advantages of the selective application form based on actual job requirements, with a template for each job or family of jobs:

1. There can arise no question between the employment office and the employing department concerning job requirements, once they are set up with the cooperation of both.
2. An applicant can be judged solely by what he has to offer in terms of qualifications for a particular job.
3. The employment man has definite specifications of the requirements he should look for on a given job.
4. The tendency to rationalize an applicant's qualifications for one job because of his personality traits, or his outstanding experience not related to a given job, is minimized.
5. Considerable time may be saved by the interviewer in cases where he is obliged to hunt through a number of applications to find one with the requirements for a particular job.
6. The employment department, and particularly the interviewers, will learn to think more readily in terms of job elements and may find themselves not so readily inclined to generalize and read information into the application form as in the past.[4]

Use of such a template presupposes that some study (preferably by item analysis) is made to determine the items on the application form that relate to specific jobs or job families.

In the preparation of application blanks, items are selected in one of several ways. One way is to include the items that seem logical and appropriate to the person preparing the application form: this is the armchair method. Another way of deciding what items to include is the inspection of application blanks used by other companies and the choice of appropriate items.

In preparing the *Handbook of Personnel Forms and Records* for the American Management Association, Ahern suggested a number of questions which might be asked to see whether the items under consideration are suitable and necessary for the application form.[5]

[4] Wendell F. Wood, "A New Method for Reading the Employment Questionnaire," *Journal of Applied Psychology*, XXXI (1947), p. 17. See also, "Reading the Employment Questionnaire," *Personnel*, American Management Association, XXIV (1947), pp. 123–26.

[5] Interviewers who are interested in developing new forms or revising old ones may find useful information in these references in addition to Eileen Ahern's *Handbook of Personnel Forms and Records*, Research Report No. 16 (New York: American Management Association, 1949), p. 227, described in this section; Beatrice Gaines, "Forms Control—for Modern Business Efficiency," *Modern Management*, VIII (1948), pp. 7–9; and Beatrice Gaines, "Techniques of Forms Control," *Modern Management*, IX (1949), pp. 15–18. A recent book which contains many sample forms is George D. Halsey's *Selecting and Inducting Employees* (New York: Harper & Bros., 1951), p. 361.

Several of the questions pertain to the usability of the item: Is the information necessary to identify the applicant? Will the information be used? How? Is the information needed for selection at all? Is the application form the proper place to ask for the information? Does it ask for information duplicated elsewhere? Other questions are concerned with the item's relation to selection: Is it based on analysis of the job for which the applicant is to be considered? Does it help to decide whether the candidate is qualified? Has it been pre-tested on the company's employees and found to correlate with success? Is it probable that the applicants' replies will be reliable?

Analysis of application blank items. It is strongly recommended that items be selected on the basis of their relationship to success of applicants in their history as employees with the company. This is considered the most important of Ahern's questions: Has the item been pre-tested on the company's employees and found to correlate with success? This basis for selection of items is the objective approach; it utilizes only items which have been found to discriminate between good and poor workers. One way of finding out is *the horizontal per cent method*[6] of item analysis. Certain non-test trial predictors, as application blank items are called in technical language, may be found to be related to later success on the job. Items such as age, sex, marital status, number of dependents, and those pertaining to training and experience can be used as trial predictors of success, just as scores from psychological tests and trade tests are used. To differentiate the two, we shall usually call items from the application blank either "personal data items" or "non-test trial predictors," as opposed to test scores, which are called "trial test predictors."

Item analysis of application blanks is a simple statistical technique which can be used to identify the non-test items of data that are related to success on the job. These non-test trial predictors are validated in much the same way as psychological tests are. Some items may be found to have more relationship to success than others; if so, they are given more weight. The weighting is done by assigning a score to each of the variables according to the amount of relationship they bear to success on the job.

When all categories of the several personal data items have been

[6] This method is discussed in William H. Stead, Carroll L. Shartle, and Associates, *Occupational Counseling Techniques* (New York: American Book Company, 1940), pp. 256–57.

PART I

DIRECTIONS

The first 25 questions are about your personal history--activities of yourself and your family, things you like or dislike, and so on. Each statement or question has four or five possible answers, one of which will apply to you better than any of the others. Read each statement or question carefully, then read all possible answers. Select the answer which best applies to you, and put an X in the parentheses in front of it. Answer every question. Work rapidly. Do not spend too much time on any one question.

1. What is your present marital status?
   A( ) Single.
   B( ) Married, have no children.
   C( ) Married, have one or more children.
   D( ) Widowed.
   E( ) Separated or divorced.

2. How many persons, not including yourself, are dependent upon you for all or most of their support?
   A( ) None.
   B( ) 1.
   C( ) 2 or 3.
   D( ) 4 or 5.
   E( ) More than 5.

3. When you were 15 years of age, how many living brothers and sisters did you have?
   A( ) None.
   B( ) 1.
   C( ) 2.
   D( ) 3.
   E( ) 4 or more.

4. How much is your income from sources other than your regular job?
   A( ) $200 per year or less.
   B( ) $201 to $500 per year.
   C( ) $501 to $2,000 per year.
   D( ) $2,001 to $5,000 per year.
   E( ) $5,001 or over.

5. On how much life insurance do you personally pay premiums, either for yourself or other persons?
   A( ) None.
   B( ) $1,000 to $5,000.
   C( ) $5,000 to $10,000.
   D( ) $10,000 to $25,000.
   E( ) Over $25,000.

6. For what purpose do you expect to use your bank savings or investments?
   A( ) To buy a business.
   B( ) For the education of some member of my family.
   C( ) To buy a home or furniture.
   D( ) For some other purpose.

7. Do you keep a personal budget and account of what you spend?
   A( ) I keep exact records and budget all expenses.
   B( ) I keep exact records and manage the spending according to a general plan.
   C( ) I do not keep exact records, but do manage expenses according to a plan.
   D( ) I have tried keeping records or budgets, but have found them unnecessary.
   E( ) I have never found it necessary to keep exact records or budgets.

Source: Employee Relations Dept., Standard Oil Co. (N. J.), *Made to Measure.* Appendix, Charts A40, A41. New Jersey: Employee Relations Dept., Standard Oil Co., 1951.

FIG. 12.3. Portion of application form designed not only to facilitate the analysis and scoring of items, but also to reduce errors in filling out or reading the form.

analyzed to determine their weights, the personnel technician has a scoring key with which to score an application blank. He derives a weighted composite predictor score from the application form of an applicant. The personnel technician now needs a technique for determining what total score he should use as a cut-off point for hiring.

One firm has prepared its application blanks in a form similar to multiple-choice psychological tests in order to facilitate the analysis and scoring of the items. Thus, instead of asking the applicant to write a word in to describe his marital status, the application form would contain several possible choices, and he would check the one which applied to him. (See Figure 12.3.)

This format is suggestive of a workable arrangement of items designed not only to facilitate the analysis and scoring of items, but also to reduce errors in filling out or reading the form.

During the past three decades analysis of the items contained in application blanks has contributed measurably to the systematic appraisal and prediction of the success of applicants. The development and evaluation of this kind of item is somewhat similar to the development and evaluation of test scores.

To what extent does previous job experience contribute to success? What role does age, one of the most readily identifiable characteristics of an applicant, have? What does marital status—whether an applicant is married, widowed, single, separated, divorced, or engaged—have to do with his potential success on the job? Non-test predictors such as age and marital status are trial items for which a test does not need to be given. You can ask the applicant directly or you can find out from records or from what he puts down on the application blank. There is a significant value in the use of non-test information of this kind, if it is predictive of success, simply because you do not have to pay for it. It costs a considerable amount of money to give tests; it costs comparatively little to obtain information of the non-test variety.

Another reason for the use of non-test information is that it may tap kinds of information, some of which is not at all, or lowly, intercorrelated with test information, thus delimiting more of the make-up of the applicant that is related to success. Some of the early research on items on the application blank was done by Kenagy and Yoakum[7] and Kurtz[8] in predicting the success of salesmen from a statistical coding and weighting of the items on the application blank.

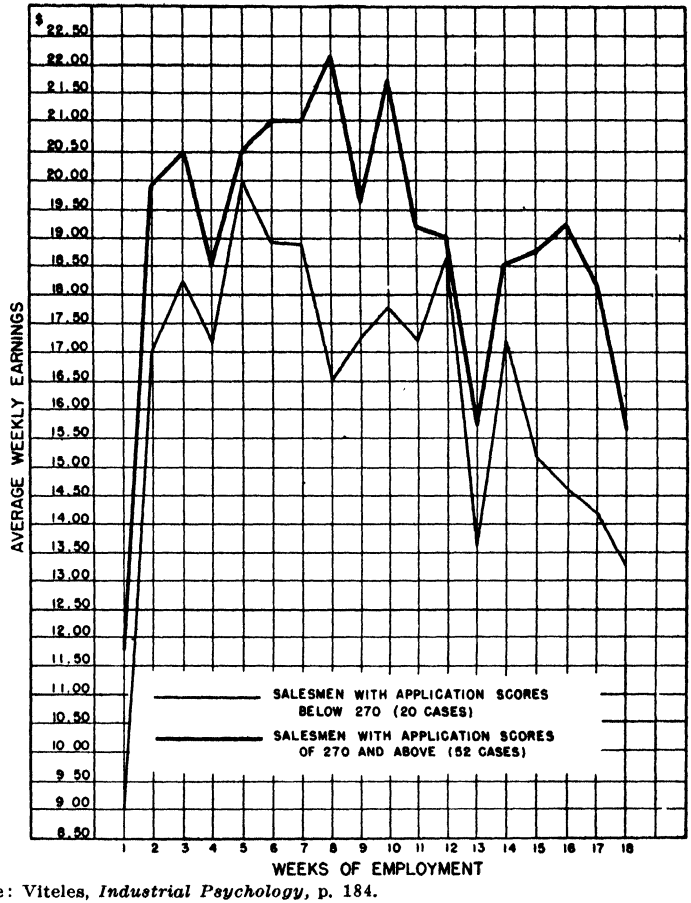
A classical study conducted by Viteles,[9] in the Yellow Cab Com-

[7] H. S. Kenagy and C. S. Yoakum, *Selection and Training of Salesmen* (New York: McGraw-Hill Book Co., Inc., 1925), p. 194.

[8] A. K. Kurtz, "Selecting Salesmen by Personal History Items," *Psychological Bulletin,* XXXVI (1939), p. 528.

[9] Morris S. Viteles, *Industrial Psychology* (New York: W. W. Norton & Co., Inc., 1932), pp. 182–85.

pany of Philadelphia, illustrates the utility of application blank item analysis for predicting success in job performance of taxicab drivers. A test of mental alertness and a test supposed to measure accident susceptibility, used by the company, had not been shown to predict the commissions and gross earnings of the drivers (that is, successful drivers). A study of the usefulness of application



Source: Viteles, *Industrial Psychology*, p. 184.

FIG. 12.4. Differences in the earning ability of cab driver-salesmen.

blank items was made, using a group of the highest earners and a group of the lowest earners. Items were: age, nationality, marital status, number of children, number of other dependents, trade followed prior to employment by the Yellow Cab Company, and weight. A critical score of application blank items was obtained for rejection of doubtful or borderline cab drivers.

Applying this score in a follow-back study of men hired during the previous period, its use would have rejected 60 per cent of the poorest earners, 22 per cent of the best earners, and 18 per cent of the average earners. Figure 12.4 shows the striking difference in earning ability between 20 men who were hired even though they were below the critical score and 52 men who were above it.

As part of a long-range personnel research program the Burroughs Corporation foresaw the need for improved personnel techniques and analytical approaches to evaluation of applicants in the early 1920's. The program of personnel research now in progress at Burroughs entails selection problems concerning several categories of personnel within the marketing activity.[10] The selection of personnel has been performed with great care. As a result of this continuing program, the amount of turnover has been kept exceedingly low, compared with the average of companies in general. A study in this company [11] of non-test trial predictors from the application blank and other records for selection purposes is described below. The group studied included 52 successful salesmen and 50 salesmen who had separated from the company because of ineffectiveness as salesmen of the office equipment products of the company. The criterion of performance was simply success or failure.

Personal data about the salesmen were gathered from records and from application blanks. The trial variables were: age, interviewer's estimate of success, marital status, former employers' ratings, number of dependents, office experience, part-time employment, supervisory experience, number of accounting courses completed in college, and extra-curricular activities while in college. The relationship between age and the criterion of success-failure is shown in Figure 12.5.

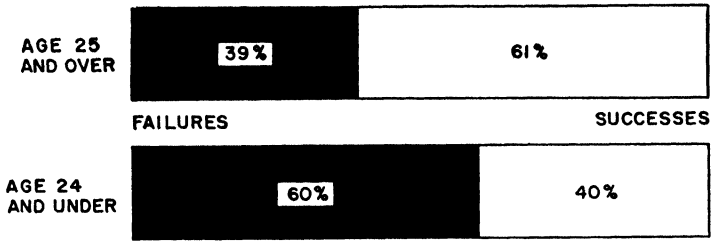
Age was the most significant non-test trial predictor. The significance of this item is described by an index indicating whether or not there is a strong likelihood that the differences in the ages of the salesmen in the two categories, success and failure, are true differences, not just a chance occurrence which happened this one time. The index is determined by a formula which tells how much the proportion of people in each category departs from the propor-

[10] This system has been developed over a period of years by Paul G. Kanold, H. W. McIntyre, more recently by Robert B. Lapham, and still more recently by D. E. Clifton and his staff.

[11] Portions of several unpublished studies by Roger Bellows and Associates, with the participation of knowledgeable personnel in the Burroughs Corporation, marketing activity, are described.

tion one would expect to find from chance alone. The larger this index, the surer one could be that the number of people in each category would occur in about the same ratio if the experiment were repeated. This item was significant at the 4 per cent level of confidence.[12] This means that if we could repeat the study many times, we would expect about this same order of differences in 96 out of 100 similar samples from this company; that men 25 and above are more likely to be successful than men 24 and under at the time of hiring.

Two other significant items were marital status and interviewer's estimate of success. They were significant at about the same level of confidence—at the 5 per cent level. There was a tendency for the



Source: An unpublished study by Roger M. Bellows and Associates with the participation of representatives of the marketing activity of The Burroughs Corporation.

FIG. 12.5. The relationship of age to success of 102 office equipment salesmen (4% level of significance).

married or engaged man to be more successful than the single man in the job of office equipment salesmen. The other variable, interviewer's estimate of success, was a rating performed at the time of hiring. It has been the company's policy for several decades to provide carefully prepared rating blanks for branch managers to use after the interview. The branch manager sends in his estimate of the predicted future success of the individual. The estimate was not based on the interview alone but on all of the information available in the branch. The applicant's potential success is rated either superior, good, average, below average, or unsatisfactory. This rating goes to the central personnel selection authority in the marketing activity, for authorizing selection of the new hire. In this study, the interviewers' estimates were picked up from the records and analyzed for validity. There was a low but significant tendency for

[12] The statistical rationale of the index of level of significance may be found in Quinn McNemar, *Psychological Statistics* (New York: John Wiley & Sons, Inc., 1949), pp. 66–67.

applicants rated superior to be more successful than those who received a lower rating.

This study is but one example of the selection power to be obtained by application blank analysis of non-test trial predictors. It serves to illustrate that certain items on the application blank can be as helpful in predicting success on the job as can other devices, such as ratings or interviews, and help improve the worth of the entire hiring procedure.

Work histories. The problem arises concerning the accuracy or truth with which applicants report factual information on the application blank. If their entries could always be considered as reliable, this would make verification by checking source records unnecessary.

The accuracy of work histories given by the applicant on the application blank was the subject of a study conducted by Keating, Paterson, and Stone.[13] A total of 236 cases were selected at random from the Minnesota State Employment Service Office, St. Paul, for a study of the accuracy of the applicants' reports of past employment in relation to weekly wages, duration of employment, and job duties. The investigators found the applicants' reports of their work history to be very accurate, and the correlation coefficients between what the applicant claimed and what was found by checking source records were from .90 to .98.

Supplemental Information

Letters of reference. The final decision to hire is usually delayed until the company has had time to verify the applicant's statements on the application blank. Inquiries generally take one of five forms: (1) an evaluation form to be filled out by previous employers or teachers; (2) a letter of reference; (3) telephone checks, such as the one developed by McMurry; [14] (4) investigation by an agency; or (5) a printed card for economical replies. Books has used the card form, with 88 per cent return.[15] It is interesting that in checking the actual employment dates of the applicant, the dates checked in about two-thirds of the cases Books described.

[13] Elizabeth Keating, Donald G. Paterson, and C. Harold Stone, "Validity of Work Histories Obtained by Interview," *Journal of Applied Psychology,* XXXIV (1950), pp. 6–11.

[14] The printed form is available from Science Research Associates, 57 West Grand Avenue, Chicago, Illinois.

[15] Charles W. Books, "Checking the Applicants' References," *Personnel Journal,* XXVI (1948), pp. 329–31.

DIAGNOSTIC INTERVIEWER'S GUIDE

NAME_____ DATE_____.
ADDRESS_____ INTERVIEWER_____

The interviewer should begin each interview with this statement to himself, "This applicant will impress me according to my past experience with persons who remind me of him. Consequently I must be on my guard against such prejudices which may naturally arise on account of this. I must keep a record of the facts and judge the applicant on the basis of the facts only. The applicant is a blank to me now." (Interviewer should write out information received as answers to the questions in the space left for that purpose.) If extra space is needed use separate sheets of paper. All of this material should be included with the blank itself when returned to the personnel department. The questions which are listed below for the interviewer to ask the applicant are suggestive. Other queries pertinent to the applicant's history will naturally suggest themselves to the interviewer as he contacts the applicant.

Please read special instructions on last page before interviewing.

WORK HISTORY:

Interviewer says—

1. Give me the names of your past employers. Begin with the last or present employer and go backward. Tell me:
   (*a*) How you got the job,
   (*b*) What you did, and,
   (*c*) Why you left.

2. How did your previous employers treat you?

3. What experience of value did you get from each job?

4. Did you do work of such quality that your employer would be glad to recommend you?

5. Were you ever criticised for the kind of work you did? Give me some examples of mistakes or failures.

6. Can you give me any example of success in your experience, particularly in handling people?

7. What kind of work did you enjoy the most and seem to progress the best in?
   (*a*) Mechanical work?
   (*b*) Clerical and detail work?
   (*c*) Contact work?
   or (*d*) Do you know?

When the interviewer has secured as much information as it is possible for him to get concerning every phase of the applicant's work history, he should ask himself the following questions:

1. What kind of work history does the applicant have?

   (−) Poor − Fair ‖ Good − Excellent (+)

2. Has it been the type of work which has required meeting and handling different types of people? (+) Yes ‖ No (−).
3. Has the applicant indicated ability to work consistently? (+) Yes ‖ No (−).
4. Has the applicant indicated a serious and sincere attitude toward the work he has been doing? (+) Yes ‖ No (−).
5. Has the work been such as to necessitate the development of habits of persistence and aggressiveness? (+) Yes ‖ No (−).
6. Has the work history indicated a capacity for growth? (+) Yes ‖ No (−).
7. Does the work history reveal habits or attitudes which would make it easy for the applicant to adjust himself to the policies and procedures of this company? (+) Yes ‖ No (−).
8. Is this man a good soldier as evidenced by good team-work? (+) Yes ‖ No (−).

Source: Scott, Clothier, Mathewson, and Spriegel, *Personnel Management*, p. 82.

FIG. 12.6.

Diagnostic Interviewer's Guide. A guide called the "Diagnostic Interviewer's Guide" (D.I.G.),[16] devised by Wonderlic[17] for interviewers' use in selection of employees, consists of a series of organized questions which can be prepared in advance of the interview and scored. Four areas of information are covered: work history, social history, personal history, and family history. Since the guide deals with biographical information, its use is considered as supplemental to the interview. There are 34 questions in the guide, some of which can be asked of the applicant by the interviewer and some of which the interviewer answers after the applicant has departed. In addition to providing necessary information concerning an applicant, the D. I. G. provides for a rating by the interviewer of the person's capabilities and future potentialities, which are judged by responses to the questions asked in the interview.

For example, the section on work history shows whether the individual has demonstrated capacity to grow and develop in the work which he has previously done. This is illustrated as Figure 12.6. Did he profit by the work experience? This sort of judgment is facilitated by the interviewer's asking, "What experience of value did you get from each job?" On family history: these questions reveal whether or not the applicant's training and family background in terms of social, economic, and educational advantages have developed traits of personality and character that are desirable from the standpoint of success on the job for which he is applying. ("Did your parents insist upon your getting the education that you have?") On social history: a description of the character of the applicant's social history to determine his sociability and interest in people. ("Do you enjoy being with people?" "Do you have many close personal friends?") On personal history: discover motivational factors in the applicant's make-up. Is he ambitious? Is he capable of hard continuous work? Does he have a well thought out goal? ("Why should we give you a chance with us?" "What ambitions do you have for yourself?")

The predictive value of the Guide seems fairly good. It was found that those who were still on the job a year after hiring had made higher average scores on the D. I. G. than did those who were dis-

[16] A reproduction of the entire "Diagnostic Interviewer's Guide" may be found in W. D. Scott, R. C. Clothier, S. B. Mathewson and W. R. Spriegel, *Personnel Management* (New York: McGraw-Hill Book Co., Inc., 1941), pp. 82–85.

[17] C. I. Hovland and E. F. Wonderlic, "Prediction of Success from a Standardized Interview," *Journal of Applied Psychology*, XXIII (1939), pp. 537–46.

missed.[18] Also, a greater percentage of those who had high scores were still on the job, and of those who had made low scores, a low percentage remained. The contribution of the D. I. G. is that it may act as a selection device which picks workers who are more likely to stick and be successful on the job.

Prediction and Control of Turnover

Individual differences taken into account at the hiring point may lead to control of turnover. Studies reported as early as 1923 illustrate a relationship between test predictors and turnover on some jobs. For example, a study in three companies is reported by A. J. Snow.[19] In the first company, he found that of the female clerks who had been hired with a mental alertness test score between 15 and 30, as measured by the "Scott Company Mental Alertness Tests," about 40 per cent left within 6 months. He found the least labor turnover among female clerks who scored between 35 and 50 on the test. However, for those female clerks whose scores were above 50, the percentage leaving increased rather rapidly; those with highest scores were most unstable of the clerks—even greater than for the clerks scoring low in mental alertness.

In contrast, in the second company there was a direct relation between turnover proneness and mental alertness test score. Snow pointed out that the two companies had different working conditions and that these different conditions make necessary a study of the particular situation.

An early study by Viteles [20] shows the results of testing a group of inspector-wrappers and cashiers. He discovered that workers who remained on the job for a long time had a characteristic range of scores on an intelligence test. Workers both above and below this range were found to be short-termers. (See Table 12.1.)

Others have approached the same problem of the control of turnover by identification of the non-test predictor items which relate to high turnover on the job. In a classic study made in the late 1920's, Dreese found an astonishing rate of turnover among Western Union telegraph messengers. During the decade preceding his study, the rate of turnover was almost 400 per cent annually.[21] Of

[18] *Ibid.*

[19] A. J. Snow, "Labor Turnover and Mental Alertness Test Scores," *Journal of Applied Psychology,* VII (1923), pp. 285–90.

[20] Morris S. Viteles, "Selection of Cashiers and Predicting Length of Service," *Journal of Personnel Research* now *Personnel Journal,* II (1924), pp. 467–73.

[21] Ira Mitchell Dreese, "Personnel Studies of Messengers in the Western Union

TABLE 12.1

COMPARISON OF MENTAL TEST SCORES AND LENGTH OF SERVICE OF 68 CASHIERS AND 22 INSPECTOR-WRAPPERS*

Number of Cases	Per Cent	Test Scores	Average Length of Service in Days
2	2.2	10–19	3.0
7	7.8	20–29	54.6
8	8.9	30–39	128.1
26	28.9	40–49	168.4
23	25.5	50–59	87.6
10	11.1	60–69	106.5
9	10.0	70–79	65.0
4	4.5	80–89	65.0
1	1.1	90–up	35.0
Total 90	100.0		

* Source: Morris S. Viteles, "Selection of Cashiers and Predicting Length of Service," *Journal of Personnel Research*, II, No. 12 (1924), p. 472.

those messengers who were released over a 6-months' period, 15 per cent had served less than 1 week, 50 per cent less than 1 month, 75 per cent less than 3 months, and 95 per cent less than 1 year. Dreese also studied cost of this turnover. There was a tremendous economic waste to the boys, to the company, and to the public. The cost of the hiring itself, including advertising and clerical help, amounted to $2.00 per messenger. The expenditure involved in issuing the uniform and giving necessary instructions was estimated at a minimum of $1.00. The difference between the guaranteed salary of the first week and the boy's actual earnings amounted to $3.50 on the average. Dreese stated, "During 1928 the total measurable loss caused by the early resignations of carriers was at least $20,000.00."

Although he did not analyze his results by elaborate methods, he did find certain characteristics which identified the turnover-prone applicant for messenger service. He recommended that these earmarks of the turnover-prone boy be used in hiring. He found that age at hiring was inversely related to turnover, that pay rate played a part, and that if boys with an education of 9th grade or less were hired, messenger turnover would tend to be reduced. He made other recommendations which may have been quite effective in turnover savings.

A study conducted by Industrial Services Division of the U. S.

Telegraph Company," a thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, Columbia University (New York: Columbia University Press, 1929), pp. 1–61.

Employment Service for Michigan showed that certain USES tests were effective in reduction of turnover during the war period.[22] In this study, 600 trainees were used as subjects. The trainees were employed in routine and semi-skilled assembly work at a furniture manufacturing company. Both voluntary and involuntary separations for one year were covered by the study. The results showed that of those employees who were in the upper third of the aptitude tests, only 10 per cent left during the year, whereas 35 per cent of the trainees left who were in the middle third on the tests. Of those who scored in the lower third on the tests, the turnover rate was 55 per cent. This study suggests a striking saving in turnover expense by the use of a test battery which requires not more than 30 minutes for administration.

Another study, by C. E. Scholl, Jr., and the writer may be cited.[23] Seventy-five female production employees who were still with the company after a period of time as long as 5 years were called the long-term control group. A group of 75 female production employees who had terminated and who had been with the company for a period of 9 days to 1 year were used as short-term subjects. The characteristics of these two groups were contrasted by statistical procedures.

In the beginning of the study, a procedure of a tentative or armchair nature was developed, and a turnover score was obtained for each of the 150 cases comprising the short- and long-term employee groups. This turnover score was developed as follows:

	Points
1. "Wonderlic Personal Test" scores:	
Between 7 and 17, inclusive	5
Scores of 5, 6, 18, 19, and 20	3
Below 5 and above 20	0
2. Age at last birthday:	
24–40	1
Under 24 and over 40	0
3. Marital status:	
Unmarried, including widowed, separated, and divorced	1
Married	0
4. Previous employment record showing at least 1 year's continuous satisfactory experience in similar routine factory work and no office, clerical, or stenographic work:	
Good	2
Absence of good record as defined above, including no previous employment	0

[22] An unpublished study by the Michigan State Employment Service.

[23] This study was conducted in the Parke-Davis Pharmaceutical Company, Detroit, Michigan. Charles E. Scholl, Jr., and Roger M. Bellows, "A Method for Reducing Employee Turnover," *Personnel*, American Management Association, XXIX (1952), pp. 234–36.

On this basis, the turnover scores of the 150 employees were computed. It was found that the short-term employees made scores significantly different from those of the long-term employees, indicating that the device based on an armchair approach was better than the former completely unsystematic way of selecting employees.

The next step in the study was to find out which of several variables had maximum forecasting efficiency of turnover proneness. In this part of the study, previous employment record was found to be most significantly associated with turnover, second was marital status, and the "Wonderlic Personnel Test" score was third. It was found that age did not add any validity to this simple battery of predictors. Single girls with previous factory job experience who made moderate scores on the test were more stable on the job. After the proper statistical weights had been derived, it was found that the final procedure for predicting turnover of applicants had greater effectiveness than the armchair or tentative procedure. Of those employees who were identified by the final predictor method as turnover prone, 69 per cent actually were found to be short-term employees.

A study in several respects similar to the one outlined above was reported by Tiffin, Parker, and Habersat.[24] They analyzed a long-term group (27 employees who were still on the job 9 months after employment) and a second group of 60 employees who left the job within 3 months after employment. They found that each of 4 characteristics—age, years of education, marital status, and number of dependents—significantly picked the long-term workers. For that situation, the workers who were married, 30 years of age or older, who had not finished the 10th grade, and had at least one dependent tended to be less turnover prone than those without these characteristics.

Kreidt and Gadel isolated the non-test predictors which differentiated girls who left clerical jobs in a large insurance company office after a few months of employment from those who remained on the job. At the time of employment, 400 high school girl graduates were given a battery of four clerical speed tests, a vocabulary test, an arithmetic test, a biographical information blank including attitudinal items, and a job preference sheet on which the applicant

[24] J. Tiffin, B. T. Parker, and R. W. Habersat, "The Analysis of Personnel Data in Relation to Turnover in a Factory Job," *Journal of Applied Psychology*, XXXI (1947), pp. 615–17.

indicated the relative importance to her of factors such as pay, security, and type of work.

After three months, 75 of these girls had left the job to go to college or to take other jobs. Analysis showed that these short-term employees differed from those who stayed on the job. The short-termers more often had a father whose occupation was professional or managerial, more often took a college preparatory course in high school, more often, in general, considered the type of work they did as very important, had somewhat lower scores on the clerical speed tests, and had higher scores on the vocabulary and arithmetic reasoning tests.

Two composite scores, one for the vocabulary and arithmetic reasoning tests and another for selected non-test predictor items and attitudinal items, yielded considerable accuracy in predicting whether the employee would remain longer than 3 months.[25]

Trade Tests

Personnel technicians have sought to improve their decisions in the selection and placement of workers by adding testing procedures to the interview. Some of the most successful of these procedures are trade tests, particularly oral trade tests. Oral trade testing is considered as supplemental to the interview.

Trade tests and job proficiency measurements tap into specific knowledge and skill learned in a more or less systematic and formal way. It would be well, at the outset, to distinguish between measures of job knowledge and job aptitude. Aptitude tests, considered in the next chapter, are designed to measure knowledge which has been acquired, not by formal or systematic training in specific subject-matter areas, but which has been acquired incidentally. Aptitude testing is thus more applicable when it is important to find out an applicant's potentialities for learning, the amount of knowledge and training he can be expected to acquire in a given time. Trade testing is the measurement of specific trade knowledge and skill. Specific trade knowledge tends to enable him to perform at once on the job or to go into more advanced training based on the specifics of knowledge and skill that he already has acquired.

Trade testing began as a result of the difficulties encountered in classification of men during World War I. At first, men were simply

[25] Adapted from Philip H. Kreidt and Marguerite S. Gadel, "Prediction of Turnover among Clerical Workers," *The American Psychologist,* VII (1952), p. 50.

interviewed and asked what kind of job experience they had. This information was entered by making a check mark on the soldier's qualification card. Also, the number of years the man alleged to have followed his particular occupation or job was recorded. These data on the qualification card were found to be highly invalid. For one thing, a large number of bluffers were encountered. Some of the men attempted to bluff their way into certain skilled Army jobs in order to avoid an unpleasant assignment.

It is desirable then, if possible, to develop methods for the interviewer to use in detecting gross degrees of skill and knowledge. His referrals can then be at least partially accurate. Several requirements must be met if trade tests are to be usable: they must be such that they can be employed by an intelligent examiner who has no specialization or personal knowledge of the trade; they must yield an objective score; and, in most cases, testing must not require the use of tools or apparatus.

There are four kinds of trade tests—performance, written, picture, and oral. The performance trade test is perhaps one of the oldest kinds of testing procedures in existence. The procedure varies from a highly informal probationary procedure to fairly objective, systematic measurements. In the most informal situation, the interviewer says to the applicant, "Well, you say you can do the job. Let's find out." This is usually an informal, unsystematic, expensive, and generally unsatisfactory practice.

At the other end of the scale, performance trade testing may be done by carefully developed and manualized procedures. The applicant is asked to turn out a standard part or to perform a standard task. Measurements and tolerances, as well as the over-all fit and goodness of the part, are rated at the conclusion of the proficiency test. In more formal procedures, norms are developed, and the candidate is graded as finely and as accurately as the test conditions and the subjective nature of the scoring procedure permit.

Standardization of such testing requires a considerable amount of developmental work. The particular situation must be surveyed to determine whether it is feasible or profitable to develop this type of test. Work must be done on the verification of the test for selection of good employees and also follow-up on the validity of the test scores. During the developmental phase, much revision in the manual of procedures is required, and a considerable amount of statistical analysis and calibration of the test is necessary.

The performance type of test has been found to be somewhat

expensive and difficult to administer. It takes a great deal of time and requires the services of an examiner who is expert in the subject matter involved in the test. These are obvious disadvantages. Unless the volume of applicants and the number of hires, together with the importance of the job, is sufficient to justify it, the company may want to use simpler, less expensive devices.

Performance tests should be used only when a measure of skill is required and when the skill measure does not correlate highly with knowledge and information. For most trades, the relationship between knowledge and skill possessed is higher than is generally supposed. If skill and knowledge are correlated sufficiently, then the rule would be to measure knowledge, since knowledge can be readily measured by use of written, picture, or oral types of trade tests.

Written trade tests can be administered to several or a large group of applicants at the same time. Whereas they are quite expensive to develop and validate, they are not only objective but more economically administered than individual trade tests. Being given in a group, they reduce administration and test-scoring time and increase scoring accuracy through the use of stencils and objective scoring methods. They eliminate subjective judgments, they yield the possibility of rapidly eliminating the trade bluffer, and leave only those who show evidence of trade knowledge for consideration and more comprehensive interviewing and selection procedures. Thus, the written trade tests sometimes can be used as a preliminary hurdle in the selection process.

The procedure for giving picture trade tests involves presenting the test material visually to the examinee. The picture type of trade tests tends to get a little bit nearer the trade of the man and nearer to the conditions under which the trade is performed, than does the oral type of trade tests. It is desirable that the examinee have the feeling when he leaves the interview situation that the test has been fairly given. It is possible that the picture trade test tends to establish this rapport with the man somewhat better than oral trade tests. Also, differences in language ability among applicants (an ability that is not necessarily related to success on the job) tend to be equalized by use of the picture trade tests.

The most economical type of trade test generally is a series of questions asked orally by the interviewer. This type of test adds only seven to twenty minutes to the interview, yet provides a valuable rough screening of applicants on the basis of trade knowledge.

Examples of the oral type of trade test question for auto mechanic are:

What happens to the braker points if the condenser is bad?
ANSWER: Burn (pit) (foul) (corrode)

What two metals are cam-shaft bearings *usually* made of?
ANSWER: a. Bronze (brass)
b. Babbitt (white metal)

Other examples may be given for the trade of bricklayer:

What is half of a brick called?
ANSWER: Bat.

What is a brick called when set on end?
ANSWER: Soldier.[26]

Oral trade questions were developed and rather rigidly evaluated as one part of the activities of the Occupational Research Program in the United States Employment Service beginning in 1934.[27] In this program, the trade questions were formulated for the most part by job analysts in the course of their work. The analysts determined processes, methods, tools, and materials for each job, so that references to them could be used in the formulation of oral trade questions. After the questions were written by the job analysts, they were discussed with the foreman or an expert or skilled worker on the job, who criticized and helped in the process of editing the questions.

Several principles have been found useful in preparing and editing oral trade questions. They are:

1. The wording of the question must be simple and in the language of the worker.
2. The question must deal with an important element of the job.
3. The question must give promise of eliciting a short, specific answer.
4. The question must be such that it cannot be answered by "yes" or "no."
5. The question must contain no catch.
6. The question must give promise of discriminating expert tradesmen from apprentices, helpers, and workers in related occupations.[28]

[26] J. Crosby Chapman, *Trade Tests* (New York: Henry Holt and Co., Inc., 1921), p. 109.

[27] William H. Stead, Carroll L. Shartle, *et al., Occupational Counseling Techniques* (New York: American Book Company, 1940), pp. 30–48.

[28] *Oral Trade Questions Manual,* CT-055z,M (Washington: War Department, the Adjutant General's Office, 1944), p. 13.

After the questions were set up and reviewed for length, spelling, and consistency, a preliminary verification was made through trial runs on skilled workers. Correct answers were established, and the wording of the questions smoothed out.

The questions were then given to samples of three groups of workers with varying amounts of proficiency in the trade. Group A was comprised of recognized experts in the occupation. In Group B were beginners, apprentices, and helpers. Group C consisted of workers in closely related occupations. The experts were considered by their supervisors to be highly skilled. The requirement was specified that the expert must have had a minimum experience of four years' full-time paid experience as an expert in the occupation. The beginners might have had from one to three years of experience, depending upon the occupation. They were generally considered as apprentices or helpers and were not thought of by their supervisors as highly skilled. The Group C workers had been working in the immediate environment of the skilled workers in the occupation under consideration but had not directly participated in it. For example, if the occupation being verified was bricklayer, a hod-carrier would be considered as a related worker. If the occupation under consideration was plasterer, a lather, who nails up narrow strips of wood to which plaster is applied, might be considered to be related.

The next step in verification of the questions was item analysis of the data. Analysis of the questions showed which ones were good and could be retained and which ones were to be deleted. The final step of the analysis was to determine the relationship between the test scores and the skill level, in terms of years of experience, of the workers in the trade.

Validity of trade tests. In the Occupational Research Program, one of the jobs for which a trade test was prepared was asbestos worker.[29] It was found that approximately fifteen questions were satisfactory from the standpoint of sufficient reliability, so that the final test lists were made up of about fifteen verified questions. In Table 12.2, the degree of validity of a list of oral trade questions is shown. The table shows the number of the sample list of 15 questions answered correctly by expert asbestos workers (A Group), the apprentices and helpers (B Group), and the related workers (C

[29] William H. Stead, Carroll L. Shartle, *et al., Occupational Counseling Techniques* (New York: American Book Company, 1940), p. 36. The Occupational Research Program at the time of publication of this report, 1940, indicated that 126 jobs had been provided for by standardized and verified trade questions and that alternate forms were available for 49 jobs.

TABLE 12.2

DISTRIBUTION OF SCORES OF EXPERT ASBESTOS WORKERS, APPRENTICES AND HELPERS, AND RELATED WORKERS ON ASBESTOS WORKER TRADE QUESTIONS, FORM I *

Score	Expert asbestos workers (50 subjects) *Group A*	Apprentices and helpers (25 subjects) *Group B*	Related workers (25 subjects) *Group C*
15	00000000		
14	00000000000000000 **		
13	000000000000		
12	000000	00	
11	00		
10	0	0	
9	0		
8	00	00	
7	0	0	
6		00000000 **	
5		000	0000
4		0000	00
3		00	000
2		0	00
1		0	0000 **
0			0000000000

* Source: William H. Stead, Carroll R. Shartle, and Associates. *Occupational Counseling Techniques* (New York. American Book Company, 1940), p. 39.
** Median score.

Group). Although there is some overlap between the A and B Groups, this overlap is not very great. The graph shows that two apprentices got high scores of 12 out of 15, but that the median apprentice received a score of 6, whereas the median expert got a score of 14 questions correct, and the median related worker answered only 1 question correctly.

A notable example of a study which evaluated the validity of written trade tests was that conducted by the Personnel Testing Unit at San Bernardino Depot of the Air Technical Service Command. The command developed written trade tests for 97 different jobs or occupational areas. They used a multiple-choice, best-answer type of item. The tests varied in length from about 75 to 100 items. A very high degree of reliability for 9 of the tests was obtained; in fact, the median coefficient of correlation indicative of the reliability (Spearman-Brown formula) was .91. These tests were validated by the Personnel Testing Unit. They were correlated with instructors' grades, officer efficiency ratings, on-the-job training chart data, and civil service grade designation.

The tests showed fairly high validity: when the instructors' final grades in the civilian training classes were taken as a measure of the trainees' success, the median correlation between these grades and scores on the written job information trade test was .42. Efficiency ratings yielded a median correlation coefficient with the job information trade test scores of .33. Performance in specific job operations dealing with the on-the-job training program was measured. When these measures were correlated with job information trade test scores for a group of 55 workers, the correlation coefficient was found to be .54.

Ratings by foremen on job knowledge of the workers produced correlation coefficients with the written trade tests of .42 up to .66. Civil service grade was also used as a criterion. The civil service grade yielded a median correlation coefficient of .52 when correlated with written trade tests on several samples.[80]

Summary

Application blank items, which all companies use in one way or another, can be so developed and analyzed that they will add predictive power or accuracy to other selection procedures. These items are called *non-test predictors*. A vast difference exists between the usefulness of items evaluated clinically or by the armchair and items of statistically proven validity.

Other kinds of supplemental selection procedures include letters of reference, diagnostic interviewer's guides, and trade tests. The interviewer's guide, consisting of the interviewer's summary of work, social, personal, and family history, has proven useful in some situations. Turnover of employees can be controlled to some degree by careful analysis and utilization of statistically valid application blank items. Oral trade questions have also been found quite valuable and are fairly economical to evaluate and use. The oral trade test, if item analyzed, validated, and standardized on workers, can increase accuracy of selection.

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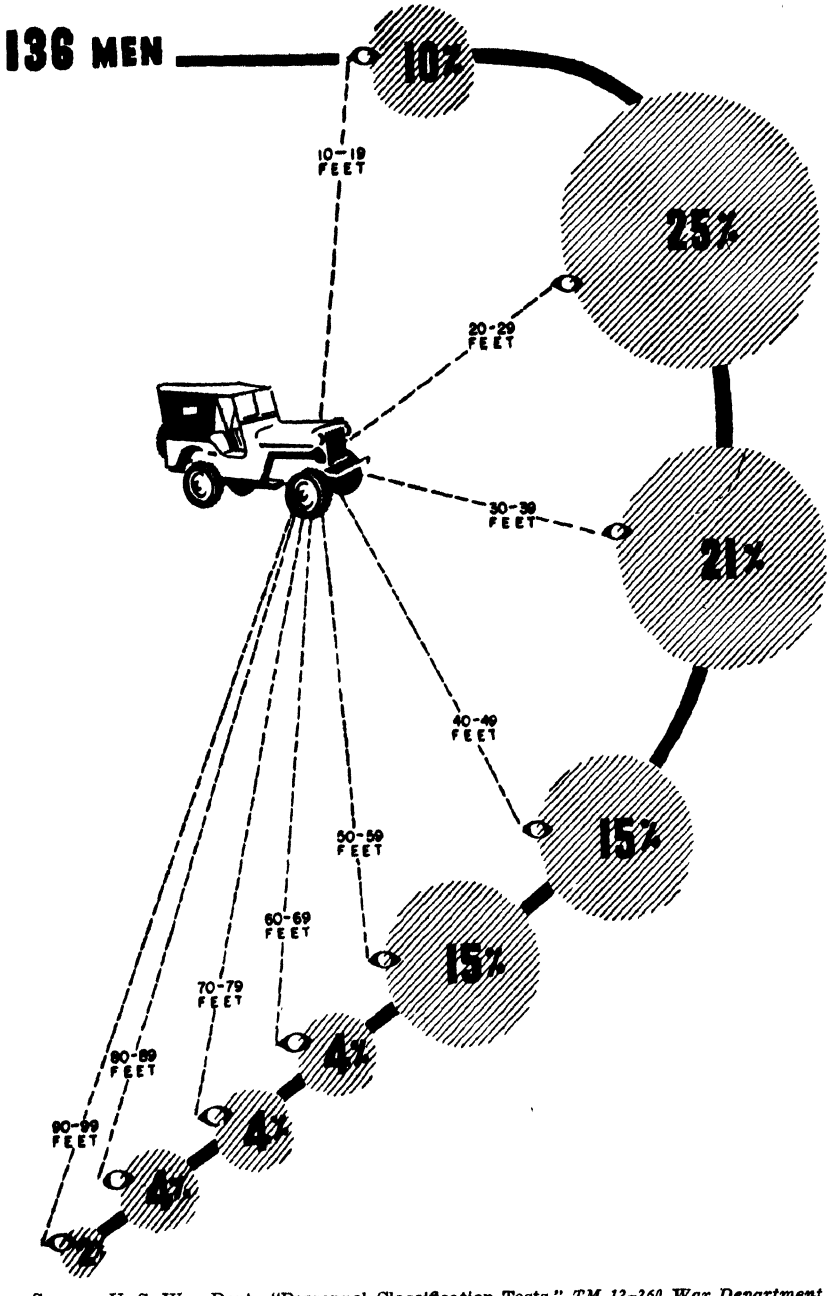
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13 Psychological Testing

IT WOULD BE convenient, if it were possible, to describe people psychologically in terms of a special kind, a certain type, or an index number. Conceivably, a production manager could then requisition a new man for work much as he would order a new tire for his car, size 6.70 × 15. Unfortunately, however, people cannot be typed and measured as objectively and accurately as tires or other material products. People differ in so many ways. While any number of men may be the same height, they differ from each other in hair coloring, in weight, in length of foot, and several not easily observed psychological characteristics such as measured intelligence, mechanical ability, or interest. For example, in Figure 13.1, it is seen how different is the ability to see at night. Of 136 men, 10 per cent were able to recognize an object such as a quarter-ton truck at night at a distance of about 15 feet. At the other extreme, 2 per cent were able to recognize the truck at about 95 feet! In Chapter 16, "Criteria of Performance," examples will be noted of the great differences between individuals in producing on the job. (See pages 352, 365.)

Every day, personnel departments are faced with the challenge of identifying the individuals with the characteristics needed for the jobs in the company. With 22,028 jobs listed in the *Dictionary of Occupational Titles* known by over 40,000 titles, and a labor force of about 61,000,000 workers, problems of matching workers to jobs come into focus.

A short cut to personnel placement is needed, but it must be a



Source: U. S. War Dept., "Personnel Classification Tests," *TM 12-260 War Department Technical Manual.* Washington: Government Printing Office, 1946, p. 6.

FIG. 13.1. Differences in ability to see an object at night.

short cut which is known to be useful in improving the "batting average" of the personnel man. One of several techniques which is recommended for use is careful measurement and use of manpower according to measured abilities. Popularly, this is known as "psychological testing" or simply "testing."

Measurement by tests is indirect. Intelligence, for example, cannot be seen and measured as one can see and measure a piece of steel. Tests are constructed in such a way that the display of an individual's behavior called for by the test (such as answering the questions of the test) is compared to the behavior of other persons who take the test. The procedure is indirect, since on-the-job behavior is not observed. Rather, test behavior is observed and a reading taken that may be related to on-the-job performance. No one today questions the use of a thermometer, yet it does not concern people that they can't see the temperature which is being measured. When these temperature measuring devices were first introduced, however, they replaced old systems based partly on superstition, partly on armchair logic. So it is with psychological measurements. They replace old methods which have proceeded without evidence, without assurance of workability, and without checks on the workability of the device.

The Scope of Test Use

Testing programs are on the upswing in industry, if one is to judge from surveys made.[1] It has been estimated that in one year 20,000,000 Americans took a total of 60,000,000 psychological tests.[2] This includes men and women tested in the armed forces, applicants for employment, and boys and girls in school and college. Testing has become "big business." A survey by Forrest Routt [3] described the experience of 100 firms—45 per cent were using tests, 5 per cent had used tests but had discontinued their use, 50 per cent had no experience with tests. It was found from this survey that much of the testing was done in clerical fields, with mechanical and

[1] In this connection, see: National Industrial Conference Board, Inc., "Experience with Psychological Tests," *Studies in Personnel Policy No. 92*, 1948, p. 32; Frederic R. Wickert, "Current Use and Misuse of Psychological Tests in Business and Industry," *Personnel*, American Management Association, XXVII (1950), pp. 47–52; Donald G. Paterson, ed., *A Survey of 195 Companies on the Use of Tests in Selecting Salesmen* (Chicago: The Dartnell Corporation, 1951), p. 106.

[2] Dael Wolfle, "Testing is Big Business," *The American Psychologist*, II (1947), p. 26.

[3] Forrest V. Routt, Jr., *Personnel Testing* (San Francisco: Council of Personnel Management, 1946), p. 26.

sales fields runners-up; 65 per cent of the companies using tests reported that they had improved their selection (that is, they had more successful workers and fewer poor ones). Other gains listed were more productive employees, 49 per cent; reduced labor turnover, 20 per cent; lower accident rate, 16 per cent.

It appears that unfavorable attitudes toward the use of tests for selecting salesmen *after experience with test usage* arise from the following causes: [4]

1. Inadequate or inexpert help in installing testing programs.
2. The district managers were not adequately trained and thus found the tests too cumbersome, laborious, and technical.
3. The salesmen and the union were not properly "sold" on the program and reacted unfavorably.
4. The company just remains confused about the whole subject and is still shopping around.

Large industries have encouraged the cross-fertilization of ideas between their management leaders and educators from universities and colleges. General Motors Corporation began a series of conferences a few years ago. A portion of the conferences was devoted to a discussion of personnel testing. In commenting upon the utility of testing, Vernon G. Schaefer, who has had experience with the technical as well as the practical side of testing, said:

The battery of tests now serves to select and place people on jobs who have a greater prospect of adjustment, personal satisfaction, and productive success on the jobs for which they are selected. Training costs and labor turnover costs and problems have been reduced. Distinctive test batteries have been set up as selected predictors of success for many factory jobs, for some office jobs, and for supervisory jobs. The evidence from many companies is similar to the experience of General Motors where tests have been widely used.[5]

Well known to personnel research people is the example involving selection of life insurance salesmen. This project, conducted by the Life Insurance Sales Research Bureau, has done a creditable job of developing selection tools for several decades.[6]

[4] From Donald G. Paterson, ed., *A Survey of 195 Companies on the Use of Tests in Selecting Salesmen* (Chicago: The Dartnell Corporation, 1951), p. 18. Twelve of the 195 companies surveyed had discontinued use of tests; 68 had never used them.

[5] Vernon G. Schaefer, at the Third Conference with College and University Educators, Detroit, June 30, 1947.

[6] For a comprehensive report of some of the work done, see Albert K. Kurtz, "Recent Research in the Selection of Life Insurance Salesmen," *Journal of Applied Psychology*, XXV (1941), pp. 11–17. (As of January 1, 1946, the title of this organization was changed to Life Insurance Agency Management Association.)

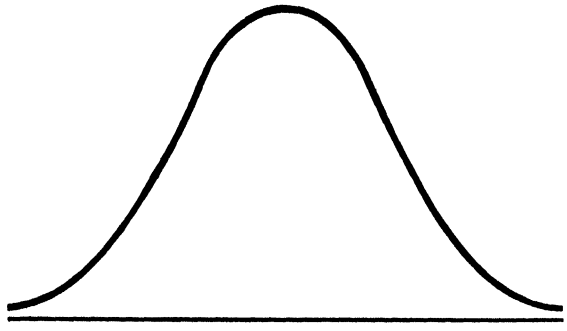
Professional groups, among them medicine, law, engineering, and more recently, accounting, have contributed funds to research projects to develop tests for improving the selection of personnel for the profession. The accounting profession, through its membership in the American Institute of Accountants, in 1943 began such a research project. The aim was to insure that a steady flow of high calibre personnel would be attracted to and selected for the study of accountancy as a profession. Tests were designed for use as part of the screening process. Among them were: (1) an "American Institute of Accountants Professional Accounting Orientation Test" of mental fitness for the study of accounting; (2) several levels of "American Institute of Accountants Professional Accounting Achievement Tests"; and experiments with the usefulness of the "Strong Vocational Interest Blank." The "A.I.A. Orientation Test" and "Achievement Tests" were developed by the research project. Members of the accounting profession themselves furnished the information for the test questions. The tests have now been analyzed and tried in many university situations as well as in several public accounting firms.

Applied to industry, similar techniques can be of considerable aid. Too often there is a tendency to reject tests because of their lack of perfection in identification of the individual man with the qualities sought for employment. At present, the goal of testing is not perfection in prediction of success of applicants; rather the goal is to improve present procedures for selection.

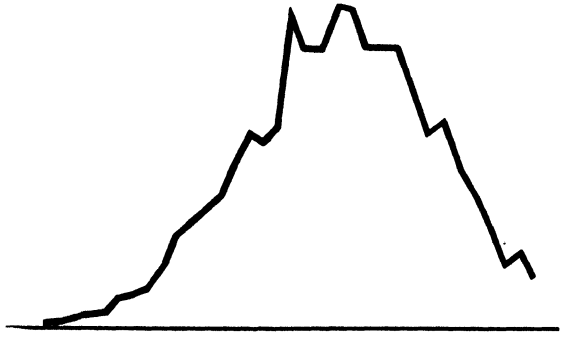
Test scores cannot be said to be more than an aid, an ancillary indicator which, used with other indices, can be helpful in placing, utilizing and promoting satisfaction of employees. Job satisfaction of employees may be expected to increase if workers are placed on jobs where their abilities are more fully used.

Values and Limitations of Testing

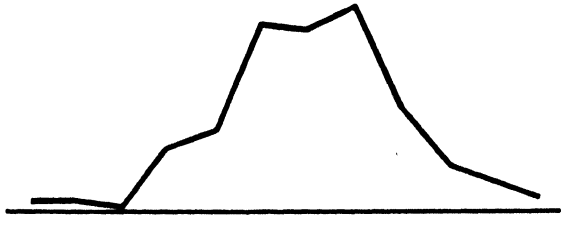
Meaning of test scores. Tests yield raw scores. By themselves, the raw scores are not meaningful. It is necessary to relate them to some index which does have meaning, one which will indicate an individual's performance compared to others. It is always necessary, therefore, to give the tests to a number of persons, several hundred or a thousand if possible, and describe the performance of the group of individuals who took the test, using their distribution of scores as "norms." This provides a basis for comparison of an applicant with groups.



THEORETICAL NORMAL CURVE OF DISTRIBUTION



APPROXIMATE NORMAL CURVE FROM ACCOUNTING TEST DATA



APPROXIMATE NORMAL CURVE FROM CLERICAL APTITUDES TEST DATA

FIG. 13.2. The theoretical normal curve of distribution and two examples of distribution of industrial test data.

It has been shown that for almost any measured ability or trait, the members of a large unselected population will tend to distribute

themselves in a normal curve. (See Fig. 13.2.) That is, most of them can be expected to cluster not far from the average of the test scores. A very few people will make very high scores, and a very few other individuals will make quite low scores.

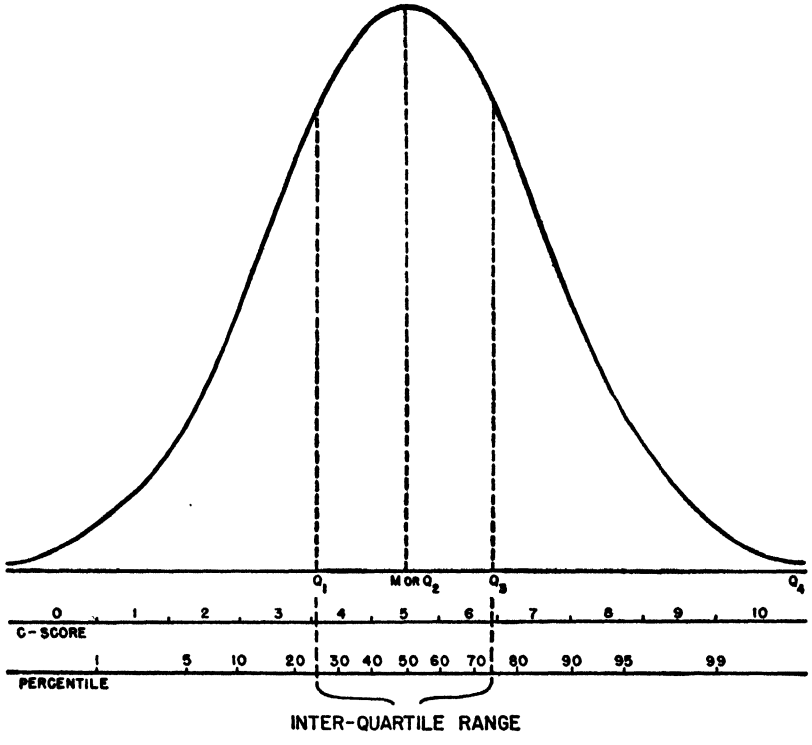


FIG. 13.3. A normal curve of distribution with designations of percentiles, quartiles, and C-scores.

A convenient way of expressing scores is in terms of percentiles. (See Fig. 13.3.) Percentile is defined as the proportion of a group surpassed by a person making a certain score. His score is said to have a percentile equivalent. For example, examinee John Blakeslee made a raw score of 39 on a test which, when translated to a meaningful percentile, indicated that he surpassed 52 per cent (52nd percentile) of the population with which he was compared. The unusually able person whose score is high may fall in the 99.9 percentile, meaning that he has surpassed 999 out of 1,000 persons who have taken the test and with whom he was compared. The use

of percentiles also is convenient in comparing an individual's score on one test with his scores on other tests. A person who was in a high percentile in mechanical aptitude may be in a low percentile in some other measurement, such as clerical aptitude. This cannot be shown meaningfully by raw scores.

Another useful way of describing test scores is by use of "C-Scores." These are comparison scores. There are eleven C-Scores in a range of 100 percentiles; these are shown in Table 13.1 and graphically in Figure 13.3. It will be noted that a relatively wide

TABLE 13.1

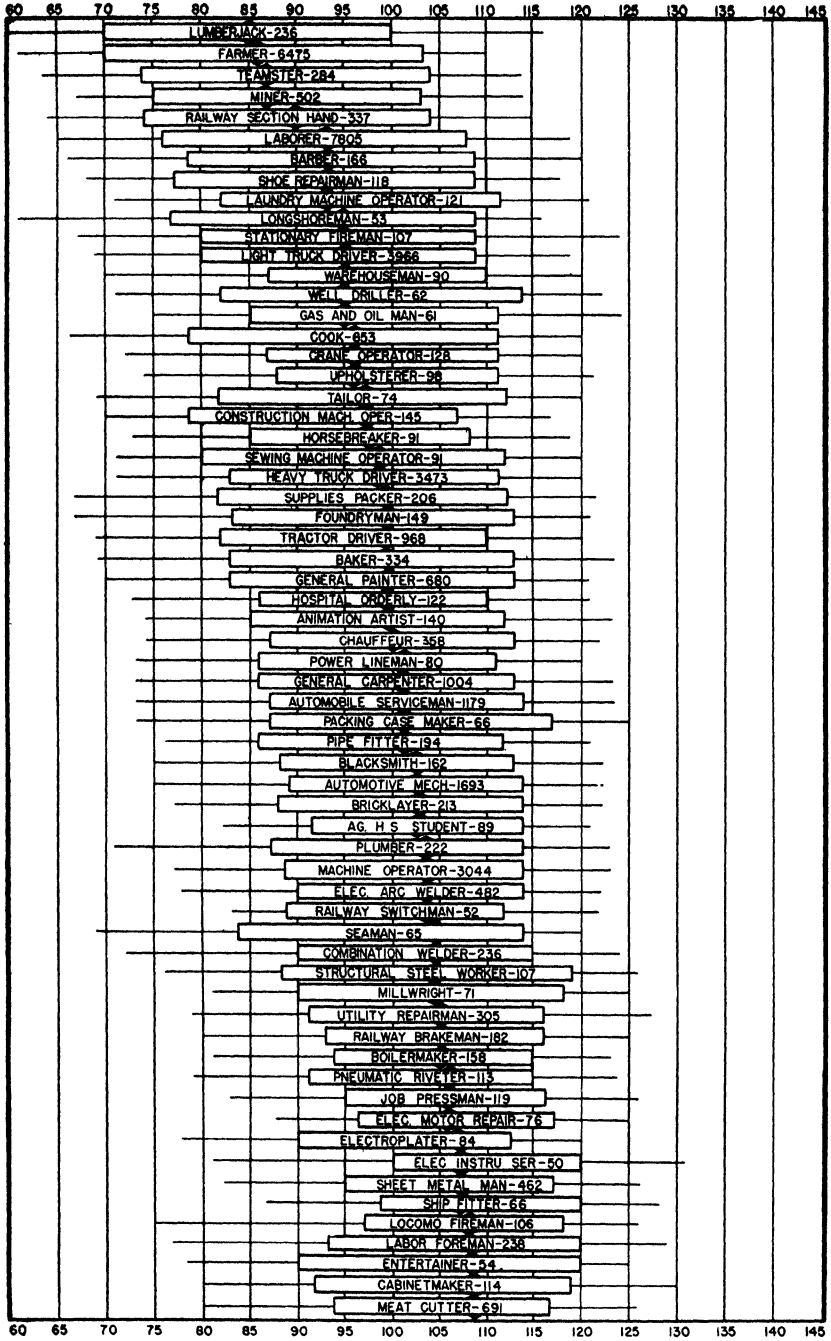
CONVERSION OF PERCENTILES INTO C-SCORES

Percentile	C-Score
100	10
97–99	9
90–96	8
78–89	7
61–77	6
41–60	5
24–40	4
12–23	3
5–11	2
2–4	1
1	0

range of percentiles is included in the 4th, 5th, and 6th C-Scores. That is because most individuals will be making scores in those categories toward the middle of the distribution. Fewer persons will be found as one gets further from the middle of the distribution, since performance is rare at the extremes, or tails, of the distribution. In describing the test performance of Andrew Doakes, a raw score of 124 on a particular clerical aptitudes test would indicate that he surpassed 45 per cent of the population of male veterans (the comparison group). This would be designated as a C-Score of 5. A raw score of 124 on the "Army General Classification Test" would indicate that he surpassed 95 per cent of the male inductees, a C-Score of 8. C-Scores are merely an abbreviated way of expressing test scores so that they are meaningful and comparable from one test to another.

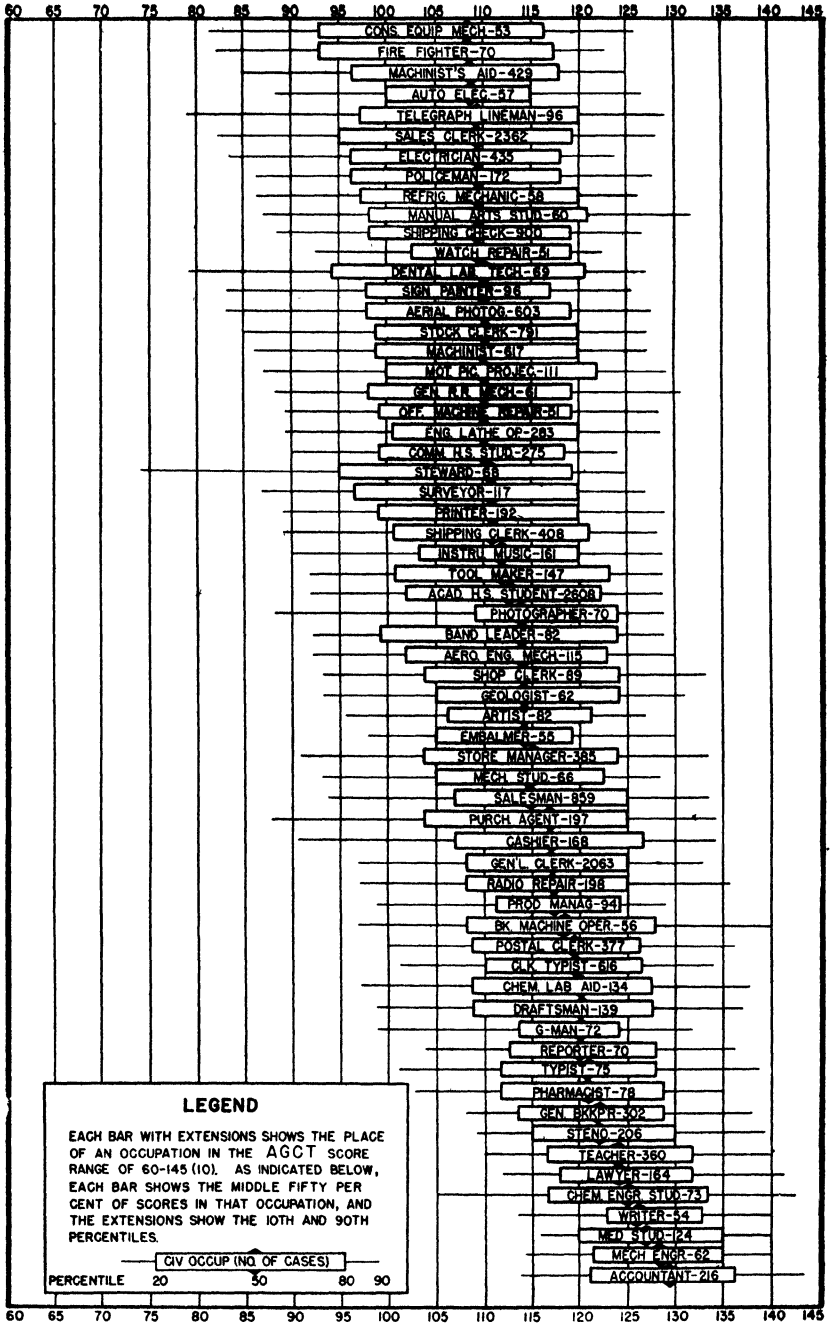
For vocational counseling and placement. Test scores can be useful in estimating probable success in an occupation. As an illustration, we might examine the test scores made on the "Army General Classification Test" [7] (AGCT) and compare them with civilian occupa-

[7] The "Army General Classification Test" in its civilian edition was released to business and industry on April 9, 1947 (Chicago: Science Research Associates).



Source: Examiner Manual for the SRA "Army General Classification Test," 1947.

FIG. 13.4. Scores on the "Army General Classification Test" by civilian occupational levels.



Science Research Associates, 57 West Grand Avenue, Chicago 10, Ill.

FIG. 13.4. (*Cont.*)

tions of the testees. It has been a common assumption that it takes more intelligence to become a doctor than a laborer. There seems to be basis in fact for this assumption if we examine Figure 13.4. The various learned occupations are seen to be near the top of the scale so far as intelligence is concerned. These include accountant, mechanical engineer, medical student, writer, lawyer, teacher. The middle 50 per cent of the AGCT scores made by men from the civilian occupation of accountant ranged from 121–136. In percentiles, this would be equivalent to 81st percentile to the 94th percentile. Generally, a very high level of intelligence may be said to be associated with success in studying and becoming an accountant.

On the other end of the distribution of occupations is the lumberjack. The middle 50 per cent of the AGCT scores made by men having this occupation ranged from scores equivalent to the 8th percentile to the 43rd percentile. It is interesting to note that there is overlap from one occupation to another in general intelligence level as measured by the AGCT. A small portion of those in low occupational groups, such as cook, shoe repairman, and barber, have the same intelligence by measurement as do a small portion of pharmacists, chemical engineering students, and draftsmen.

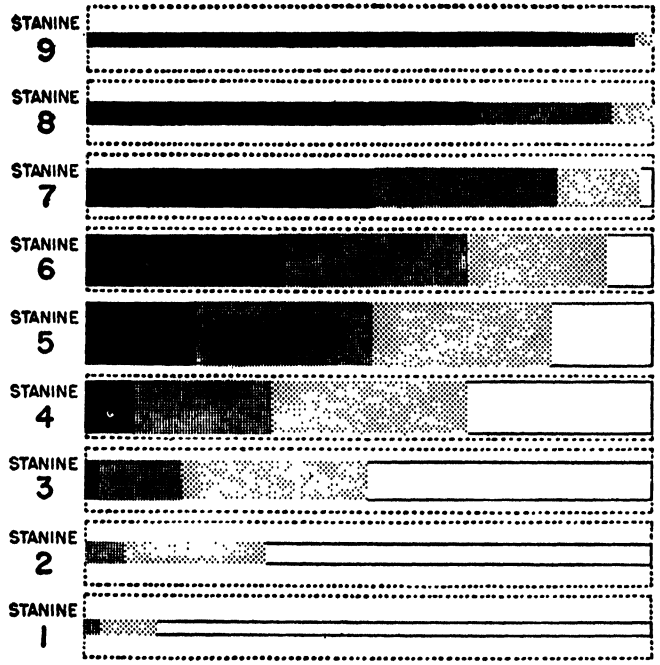
Test scores, interest inventories, and related devices aid in suggesting the most appropriate vocation for one choosing a career. University testing centers administer a wide variety of tests to entering freshmen to enable counselors to guide new students into areas in which they are most likely to be successful. Some personnel departments in industry do vocational counseling.

The usual practice is to give a number of aptitude tests, such as clerical aptitude, personal adjustment, artistic aptitude, mechanical aptitude, plus an interest inventory to see if the person being counseled has interests similar to those of people already in the occupation for which training is being considered. Such test scores are but indicators of probable career choices. They are not conclusive evidence that the testee will be successful but are suggestive in pointing the way for exploration of suitable occupational areas.

For prediction of efficiency. By far the widest use of tests in industry is in the prediction of efficiency. Some test scores are shown by statistical evidence to have relationship to success on the job. Examples of this are many. Typical of the highest relationships to be expected are those shown in Figure 13.5. Here the quality of performance to be expected from personnel at various levels of apti-

tude is pictured.[8] This figure is based upon a correlation coefficient of .70 between the aptitude scores obtained and the criterion of successful performance on the job.

The figure shows that 87 per cent of those with the highest level of aptitude for a given activity, which was designated in the Air Force as a standard score (*stanine*) of 9, would be found in the top quarter with respect to effectiveness in that activity. Ninety-seven



Source: Flanagan, "Contributions of Research in the Armed Forces to Personnel Psychology," p. 56.

FIG. 13.5. The per cent of people in each stanine found in 1st, 2nd, 3rd, and 4th quarters, in respect to effectiveness.

per cent of those with a stanine of 9 would be in the top half, with only 3 per cent below the middle of the group and none at all in the bottom quarter, in terms of job performance. In the bottom stanine of 1, indicating low level of aptitude for a particular activity, the picture is reversed: 87 per cent were in the bottom quarter with respect to job effectiveness, 97 per cent in the bottom half, and only 3 per cent above the middle of the group, and none at all in the top quarter.

[8] John C. Flanagan, "Contributions of Research in the Armed Forces to Personnel Psychology," *Personnel Psychology*, I (1948), pp. 53–62.

Stromberg has presented evidence to show that applicant groups selected after a testing program was installed showed higher performance on the tests than the criterion groups on which the tests were validated.[9] Possible reasons for the superior performance of tested applicants are suggested by Stromberg: they may have been more highly motivated than the workers already on the job; individuals who ordinarily have difficulty in the test situation do not apply when they realize they will be tested. Stromberg's hypothesis was rejected by MacMillan and Rothe who suggest that motivation while taking the tests is higher for applicants than for job holders.[10] They pointed out that added controls are needed for further experimentation and that different test examiners for the groups may be a factor.

By and large, workable, valid tests tend to select successful employees. No prediction can be made on the basis of test scores that *a single* individual worker will succeed. A group of workers selected by valid tests, however, will produce more as a group than a group not so selected. As predictors are improved for the particular situation, the relationship between test scores and success on the job becomes tighter, more closely drawn. The relationship need not be perfect.

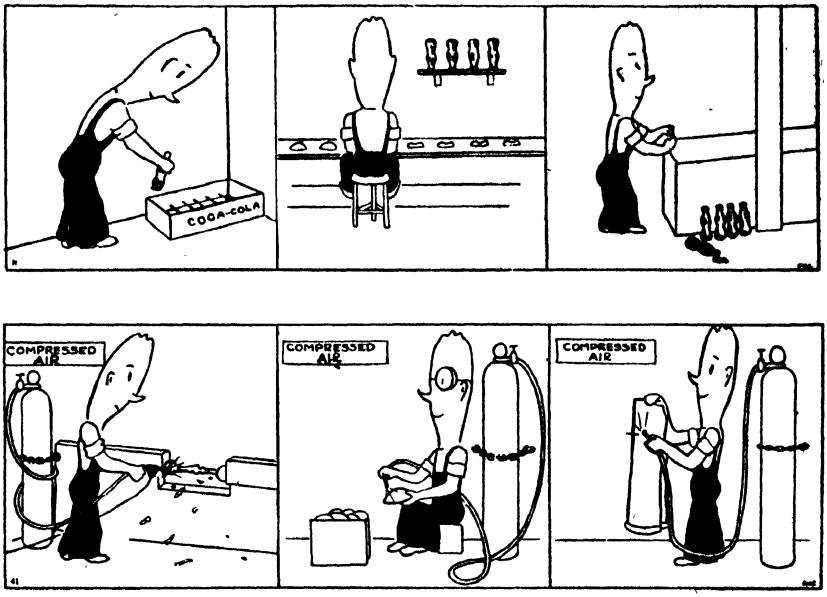
In examining data for public accountants, it was noticed that scores made on the "American Institute of Accountants Professional Accounting Orientation Test" are progressively higher from one level in accounting to the next.[11] It was found that the average or median grade for the junior accountant is lower than that of the semi-senior. Managers and partners tend to make considerably higher test scores than junior accountants. These data suggest that potentiality for growth can be estimated by the scores which are made on the test.

[9] Eleroy L. Stromberg, "Testing Programs Draw Better Applicants," *Personnel Psychology*, I (1948), pp. 21–29. See also H. F. Rothe, "Distribution of Test Scores of Industrial Employees and Applicants," *Journal of Applied Psychology*, XXXI (1947), pp. 480–83.

[10] Myles H. MacMillan and Harold F. Rothe, "Additional Distributions of Test Scores of Industrial Employees and Applicants," *Journal of Applied Psychology*, XXXII (1948), pp. 270–74.

[11] M. F. Estep, *Personnel Techniques for Accountants: Problems in Development, Evaluation, and Application of Counseling and Selection Devices for Accounting Students and Junior Accountants.* An unpublished Master's thesis on file at Wayne University, Detroit, Michigan, 1948. See also Arthur E. Traxler and Robert Jacobs, "Validation of Professional Aptitude Batteries: Tests for Accounting," *Proceedings of Invitational Conference on Testing Problems,* October 28, 1950 (Princeton, New Jersey: Educational Testing Service, 1951), pp. 13–29.

Test scores have been useful in the Revere Copper and Brass Company for identification of accident-prone operators.[12] A series of cartoons, each with three scenes, is shown in the test. (See Figure 13.6.) One or more of them may represent desirable safety practices. The operator is required to identify correctly the unsafe practices. The optimum range of scores for the most desirable operators falls above a raw score of 150. Operators with raw scores between 100 and 150 are urged to review safety rules and practices.



Source: Revere Copper and Brass Co., Rome, New York.

FIG. 13.6. Selected items from the "Revere Safety Test."

Tests are also useful in predicting labor turnover or, positively stated, in predicting which employees are likely to remain on the job. Managers are interested in screening out short-time employees. Such people are expensive from several viewpoints, and it is to the advantage of the entire company not to hire people who are likely to leave within a short period.

For training and placement. When the production records of a group of employees are scanned, great differences in the amount of work output can be found. It is not uncommon for the best worker

[12] "Revere Safety Test," developed by Revere Copper and Brass, Inc., in cooperation with Syracuse University.

to be turning out two or three times as much as the poorest worker. These individual differences are apparent also in the measured characteristics of a working group. Records of typing proficiency of office staffs reveal that good workers type 80 to 90 words per minute compared to the 30 or 40 words by others with the same job title. Speed of reading of executives is measured with the average at 220 words per minute. However, a few read as rapidly as 500 or 600 words per minute.

Wechsler [13] found that there is a greater range in human capacities than is generally realized. He interpreted the range of lowest to highest person measured as a ratio. He found the ratio for tapping to be 1 to 2.20 (that is, while a slow person made one tap, a fast one made 2.20 taps); for swiftness of blow, 1 to 2.93; card sorting, 1 to 2.50; speed of inserting bolts, 1 to 1.09; stringing discs, 1 to 2.12. He also presented information on the range of intelligence as measured by tests and learning ability—for hard learning, 1 to 3.87; simple learning, 1 to 2.42; memory span, 1 to 2.50; and for general intelligence, 1 to 2.30.

With additional training, most skills can be developed to a higher level of proficiency, to the increased benefit of the company. However, for economy in training, it is advisable to know what levels of proficiency have already been reached by the employees, so that advantage can be taken of their present knowledge. It is not necessary, therefore, to give elementary or basic training to the superior worker. Instead, he should be placed into advanced training situations where he and his company can reap the greatest good. Thus, in an office with 20 typists, those having a speed of 90 words per minute, say 5 or 6 of the typists, need not go through additional training to increase their speed. Some might more advantageously receive training in office organization procedures or minor supervisory practices. This would fit one or two of the more advanced employees for an upgraded position. The typists with low typing speed can be trained to increase their speed and contribute more to the production of the office.

Test scores are useful in identifying the specific workers who might profit most from training for new positions that open in an organization. For example, some companies make use of a personnel card on which are recorded scores on tests given to each applicant when employed. Such cards when completed for each worker

[13] David Wechsler, *The Range of Human Capacities* (New York: The Williams & Wilkins Co., 1935), p. 53.

constitute a skill inventory. Test data included on the skill cards are, in general, from tests of general mental alertness, clerical aptitude, mechanical aptitude, vision, supervisory potentiality, and dexterity tests. If a new person is needed for a special project, such as a checker on a small parts assembly line, the test scores will locate the person high in dexterity, good in vision, and able to perform a routine checking task. These test scores, when shown to have relationship to success on the specific jobs, are an aid to the effective placement of employees on a job.

Values of tests in a tight labor market. The value of tests for selection in a tight labor market is often questioned because the number of job openings outnumber the applicants for employment. Selover and Vogel demonstrated that in such a situation tests can be useful in assigning applicants to the jobs which best match their respective aptitudes.[14] Data on four clerical groups were presented to demonstrate the process of "selective placement."

Brogden presented results showing the relations between test validity, percentage of applicants to be selected, and savings expected from use of selection tests. Savings resulting from testing applicants depend upon two factors: (1) the effectiveness of the selection instruments in predicting efficiency on the job, and (2) the percentage of applicants who must be chosen. The need for including cost of testing is emphasized, since it increases markedly as the percentage of applicants rejected increases.[15] In a tight labor market, when fewer applicants are tested, use of tests might be emphasized for placement as well as selection.

Requirements of Useful Tests

The need for making a job analysis prior to the construction of a test is well recognized; systematic integration of the procedures of job analysis and test development is needed. Wagner, for example, has done this in a research project.[16] The project was designed to test the feasibility of utilizing the critical incidents technique (discussed in chapter nine, "Job Analysis: A Basic Tool") as a basis for determining testable job elements, developing

[14] Robert B. Selover and Julius Vogel, "The Value of a Testing Program in a Tight Labor Market," *Personnel Psychology*, I (1948), pp. 447–56.

[15] Hubert E. Brogden, "When Testing Pays Off," *Personnel Psychology*, II (1949), pp. 171–83.

[16] Ralph F. Wagner, *Development of Standardized Procedures for Defining the Requirements of Aircrew Jobs in Terms of Testable Traits*, School of Aviation Medicine, USAF Project Report No. 21-29-010 (1951), p. 94.

aptitude tests for these testable elements, and developing weights for tests in a classification battery. In his preliminary work, Wagner found that a practical number of job elements can be defined and used as a framework for classifying critical behaviors, that these critical behaviors are determined with high reliability, and that distinctive patterns of requirements emerge for different jobs.

Tests, if they are to be useful, depend for their development upon the goodness of the criteria used. This is discussed at some length in chapter sixteen. Objective records, such as production, scrap, absenteeism, can be correlated with test scores to determine the goodness of the tests. More elusive criteria, such as merit ratings of success on the job and judged quality of work samples, are more difficult to develop.

For the validation of tests to see if they are workable or not, it is necessary to define a good criterion group (a group of good employees) and a low criterion group (poor employees). Study of good and poor employee groups will show up the items of the test which differentiate between the poor and good workers.

Reliability and validity. Two concepts are of utmost importance. These are reliability and validity of the data derived from the use of a test. Reliability is internal consistency of the data; validity refers to their external consistency. Some examples and discussion will clarify these definitions.

Data that are reliable may be said to be internally consistent. If a test is split into two parts, say by taking the odd-numbered items by themselves and obtaining a score from them and then taking the even-numbered items by themselves and obtaining a score from them, an examinee should perform about the same on the odd half as he does on the even half. If scores from many examinees show they perform about the same on the two split halves of the test, one half measures about the same thing as the other. To put it another way, if examinees tend to maintain their same relative rank on either half of the test, the test is internally consistent. It is then said to be reliable.

Another way of estimating the reliability of a test is to give it on two separate occasions. Individuals in the group would be expected to maintain about the same relative rank on the second occasion as they did the first time. This technique is sometimes called the test-retest method of estimating reliability.

If a test is reliable, it measures something consistently. The more reliable it is, the more likely it is to have high validity. A highly

reliable test may not have validity, however. This is because it may not measure at all the characteristics that are needed on the job. Validity is external consistency or the power a test has for picking good workers. If it is valid, it must measure what is needed on the job—it must be externally consistent.

To take an extreme example, a long test of tonal memory may be reliable—it may measure this attribute of the examinee consistently. However, if the job is clerk-typist, tonal memory would most likely be found to bear no relationship to job success. Those who are good producers on this job might or might not excel in tonal memory—the characteristic measured by the test is not needed. The text is reliable but not valid for this job situation.

Another example will help clarify the relation reliability bears to validity. A test of arithmetic computation is so short as to have very low reliability. A job, sales audit clerk, requires much skill in figure work. The test is found not to be valid since it does not tend to pick the good producers because of its low reliability. When such a test is made more reliable by increasing its number of items, it would tend to be more consistent, both internally and externally, both more reliable and valid.

Thus a reliable test is seen to be not necessarily valid; a valid test must be reliable. Validity is the more important. The crucial aspect of the test is validity. Does it do, in the practical situation, what it is supposed to do?

As conditions change, the test technician must allow for and alter his selection technique. No generalization can be made to future samples of applicants except to say that *if* certain conditions remain the same, *then* we may expect similar validity in the future use of the tool.

One of our fundamental theses is that validity information must be considered in the past tense, not the present or future tense. We may say that the validity of an item of information, whether test item or non-test item, *was* of a certain magnitude. We may never say that the validity of such and such an item of information *will be* significant. This is because conditions concerning the applicant population as well as the job situation and its psychological requirements may change from time to time.

This suggests that the test technician must re-evaluate the selection procedures frequently. Changes may take place in the policies of the company, in the composition of the employee work force, in the composition of the labor market from which recruits are at-

tracted, as well as changes in the job methods and job duties into which the new hires are fed. He must systematically follow up the people he hires to accumulate information for sharpening up and revalidating his selection procedure.

Other considerations. The personnel man charged with the responsibility of selecting tests must use several practical considerations in addition to the technical ones concerned with the statistical soundness (reliability, validity, stability) of the test. Cronbach has summarized the following practical considerations in choosing tests:

(1) *Cost*—Cost generally must not be overweighted in comparing tests; there is usually little relationship between the cost of the materials and the quality of the test.
(2) *Time*—Short tests may be required instead of a little better, though longer one. Too long tests may bore the subject.
(3) *Ease of administration and scoring*—Tests requiring the services of expert testers and scorers may not be feasible. For group testing, there are numerous tests available with rapid-scoring features.
(4) *Comparable forms*—For some kinds of research programs, alternate or equivalent forms of the tests are essential to the evaluation of a particular method or technique being experimented with.
(5) *"Face" validity and interest*—The cooperation of the subject is more likely to be obtained with tests which seem to him to make sense for the purpose for which he is being tested.
(6) *Acceptability*—When several persons may be using the test results, it is important that the particular kind of test, or the form of the test, be one which is acceptable to them, else they may not use the test scores confidently.
(7) *Usefulness of results*—Performance on the test must be expressed in a form which is usable by the kinds of persons who will use the results, not in some form requiring experts' interpretation.[17]

Levels of Workability

There are several levels of the use of tests and measurements in personnel work. These levels have to do with the certainty or sureness of use. Sometimes tests are used in personnel work with no knowledge whatever of their validity. In other cases, there has been a considerable amount of evidence gathered from follow-up and follow-back studies, so that the tests are used with knowledge of validity and workability.

[17] Lee J. Cronbach. *Essentials of Psychological Testing* (New York: Harper & Bros., 1949), pp. 44–47.

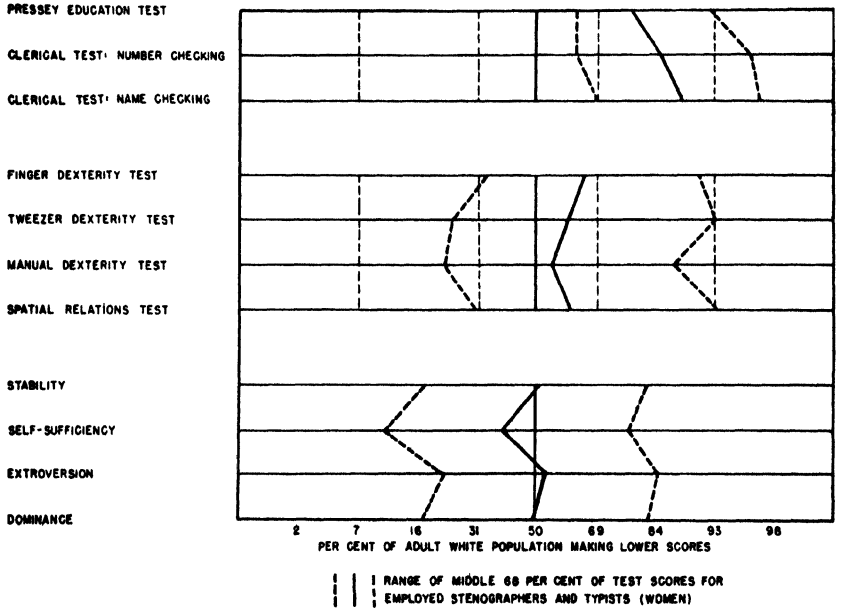
When surveys are conducted, it is found that half the companies use tests for one personnel purpose or another. This does not mean that these companies really know how well the tests are working—they may have only opinions, unsupported by evidence, for the most part. Probably 90 per cent of these companies have made no adequate checks as to the utility or validity of the tests.

The hit-or-miss way. The John Doe Company installed tests for the selection and assessment of all personnel below middle supervision. They tested everybody on the staff below this level and also every employee who came into the establishment. They adopted tests on an over-all basis. This was because a new personnel man had an interest in tests and measurements, but he did not have any interest in appraisal of the limitations of testing. Testing, to him, had "halo"—it was good for everything.

The clinical way. The second level of use might be called clinical. The Hiram Jones Company uses tests without statistical studies of their workability, but this company is different from the John Doe Company in that it has one person on the staff of the employment section of the personnel department who, by virtue of adequate training, experience, and interest in tests and measurements, realizes their limitations and knows how to interpret them. This man knows that the tests might not be working and makes use of test results with caution and understanding. The vice-president in charge of personnel administration of this company has adopted a policy which calls for future follow-up and follow-back studies of a statistical nature, enabling more precise appraisal and use of tests and related predictors over a period of time. This will lead to improvement of these tools.

The occupational ability pattern way. The third level of use is the occupational ability pattern. Snodgrass, Inc., has a young research worker on the staff of the employment department who believes in the theory of occupational ability patterns. He sets up a profile showing how an applicant differs in measured characteristics from those incumbents now employed on the job for which he is being considered. The personnel director realizes that he will select people with measured characteristics like those of people who are members on the job, but not like those who are outstanding in job performance. He of course knows that by use of this device he will tend toward mediocrity, not excellence, in future personnel; his goal is to eliminate the unfit.

Figure 13.7 shows an occupational ability pattern.[18] The profile chart for 180 women stenographers and typists is shown. The figure reveals that the name-checking test differentiates most distinctly between the group of stenographers-typists and women workers in general. It may also be seen that the average stenographer and typist surpasses 75 per cent of women workers in intelligence as measured by the test although, contrary to general opinion, dex-



Source: Andrew and Paterson, "Measured Characteristics of Clerical Workers," p. 26.

FIG. 13.7. Occupational ability pattern of 180 women stenographers and typists.

terity as measured here is no more typical of typists than of other women workers. Personality factors were of no significance since the pattern follows that of the average woman worker.

Whereas the third level, the occupational ability pattern, uses a criterion, the criterion is occupational membership, not occupational success.

The level of known workability. The fourth level of test use, the one that is most scientific, may be called "the level of known workability." It is appropriate to discuss in some detail how this use of

[18] Dorothy M. Andrew and Donald G. Paterson, "Measured Characteristics of Clerical Workers," *Bulletins of the Employment Stabilization Research Institute,* University of Minnesota, III, No. 1 (1934), pp. 25–27.

tests is achieved.[19] It can best be discussed by use of a case study.

In the controller's division of a large department store, a study [20] was undertaken to develop a battery of tests of known effectiveness for the selection of good general clerical employees. At the outset, it was not known what specific test or what combination of tests would yield best results for the selection of general clerical personnel in this company. The most orderly way of investigating the value of the various available tests seemed to be to try them out on the presently employed clericals to see if the tests were able to distinguish between the various levels of work performance as measured by employee ratings.

The employee groups used for the investigation were carefully chosen. It was found that personnel records carried fairly reliable, or internally consistent, ratings of the employees. They had been rated by two different raters at two different rating periods, separated by approximately six months. The sample group contained 147 employees, concerning whom there was fair consistency in agreement as to their value to the company.

The selection of tests for the trial was made on the basis of experience in other similar situations and on the basis of current literature of published reports on how various tests had worked in similar situations. Chosen for the purpose of this preliminary investigation were:

Psychological Corporation—General Clerical Test. The over-all score for this test may be regarded as an index of general clerical aptitude. The three scores covering respectively routine clerical aptitude, proficiency in mathematics, and verbal facility may be used singly or in combination to appraise the suitability of an applicant for a given job or to assign an inexperienced person to appropriate work. The complete test is divided into 9 parts, each with a time limit varying from 3 to 8½ minutes.

Science Research Associates—Clerical Aptitudes Test. The SRA "Clerical Aptitudes" is made up of three tests: Office Vocabulary; Office Arithmetic; Office Checking. Scores are given for each test, plus a total score,

[19] A reference book by Dorcus and Jones gives these 5 items of information about more than 400 test studies: tests, subjects, criterion, validity, and reliability. This compendium will be of great value to personnel managers, research workers, and students: R. M. Dorcus and M. H. Jones, *Handbook of Employee Selection* (New York: McGraw-Hill Book Co., Inc.), 1950, p. 349. Cf. M. H. Jones, "Adequacy of Employee Selection Reports," *Journal of Applied Psychology,* XXXIV (1950), pp. 219–24. In this study 2,100 reports on test evaluation were examined, of which only 427 met part of the requirements of an adequate evaluation of the selection tests being considered, and only 8 completely met the requirements.

[20] From an unpublished study by Roger M. Bellows and Ronald F. Wilson, 1948, and subsequent follow-up studies by the writer and Carl H. Rush, Jr., 1949–51.

which are effective in indicating ability to learn the tasks usually performed in clerical jobs. Time limits are set. The Office Vocabulary test measures command of the basic vocabulary and verbal relations needed by office workers. The Office Arithmetic test consists of 24 items requiring the application of basic arithmetical processes to the solution of practical problems. Office Checking test includes number checking.

Minnesota Rate of Manipulation Test. The two sub-tests used, Placing and Turning, may be administered to small groups or to individuals. Time required to finish the board is recorded as a score on each of four trials.

Purdue Pegboard Test. This dexterity test shows relationship to success in the majority of occupations requiring motor coordination. The scores for right hand, left hand, and both hands are recorded with a time limit of 30 seconds on insertion (3 trials) and 1 minute on assembly (2 trials).

Several test scores or subscores were available for analysis for possible usefulness. Each variable was analyzed statistically for its value in picking successful clerical employees. Some of the test scores and subscores were expected to select good people with some consistency.

The variables were next examined by statistical procedures to see that they did not overlap too much in what they were measuring—there is little to gain from giving several tests which measure the same thing, and actually this duplication may detract from the over-all effectiveness of the testing procedure, mainly by making it cumbersome and unwieldy in use. Several tests and subtests were eliminated on the basis of this overlap in test measurement. Further statistical study revealed that the best combination of tests, providing maximum prediction of successful general clericals, included only four variables:

1. SRA Clerical Aptitudes Test—Vocabulary subsection
2. SRA Clerical Aptitudes Test—Arithmetic subsection
3. SRA Clerical Aptitudes Test—Checking subsection
4. Minnesota Rate of Manipulation—Placing sub-test

It was found to be necessary to give varying amounts of emphasis on these several tests, and the amount of the weights was also determined, as were the tests that went into the combination, by means of the Wherry-Doolittle test selection and weighting method.[21]

[21] William H. Stead, Carroll L. Shartle, and Associates, *Occupational Counseling Techniques* (New York: American Book Co., 1940), pp. 245–52. Statistical techniques for obtaining indices of reliability and validity and for selection and combination of several predictors for maximum forecasting efficiency are considered of

Using these selected test segments, analysis was made of their usefulness in picking high-level clerical workers. The sample had been divided, in terms of rated job proficiency, into one of five major criterion groups of job performance. These were E (the poorest group), D, C, B, and A (the best group). E and D comprised the lower 30 per cent; C, the middle 40 per cent; and B and A, the higher-level employees, 30 per cent. By using the improved test battery with appropriate weights for each score, it was found that selection of clerical personnel could be considerably improved, assuming that future conditions remained the same. If the upper 30 per cent of all applicants were screened on the basis of whether or not they met the minimum critical score on the test battery, the proportions tended to result as follows: E and D—18 per cent; C—35 per cent; and B and A—47 per cent. However, if it were possible to screen out all but the upper 10 per cent of applicants, clearly a high level group would tend to be picked as employees. The lowest group, E, would be eliminated completely, and groups B and A would comprise 67 per cent of the employees. (See Figure 13.8.)

Follow-up data were obtained for a check on stability or cross validity over a period of several years. Since the installation of the tests, somewhat more than 2,000 applicants have been tested. Of these, 29.1 per cent have passed the minimum critical score. By using ratings of a sample of 104 of the new employees screened by the test battery, substantially the same validity was found as during the experimental period. Whereas the validity of the tests on the original sample of 147 cases was represented by a correlation coefficient of .40 between weighted tests and criteria of success, the validity index of the follow-up sample group of 104 cases was .50.[22]

It is demonstrated on the basis of the above case study that the examination and statistical investigation into the workability of available tests will make apparent their usefulness in the particular work situation. Judgments aided by the scores made by applicants on tests can appreciably decrease the costs of employment,

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great importance. These have not been included in this nontechnical treatment. See Charles C. Peters and Walter R. VanVoorhis, *Statistical Procedures and Their Mathematical Bases* (New York: McGraw-Hill Book Co., Inc., 1940), p. 516. J. P. Guilford, *Psychometric Methods* (New York: McGraw-Hill Book Co., Inc., 1936), p. 566.

[22] Corrected for restriction of range of the follow-up sample that had been test-selected. See R. L. Thorndike, *Personnel Selection: Test and Measurement Techniques* (New York: John Wiley & Sons, Inc., 1949), p. 173.

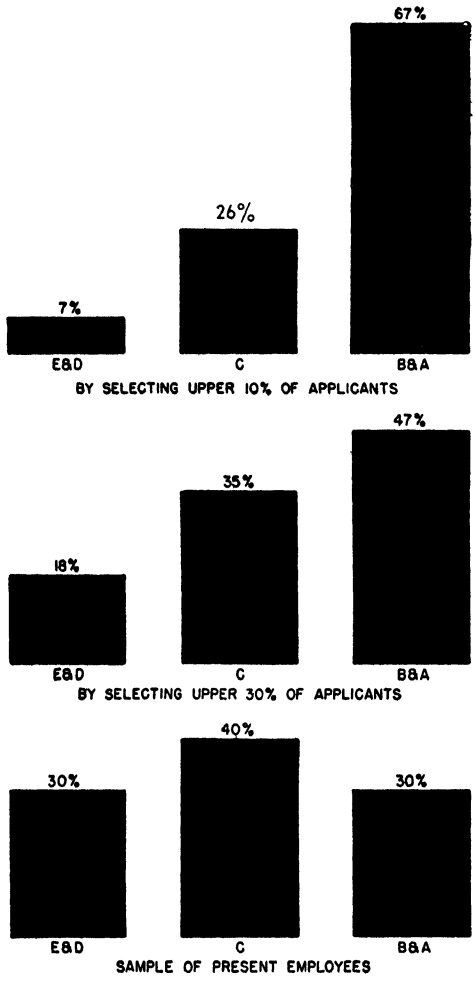


FIG. 13.8. Job performance as rated from an employee sample, compared to job performance of the upper third and of the upper tenth of that sample as selected by tests of significant validity.

both by reducing employer's time and by reducing turnover and waste resulting from deficient employees. Judgments made on the potential worth of applicants without subjecting those judgments to objective verification are an extravagance that most companies cannot well afford.

Two ways of screening are often used: (1) multiple screens or multiple cut-offs, sometimes called "successive hurdles"; (2) composite scores derived by multiple correlation methods. A composite score was used in the example of selection of clerks given above.

In the successive hurdles approach, use is made of the several variables in their order of correlation with job success. If the most valid procedure is aptitude test scores, all applicants are screened first with respect to whether or not they meet the critical score on this variable. If not, they are dropped from consideration at that stage in the selection process. If they pass this hurdle, they are viewed in the light of the next most valid tool, perhaps the weighted application blank. Thus, in screening, applicants are successively eliminated as they fail to pass the hurdles, and applicants who pass all the hurdles are hired.

The multiple cut-off method has these advantages, according to Cronbach:

1. It does not assume that strength in one ability compensates for inadequacy in another important ability.
2. It is easier to compute and easier for the layman to understand than a composite formula. It is usually easier to administer.
3. Retaining the scores of separate tests in the record permits more effective guidance or placement than an undifferentiated composite or average.[23]

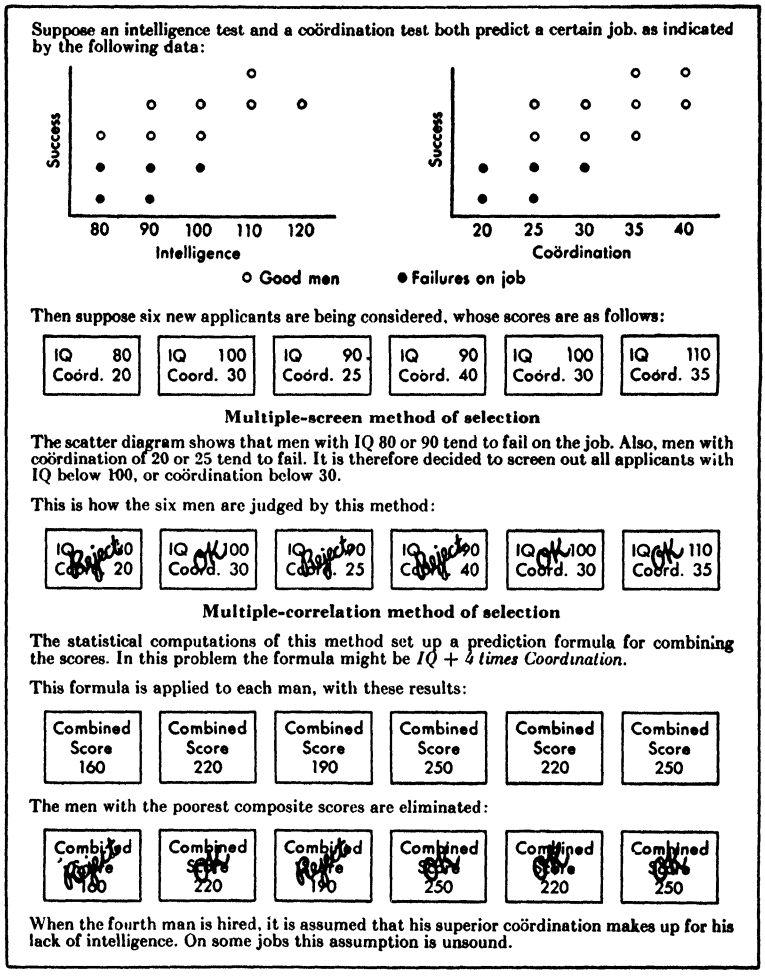
The multiple-correlation approach utilizes a statistical formulation of a composite cutting score. Each of the several selection variables is correlated with each other and with the criterion. From this can be determined an index of the amount of weight that should be placed on any particular selection device. A technician weights each possible score for all variables in a multiple regression equation and derives composite scores. An over-all critical score can then be determined for making the decision to hire. It can be seen that if a person is very high in one area of ability but average or low in another, he still may meet the selection standard when these measures are combined. Cronbach has cited these advantages for the multiple-correlation method:

1. It indicates the rank, in all-round ability, of men who pass the screen.

[23] Lee J. Cronbach, *Essentials of Psychological Testing* (New York: Harper & Bros., 1949), p. 254; see also Glen Grimsley, "A Comparative Study of the Wherry-Doolittle and a Multiple Cutting-Score Method," *Psychological Monographs No. 297*, LXIII (1949), p. 24.

This is useful in identifying men requiring special assistance during training or for singling out superior men for special responsibility.

2. For a particular man, it permits a comparison of his probable success in various specialties, instead of merely eliminating the assignments in which he would fail.



Source: Cronbach, *Essentials of Psychological Testing*, p. 255.

FIG. 13.9. Comparison of multiple-screen and multiple-correlation methods.

3. It permits combining the tests in that proportion which give the highest correlation. Prediction is therefore more accurate than with a multiple cut-off.
4. It yields, in the multiple correlation, a simple estimate of the ef-

ficiency of prediction from the test battery. The formula also indicates the contribution of each test to the final prediction.[24]

Figure 13.9 outlines graphically the difference in the assumptions made under the two plans. Of these two methods, perhaps the multiple cut-off or successive hurdles approach is more workable in most situations. It would not be assumed that weakness in one ability is canceled out by some other superior ability.

Industrial Programs in Test Development

Long-range programs in selection test development are in progress in a number of industrial situations. Several of these have been cited above—for example, the development of selection methods for office equipment salesmen in The Burroughs Corporation. Two additional projects may be reviewed as illustrative. One is in The Standard Oil Company (New Jersey), the other is in The Procter and Gamble Company.

The Standard Oil Company project is newer. It has been in progress for 8 years. Its aim is to develop and evaluate tests for selection of new people, for improving methods for lateral transfer, and for selection for specialized training and promotion. Its main emphasis is on actual measurement of success, development of criteria against which to validate tests.

Concerning the long-range goal of the Standard Oil program, Matthew Radom said:

> We are just beginning. The research completed is in many ways pioneer work in the social sciences. Jersey and its affiliates will benefit directly. Indirectly, so will other companies. It has been decided as a matter of policy that we will make the results of our research known. The performance reports and tests which have been developed up to now can only be used if careful research is done to establish criteria in the using organization. The results cannot be used blindly. The tests and performance reports were custom built, tailored, *made to measure.*[25]

Another long-range study has been conducted by Uhrbrock.[26] In 1932, a battery of 39 tests (4,738 items in 36 of the tests) was administered to 96 college trained men working in technical posi-

[24] Lee J. Cronbach, *Essentials of Psychological Testing* (New York: Harper & Bros., 1949), p. 254.

[25] Matthew Radom, *Made to Measure* (Employee Relations Department, Standard Oil Company, New Jersey, 1951), p. 3.

[26] Richard S. Uhrbrock, "Construction of a Selection Test for College Graduates," *Journal of General Psychology,* XLI (1949), pp. 153–93.

tions in the manufacturing department of the Procter and Gamble Company. The study is distinguished by its long follow-up, the detailed care and adequate design on the criterion side, the volume of item analysis work, and the comprehensiveness and clarity of the report.

Uhrbrock sought to determine the effectiveness of each separate item in the trial battery by appropriate item analysis procedure. The long trial battery, requiring some 30 hours to administer to each man in sessions of 1 or 2 hours, consisted of 4 tests of general intelligence, 10 mathematics tests, 4 chemistry tests, 4 physics tests, 8 English aptitude tests, training, and vocabulary tests, 4 paper-and-pencil mechanical aptitude tests, 1 scientific aptitude test, 2 "personality" tests, and 2 interest analysis tests.

Thirty-five executives in the manufacturing organization rated from 1 to 53 of the college men, using order-of-merit rankings, graphic scales, and check lists of scaled items. (Discussion of these methods may be found in chapter 17.) The method of developing the check list criteria is noteworthy. A list of 497 statements was prepared; for example, "has inadequate knowledge of the details of the present job," "submits clear, understandable reports," "is uncooperative." Ten judges then sorted the statements into 1 of 11 piles according to the degree of success they felt would be attained by a person about whom such a statement would be made. From these results a check list of 51 statements, from least favorable to most favorable, was derived. The combined criterion consisting of ranks, graphic scales, and check list yielded a reliability coefficient of .88.

That tests purchased and used without item analysis contain much "dead wood" is verified by Uhrbrock's item analysis results. Of the original 4,738 items analyzed, 708 (or about 15 per cent) of the most valid items were retained for future use. A test constructed of 100 selected items correlated .48 with the criterion when administered to 51 men from the original group. This test was only somewhat superior to the validity of several purchased tests included in the study.

Summary

Maximum use of available manpower depends in part on selection of personnel. Managers have sought new short cuts for picking men, realizing that profit losses are great with methods of unknown dependability, like the interview used alone. Differences between

applicants are great in terms of their psychological characteristics, some of which are objectively measurable. Testing for employee selection is utilized in nearly half of the firms across the country. This method is used as a tool for selection, counseling, placement, and development of skill inventories for transfer and replacement of workers.

Tests are perhaps badly used as often as they are properly used. Ways of checking on the dependability of tests and related devices, while somewhat technical, are rather straightforward. The reliability of a measuring instrument or its internal consistency is important. Validity is also susceptible to objective appraisal, and knowledge of a test's validity is crucial in use.

There are several levels of test use, depending upon the extent of the checks that have been made on workability or validity of the tests. The first use, without evidence of the value of the tool, results in misunderstanding and malpractice. The second level of use is clinical. Clinical test technicians make use of tests with knowledge of their imperfections, taking into account other types of selection information, including interview data. The third level is use of occupational membership as a criterion. The applicant's test profile may be compared to others already employed on the job.

The fourth and highest level is the use of testing devices with knowledge of their workability. A test selection battery is put together and tried out for validity, modified and refined, a check being made on its workability each step of the way. It is this level of use that will improve selection over a period of time. It can result in considerably increased use of available manpower. Workers so selected would be expected not only to perform at higher efficiency but also to be better satisfied with the job. Since they produce more, management is able to pay them more. Selected workers are not overplaced—their job is not too difficult and consequently frustrating to them; they are not underplaced—their job is not too easy and, consequently, not monotonous or too routine for them.

Personnel testing is a rapidly advancing technical field. To keep abreast of it will be as much a challenge to the personnel manager in industry as to the student of personnel methods.

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14 Economy in Training

IF NEW WORKERS could be given a capsule of magic ingredients, causing them to increase their production by 50 per cent, this would be a wondrous accomplishment. In the absence of such magic, training is one of the answers. It is not a panacea; it is a simple, straightforward personnel method for increasing productivity and happiness of workers on a job. Personnel managers have always been confronted with the problem of helping to arrange the work situation so that the new worker or the worker transferred to a new job would reach normal production as soon as possible. Studies of training, as educational psychology, were first conducted in 1885, and the first learning curve—showing the rapidity with which telegraph operators learned code—was drawn at the turn of the century. (See the table on the end linings of this book.) Since that time the psychological publications have contained many studies of the conditions under which learning takes place most rapidly.

Training is continuously the aim of all informed supervisors at every level of management. It is the process of bringing about a change, or improvement, in employee attitudes or potential behavior patterns, for a definite purpose. The purpose of training in business and industry is increased production, increased service, increased efficiency of the employee for the profit of all concerned. The functions of management and supervision, for the most part, amount to the improvement of employees or the training and education of workers to accomplish defined tasks. Whether this is done

by direct conversation, written memoranda or manuals. or through other forms of communication, the function and result are the same. It makes no difference whether change in performance is brought about by a highly formalized, planned program called "training" or whether it is informal. Training in industry implies that all levels of employees need techniques for improvement in job performance. This applies to top management as well as workers.

Personnel training in industry differs from education in school only in that training has a more immediate and definitive purpose. Education is broader, long-ranged, and tends to stress cultural values. Company-supervised training aims at improving the employee so that he can contribute more to the company and also earn a better living. Education, in the broad view, aims at improving the student's way of life.

Simple rules of training, including training the trainer, motivating the trainee, selecting the trainees so that they have greater probability of success in the training programs, are coming into use in industry. Other rules from psychology—optimum spacing of the training periods, constructing measuring yardsticks so that the trainee knows where he stands and is working and learning with knowledge of results—could be used with profit in many situations.

A recent trend, which is shown in the topics of national meetings of managers, such as American Management Association and Society for the Advancement of Management, indicates interest in the cost of training. Training, as any personnel endeavor, must be evaluated in terms of benefits in money derived from it as compared to its cost. The evaluation of training in these terms can probably be accomplished, although it has not been accomplished in the past. What is necessary of course is a criterion of production —a criterion of worker capability so that an experimental design can be set up which will reveal the results of training programs in terms of increased efficiency of the worker. Such endeavors go back to the criterion problem, the problem for measuring effectiveness of workers in order to point to better ways of doing—in this instance better training methods.

Certainly here, as in the case of other personnel methods, there must be a point of diminishing returns. There is little uniformity in the amount of money different companies of the same size spend on training. Some probably spend far more than the results derived from the program warrant. Most organizations probably spend far less than the optimal amount. It is predicted that cost

analysis of procedures will soon be so developed that management will be able to arrive at the optimal amount of training activity with a view to the benefits to management and workers, as well as stockholders and the general public.

The Scope of Training

Training is a broad area which should be tied in with all functions of the entire organization. The interrelations of training with other functions are like gears that intermesh. In practice, training is important to, and interrelated with, many personnel activities. Among these are:

Employment procedures
Job analysis and job evaluation
Evaluation of employees
Safety administration
Employee turnover
Communications and employee relations

Direct effects and by-products of training filter throughout an entire organization.

Training in employment procedures. How is training related to recruiting new employees? Company personnel policy as understood by the worker is a public relations influence in the community that constitutes the labor source. If the company is unfavorably considered in the community, few of the better workers will apply. Planned training may well take into account this recruiting problem. Often a public relations policy entailing a close integration of planned training with community schools may be of considerable help in recruiting.

Induction is facilitated by planned training. A time schedule of steps in introducing a new employee to his job was prepared by the training department of a large grocery chain firm to aid supervisors in the induction of new personnel. This same training department prepared an induction check list. The items of the check list included the information that was to be imparted to the new employee. Such a check list is an orderly way to help supervisors, department heads, and foremen accomplish their part of the work in induction training.

Employee services (recreation, cafeteria, insurance, credit union) make necessary orientation training of supervisors and induction training of new employees. The purposes and uses of such services

can in many situations be most economically disseminated through a planned group training program. Evans reproduces a stenographic record of how not to induct new employees. The transcript of the introductory remarks of the speaker: ". . . Now if any of you are still lucky enough to own automobiles, you'll find plenty of parking space out front, *but don't make the mistake of pulling into a space that has a name on it. You don't belong there, so don't get into trouble.*" [1] This type of crack-the-whip induction training might well be replaced by well-planned sound movies and other techniques to present the facilities and services available to employees.

Training related to job analysis and job evaluation. Planned training ties in with job analysis and use of the products of job analysis: job descriptions and job specifications. First, job analysis requires, for its successful initiation, a considerable amount of indoctrination of supervisors. They want to know what it is, how it is done, what it yields. Then, how are job analysis products, job descriptions and job specifications, to be used with profit? Their use requires that the users be trained to use them, the same as any worker is trained to handle skillfully a new tool.

Job descriptions form an economical basis for centralized training program development. Suppose a new job-methods training program is being developed. A job-methods committee is set up. It utilizes job descriptions. Job descriptions are the materials used as the base, the starting point from which new work methods are developed. Work simplification begins with present ways of doing. Then other short-cut methods are contrasted to present methods. If found more efficient, workers are then trained in the simplified job operation. This is but one of the many training uses of job descriptions.

Job specifications, including minimum hiring requirements for each job and its relationship with other jobs, are useful in training employment interviewers as well as in job training of new employees. Specifications are set up on cards indexed by job title. They are reviewed by interviewers and placement officers when requisitions for jobs are received by the employment office.

Training is closely tied in with job evaluation procedures. Here it has a three-way relationship:

[1] J. J. Evans, Jr., *A Program for Personnel Administration* (New York: McGraw-Hill Book Co., Inc., 1945), p. 35. The italics were used by Evans.

1. Indoctrination of all concerned, to facilitate the acceptance of the developmental program of job evaluation;
2. Training the committee that works out approaches and details of job evaluation; and
3. Training supervisory personnel in the use of the resulting tool.

Job evaluation, if it is to work properly, must be preceded and accompanied by a carefully planned training program. It must involve bilateral participation [2] and must be a joint worker-management endeavor if it is to be of value.

Training and evaluation of employees. Planned training is equally important for the initiation, development, and use of a merit rating (perhaps more properly termed "personnel inventory") system. A personnel inventory will not work without appropriate training of management supervision as raters and indoctrination of employees as ratees. Following is an excerpt from a memorandum transmitting information regarding a rating system to a group of professional workers in a public accounting firm:

> A merit rating procedure has been devised to aid in evaluating in a uniform way the professional work and performance of each member of the staff. A copy of the merit evaluation form, together with a manualized description of its use, is attached for your information.
>
> You may wish to study the method so that you will know its purpose and on what basis supervisors judge your work. Your attention is invited to the performance items that are included, as these may be of particular interest. You will be rated only by your immediate supervisors who are thoroughly familiar with your work.
>
> After each periodic rating you will be given an opportunity to know the evaluations of your performance on each item and to discuss them with an office executive with a view to your further professional development and improvement.

Some companies use merit rating as the main basis for training and improvement of personnel. Periodically, the merit rating forms are gathered, and weaknesses of workers are tabulated in much the same way as an instructor in industry tabulates results of an objective examination to determine areas of weakness in the trainees. For example, it was found by one public accounting firm that supervisors rated 70 per cent of the junior staff either mediocre or un-

[2] A. J. Percival and G. B. Gross, "Job Evaluation—A Case History," *Harvard Business Review,* XXIV (1946), pp. 466–97; N. L. Martucci, "Case History of Joint Management-Labor Job Evaluation Program," *Personnel,* American Management Association, XXIII (1946), pp. 98–105.

acceptable in report writing. The manager did two things to correct this deficiency: (1) a program was developed and inaugurated for counseling junior staff, using the results of the ratings; and (2) a formal training program in report writing, a necessary job characteristic, was organized for staff members.

Training related to safety. The problem of safety administration is largely a training problem. Two main steps are involved here. The first consists of explaining the danger, so that the inexperienced worker may be aware of it, and explaining precautions and safety devices, so that the worker will at least know how to be safe. Inexperienced workers have more accidents than experienced. Length of time on the job is known in some situations to be inversely related to number of accidents. For example, a recent study [3] of number of accidents as related to months on the job for streetcar and motorcoach operators showed that by the end of seventeen months of planned, on-the-job training, the accident rate was reduced by more than half.

Having explained safety techniques, the trainer may then attempt to deal with the second main step: the emotional and temperamental causes of accidents. This requires bringing about a change in the attitude of the worker, perhaps a more difficult change to effect and measure than a simple increase in manual skill. This step is necessarily approached through a training program designed to accomplish this end.

Training and employee turnover. An efficient training plan may well include employee counseling with a view to controlling avoidable turnover. Such plans would enable greater vertical expansion, that is, upgrading from within the organization. Companies which not only give lip service to, but actually practice, vertical expansion would, it is suggested, tend to have lower turnover rates.

Training related to communications and employee relations. During the past decade a basis for many human relations courses has been the Job Relations Training Course developed by the Training within Industry organization.[4] A human relations training course for supervisors, developed in three insurance companies, was given to a group of supervisors and not given to a control group.[5] Results

[3] E. E. Ghiselli and C. W. Brown, "Learning in Accident Reduction," *Journal of Applied Psychology*, XXXI (1947), pp. 580–82.

[4] War Manpower Commission, Bureau of Training, Training within Industry Service, *The Training within Industry Report, 1940–1945*. Washington: Government Printing Office, 1945, pp 204–222.

[5] Ralph R. Canter, Jr., "A Human Relations Training Program," *Journal of Applied Psychology*, XXXV (1951), pp. 38–45.

indicated that the supervisors receiving the training made higher scores on tests of supervisory judgment, they tended to become more similar in the abilities measured, and they tended to agree more closely with experts on the nature of valuable supervisory and company employee relations and practices.

Every manager and personnel director knows the role training plays in communications. Both worker and management need knowledge about the other. Planned training economically contributes to employee communication. As an example, representatives of management and labor meet behind closed doors to negotiate a union contract. The document which emerges is couched in such abstruse, legalistic terms that many of the supervisors, to say nothing of the workers, have difficulty in understanding it. Grievances and misunderstandings arise, stemming directly from incomplete understanding of the terms of the contract. In other words, communications in this situation are inadequate. A solution to the problem is planned: plant-wide training courses for foremen, supervisors, shop stewards, and others. These courses interpret the particular legal contract and the application of its terms to the actual operating situation.

Economy in Training

To neglect important rules for economy in training is to throw at least part of training budgets away. Practical training programs have profited from principles developed by educational psychologists. The quantitative, scientific approach to the study of learning was started by Ebbinghaus in 1885.[6] Today there is a wealth of facts, methods, and results from the fields of education and research psychology.

Contributions of the educational psychologists. A few of the general rules for economy in training have been selected for discussion here, with special reference to those for which research evidence is available. They are:

Plan in terms of individual differences among trainees.
Plan regular training intervals.
Overtrain.
Train the trainers.
Motivate the trainee.

[6] Edwin G. Boring, *History of Experimental Psychology*, 2nd ed. (New York: Appleton-Century-Crofts, Inc., 1950), p. 388. H. Ebbinghaus, *Memory*, trans. Ruger and Bassenius (New York: Teachers College, Columbia University, 1913), p. 123.

Plan in terms of individual differences among trainees. Greater differences exist in trainees than is usually evident to those who plan training programs. This is true even though a considerable amount of screening and selection of trainees may have previously taken place at the hiring point. Test data from training situations in the Army in World War II clearly substantiate this.[7] Judicious selection of training materials and methods, as well as careful selection of trainees in terms of background and basic skills such as reading ability, follows an understanding of the fact of wide individual differences among trainees.

In an Army training situation during World War II, some 100,000 men entered Ordnance Automotive Maintenance Schools each month. Of these trainees, Ordnance officers estimated that about 1 out of 4 could by-pass the first month of training, the elementary training phase, without loss of efficiency. The question was how to identify the trainees who could bypass the elementary phase of training. Measurement of individual differences among trainees was the answer.[8] A series of tests was developed for identifying those trainees who had, at the start, the equivalent of the elementary phase of training. This phase consisted mainly of exercises in tool usage and nomenclature. Its duration was 30 days. The tests found to be effective were measurements of knowledge of tools and automotive equipment. By use of the final tests of individual differences, it was found that 1 out of 5 of the trainees had the knowledge required to enter the second phase of training. Furthermore, these men could be identified by the tests. This procedure saved almost 20,000 man-months per month!

It is evident that individual differences among trainees are of two kinds: differences in attained knowledge or skill possessed at the start of training and differences in basic aptitude (learning ability). The example given above involved previously attained knowledge or achievement. In planning training in terms of the attained proficiency of trainees, the first step is to find out how much alike (homogeneous) or how different (heterogeneous) the trainee group is. If it is found that the group is fairly heterogeneous, the group can be sectioned or split into two or more subgroups, each of which is relatively homogeneous. This was what

[7] Dael Wolfle, "Military Training and the Useful Parts of Learning Theory," *Journal of Consulting Psychology*, X (1946), pp. 73–75.

[8] From an unpublished study conducted in 1943–44 by The Personnel Research Section, The Adjutant General's Office, War Department.

was done in the case of the Army Ordnance Automotive trainees. They were split into a bypass group that did not take the elementary course and a regular group that needed the elementary phase to make progress in the more advanced phase of training.

Basic aptitude differs vastly among workers. Some workers are slow learners, some average, others rapid. Basic aptitude differs from achievement, discussed above, only in that aptitude is general, and achieved knowledge is specific. General vocabulary, facility for handling numbers, and dexterity with fingers or hands are examples of basic aptitudes. They make for rapid learning, fast achievement. Sectioning or grouping trainees in terms of basic aptitudes needed for learning is obviously desirable. This procedure is fundamental for economy in learning.

How is sectioning of trainees into homogeneous groups accomplished? Such placement is done by tests and measurements, interviews, and inventory information. This procedure was discussed in chapter 13, "Psychological Testing."

Plan regular training intervals. Economy in training may depend to a considerable extent on spacing the practice intervals.[9] Usually spaced practice or training periods are more effective than massed training periods. Often there is a strong temptation to crowd practice into a few weeks' duration to get the program over and finished. This temptation leads to full-time training for a short period. More economical would be the practice of training with work periods interspersed. The economy realized from distributing practice has been known since the time of Ebbinghaus and has been verified through a number of studies of various learning situations since that time. The exact amount of distribution for maximum economy depends, of course, on the individual situation.

Closely related to planning regular, spaced practice periods is the need for caution that what is retained after a practice period depends also upon what kind of activity follows the practice.[10] Experiments have shown that the activity of the trainee following a learning period determines in part how well he will remember what he has been taught. In general, an activity unrelated to the learning session engenders retention; one closely related to the

[9] For one of the early classical studies see D. Starch, "Periods of Work in Learning," *Journal of Educational Psychology*, III (1912). Subsequent research has tended to verify the findings of this pioneer study.

[10] Results of study show that forgetting "is a matter of interference, inhibition, or obliteration. . . ." J. G. Jenkins and K. M. Dallenbach, "Oblivescence During Sleep and Waking," *American Journal of Psychology*, XXXV (1924), pp. 605–12.

practice period tends to obliterate the material that has been learned. A stiff training session in shop math followed by lunch or by a shop work session in which math was not applied, or by a rest period, would be generally favorable to retention. If the training session were followed immediately by a drill session on the multiplication table, the influence would tend to be unfavorable to retention.[11]

The optimum conditions for economy in training are highly specific, depending on the training situation. In planning a training course for maximum economy, consideration must be given to these factors.

Overtrain. It is known from both experience and experiment that skills and knowledges once learned are soon lost. Examples of this are frequent. A third or more of college sophomores are below 5th grade norms in arithmetic skills. College students lose more than two-thirds of what they have learned in a course within 2 years. Typists who attain 60 words per minute during training drop to 40 or less within a year without retraining or practice. The U. S. Civil Service Commission has been much concerned over the rapid deterioration of skills of stenographers who were found to be highly proficient at the time of appointment in taking and transcribing dictation at 90 to 120 words per minute.

What can be done to reduce forgetting or loss of skill? One answer is to overtrain. Plan to train the workers to a standard of proficiency higher than that deemed necessary for the job; for example, if 70 units are desired, bring trainees to a point of proficiency in which they produce 90 units. Another answer is to train periodically. Train by booster sessions so that workers maintain the desired level of proficiency.

Train the trainers. It would seem but common sense to insure that trainers know their subject and know how to instruct others in it. Frequently in industry, however, procedures for uniform standards of certifying and selecting qualified instructors are almost totally lacking. Little planning seems to be given to this important item. It may be of interest to have a look into an investigation which illustrates the profit that may result from training the trainer.

[11] A comprehensive review of the status of the technical studies on this subject is compiled in E. J. Swenson, "Retroactive Inhibition: a Review of the Literature," University of Minnesota, *Studies in Education,* No. 1, 1941, p. 59.

In one study,[12] trainers were given eight hours' special training. This consisted of methods for obtaining favorable social relations, procedures for increasing motivation, and teaching procedures that would tend to further a more favorable attitude on the part of trainees. Trainers were taught by the discussion method, not by the lecture method.

A marked increase in rate of learning by beginners was noted at once. Whereas beginners, in learning machine stitching operations, could learn after one week to achieve only 18 units of work before the trainers were trained, beginners could learn to do more than 27 units when the instructors were trained. (See Table 14.1.)

TABLE 14.1

Comparison of Amount of Learning When Trainers Were Untrained and When They Were Trained *

Days of Training	Units of Work Performed by Beginners	
	Before Trainers Were Trained	After Trainers Had Been Trained
5	18	27
10	24	33
12	25	38

* Source: Adapted from N. R. F. Maier, *Psychology in Industry.* Boston: Houghton Mifflin Co., 1946, pp. 225–28.

Table 14.1 shows that after 12 days of training, beginners trained by instructors who themselves had received no special instruction, produced 25 units, but those learning under trained instructors produced 38 units. The results of the study further suggested that instructors who were given more specialized training were better than those who were given general training.

Trainers must also learn how to spot a potential necessity for training before it becomes an actuality. It is costly for trainers to wait until the company loses from ineffective methods or lack of coordination. Needs should be recognized and incorporated into a planned program of training. It is in this sense that training differs from education: training must foresee coming needs before they become acute. As an illustration, in a motorcar plant, of 144 cars produced in one day, all but four of them were rejected. The reason? Communications between the engineering department and

[12] N. R. F. Maier, *Psychology in Industry,* ed. Leonard Carmichael (Boston: Houghton Mifflin Co., 1946), pp. 225–28.

production department were ineffective. The planning supervisors were remiss since they had not been trained in methods of coordination.

Motivate the trainee. Much has been written about motives and incentives in learning. Many experiments have been performed. To boil these down, we may say that learning is more likely to take place rapidly if the trainee is motivated, that is, if there is a goal to be achieved in learning. The goal incentive, to the industrial trainee, may be increased pay or social status, approbation by fellow workers or supervisor, or self-satisfaction in knowing that he has learned.

This rule is closely allied to the procedure of measuring the learner's success in achieving and of telling him where he stands. Learning is likely to be more rapid when the learner has knowledge of the success or failure of his attempts to learn.[13] Working with knowledge of results is one phase of incentive or motivation.

The question arises as to how to inform the trainee of his progress so that he will be learning with knowledge of the results of his efforts to learn. Achievement tests, quantitative units of production during learning, and the careful use of trainee rating devices used as a counseling tool are practical methods.

General rules for instructors. Industrial organizations have made some progress toward improved planning of training. Some industrial plans are highly developed and are immediately practical. One large production enterprise uses the following outline of procedure in training workers (adapted from Job Instructor Training, Training within Industry Program):[14]

A. GET READY TO INSTRUCT

Here are four "get ready" points it would be well to take care of before the new worker appears for instruction.

1. *Have a timetable* showing how much skill you expect him to have and how soon. Answer to yourself this statement: "Employee should be able to do what job and do it how well by what date."
2. *Break down the job.* You know that there is one standard way to do every job. You know too that there are "key points" in every operation

[13] For example, see George Forlano, *School Learning with Various Methods of Practice and Rewards,* Contributions to Education, No. 688. (New York: Teachers College, Columbia University, 1936), p. 114.

[14] Most personnel administrators are familiar with the wartime achievements of the Training within Industry Program and its role in training supervisors in 16,000 war production plants. Since 1946 it has operated as a private nonprofit organization, extending its techniques to numerous foreign countries. Some of its new programs include a "Discussion Leading Program," developed in 1948, a "Management Problem-Solving Program," and "Job Economics Training" (JET).

that make or break it. There is an easy, quick way to get the job clearly outlined in your own mind. Fill out a "Breakdown Sheet" for each of your operations. It only takes three to five minutes. This is for your own use. It is not to be given to the worker.

3. *Have everything ready.* Be sure you have the right equipment, materials, and tools. Don't miss a trick.
4. *Have the work place properly arranged.* Have it just as the worker will be expected to keep it. When you have everything right, the worker is more likely to follow the same pattern.

B. HOW TO TRAIN

Here is what you should do every time you instruct a worker or correct his work:

1. *Put him at ease.* Remember he can't think straight if you make him embarrassed or scared. Find out what he already knows about the job. Don't tell him things he already knows. Start in where his knowledge ends. Get him interested in learning the job. Explain to him how his job or operation is related to the final product, so that he knows his work is important. Place him in the correct position. Don't have him see the job backwards, or from any angle other than his own working angle.
2. *Present the operation.* Tell him, show him, illustrate and ask him carefully and patiently the "key points" which will make or break the operation—maybe make or break him. Put it over in small "doses." He, the same as all of us, can catch but a few new ideas at one time and really understand them. Repeat the job and the explanation if necessary.
3. *Try out his performance.* Test him by having him perform the job. Have him tell and show you how it is done; have him explain the "key points." Be patient and go slowly. Get accuracy first and speed later. Ask him questions and correct his errors, but don't bawl him out or indicate that he is "thick" or "dumb." Continue doing all this until you know that he knows his work thoroughly.
4. *Follow-up.* Put the worker on his own. He has to "get the feel" of the job by doing it himself. Designate to whom he should go if he needs help. Encourage questions and check frequently—perhaps every few minutes at the start to every few hours or few days later on. Be careful not to take over the job too soon or too often. Don't take it over at all, if you can point out what his error is and how he should correct it. Taper off this extra coaching until he is able to work under normal supervision.

This is a simple, practical approach. You may be amazed to find that such greatly improved results can come from such a simple plan.

Use of films as training aids. A controlled field experiment was performed by Lumsdaine to study the training value of multiple examples in films teaching how to read the micrometer. Thirty-two classes of basic Air Force trainees were tested on ability to read micrometer settings after seeing one of several specially prepared experimental films.

Standard films seen by one half of the men contained *three* different examples of micrometer reading, while experimental films

seen by the other half contained *six* different examples. Following the film, *half* of all groups were given supplementary instruction with four additional examples. This supplementary instruction was given by a slide-film with a recorded commentary and dealt primarily with the more difficult kinds of micrometer settings.

Results obtained from approximately 1,300 trainees show that:

. . . the amount learned increased consistently with a greater number of examples, whether the examples were given in the film itself or in the supplementary instruction;
. . . giving further supplementary examples made a significant improvement even after the number of examples in the original film had been doubled;
. . . the "rate" of improvement diminished as the number of examples increased, suggesting a "saturation point," dependent on the difficulty of the material, after which further examples would fail to produce more gain;
. . . common mistakes were less often made when supplementary instruction was used to emphasize the difficult material;
. . . the more intelligent men benefited even more from additional examples than did the less intelligent men.[15]

Implications of the findings can best be seen by reviewing the experimental materials, procedures and test data, presented briefly on the following pages.

Evaluation of Training

Industrialists commonly attest to the effectiveness of many new techniques devised for military and defense production training in work methods. Managers, however, want to show improvement in terms of dollars and cents. Because of this, personnel managers and training directors must find ways of collecting data giving evidence of the soundness of training. Such evaluation might never have been stressed had it not been for the need for this practical justification. It is unfortunate that more industrialists have not had to face this reality before. Training effectiveness, itself, can be improved only through such a critical evaluation of its shortcomings.

A device which has considerable promise for diagnosis of supervisory and foremen training, and for measurement of the results achieved from that training, is measurement of supervisory knowl-

[15] A. A. Lumsdaine, "The Value of Using Multiple Examples in Training Film Instruction: Factors Influencing the Effectiveness of Audio-Visual Training Material—No. 2," *Human Resources Research Laboratories Report No. 25* (Washington: Headquarters Command, USAF, 1952), 28 pp.

edge. There are several measuring devices that have been experimented with in business and industrial situations. One of the most used of these is the "How Supervise?" test.[16] On the basis of a study, it was concluded that general factors possessed by supervisors "do exist and that these quantities can be measured." [17]

In a subsequent article, File and Remmers [18] found additional evidence for the validity of the device for differentiating between successful supervisors and other employees who were bypassed because of lack of supervisory ability.

The *How Supervise?* test has been used before and after a course in general psychology. Significant increases in scores were obtained on the test after the course.[19]

More important for the present consideration is the utility of this device, "How Supervise?" with relation to programs for the development and training of supervisors. The test has two equivalent forms; it can be used by giving Form A before training and Form B after training. It is then possible to measure the amount of increase in supervisory understanding. This was done by File and Remmers,[20] who concluded that "significant increases in supervisory understanding have been measured by administering the test before and after supervisory training."

In another study reported several years later, the "How Supervise?" test was used for the same purpose. Form A was given to supervisors before they took a "Basics of Supervision" course, and Form B was given after the course was completed. Figure 14.1 shows the "before" and "after" scores on the test. It is noted that the supervisory groups improved in their understanding of supervisory practices as measured by the "How Supervise?" test. It does not necessarily follow that employees will put into practice what they have learned, but it can be said that "it is extremely doubtful whether they can put into practice things they don't know." [21]

[16] Quentin W. File and H. H. Remmers, *How Supervise?* (New York: Psychological Corporation, 1948). Manual.

[17] File, "The Measurement of Supervisory Quality in Industry," *Journal of Applied Psychology,* XXIX (1945), pp. 323–37.

[18] File and Remmers, "Studies in Supervisory Evaluation," *Journal of Applied Psychology,* XXX (1946), pp. 421–25.

[19] Harry W. Karn, "Performance on the File-Remmers Test, 'How Supervise?' Before and After a Course in Psychology." *Journal of Applied Psychology,* XXXIII (1949), pp. 534–39.

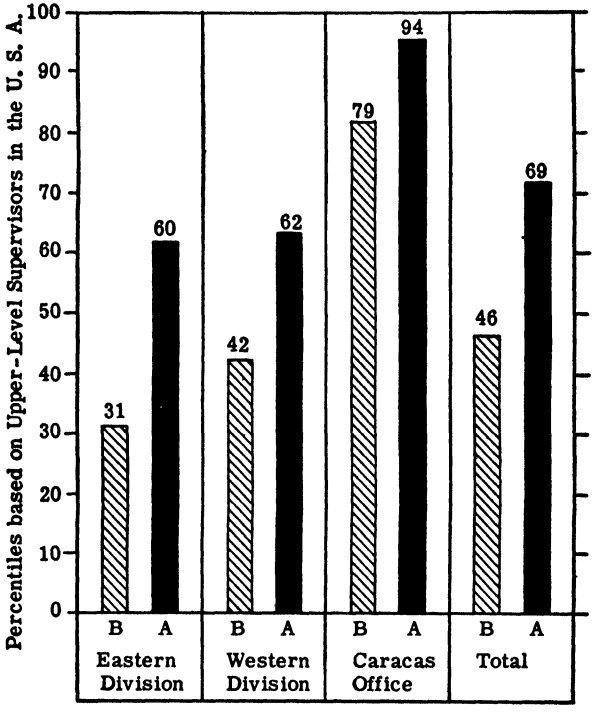
[20] File and Remmers, "Studies in Supervisory Evaluation," *ibid.,* p. 425.

[21] Employee Relations Department, Standard Oil Company (New Jersey), *Made to Measure* (New Jersey: Employee Relations Department, Standard Oil Company, 1951), p. 55.

COMPARISON OF SCORES ON "HOW SUPERVISE" TEST,

TAKEN BEFORE AND AFTER BASICS OF SUPERVISION COURSE

ENGLISH SPEAKING SUPERVISORS



Eastern Division - 68 supervisors
Western Division - 90 supervisors
Caracas Office - 45 supervisors
Total 203 supervisors

B - Before
A - After

Source: Employee Relations Dept., Standard Oil Company (New Jersey), ***Made to Measure***, p. 55(b).

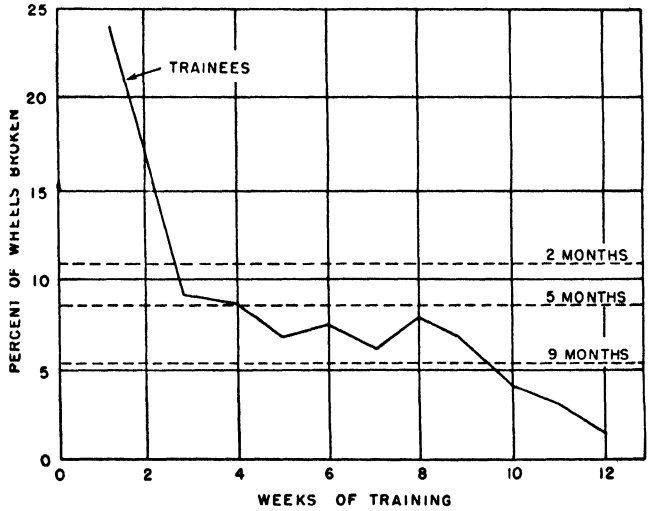
FIG. 14.1.

Before and after measures may be helpful in evaluating different methods of training. Such devices might suggest the length of the training course, the amount of spacing as compared with massing of practice periods and questions as, for example, whether the role-playing procedure in training is more effective than reading material out of a book or listening to lectures.

Lawshe lists eight checks on the effectiveness of a training program. These are:

1. Increased production
2. Reduction in time required to do the job
3. Increase in number of operators who meet the standard
4. Increase in learning rate
5. Decrease in breakage or use of consumable supplies
6. Reduction in number of accidents
7. Reduction in absenteeism
8. Reduction in labor turnover [22]

He suggests that improvement as a result of training can be objectively measured. For example, production which reflects increases of 35 to 45 per cent per man after training is a potent sales point for training. Similarly, the turnover rate, which is of concern to industrialists, showed a difference in one plant from 40 per cent for the trainee group to 68 per cent for nontrainees.



Source: Lawshe, "Eight Ways to Check the Value of a Training Program," p. 118.

FIG. 14.2. Reduction in breakage of abrasive wheels by 19 Trainees during training period.

An example of increased efficiency resulting from training is shown in Figure 14.2. The curve shown is average breakage of abrasive wheels by 19 trainees during the training period. Broken lines indicate percentage broken by experienced operators.

Lawshe recommends that in evaluating training programs, several general principles be kept in mind. Evaluation must be kept

[22] C. H. Lawshe, Jr., "Eight Ways to Check the Value of a Training Program," *Factory Management and Maintenance*, CIII (1945), pp. 117–20.

specific. It is difficult to point to varied activity and make a convincing picture out of the whole; one or two examples of improvement within the department will suffice. It is usually more meaningful to have a comparison or control group for checking the results of training. This may often mean merely that the untrained operators may be used as the control or comparison group. It is important that checks be made upon the experiment as carefully as educational psychologists routinely do in the laboratory. For example, it is not feasible to try to compare two groups not similar in composition. Neither should a training measure be defended which has been tried on a very small sample of employees.

Above all, training must be realistic. The situation as a whole must lend itself to the training program if it is to be profitable. Even if all other analyses point to significantly important results from the training activity, it may not be desirable from some other standpoint: the cost of the training may be exorbitant, the union may resent it, or some other factor may militate against its installation. Systematic check lists can help in evaluation of training programs.

A Tool for Analyzing Training Needs [23]

When a company begins work on improvement of its training program, the squeaking part of the machine frequently gets the grease. Stopgap devices may be installed to correct a specific part, only to become outmoded as other aspects of the program are modified. The tool described below was developed as a systematic means of surveying and evaluating the total training situation with a view to its improvement. The approach, as well as the pattern of procedure, is applicable to many training situations in various industries. The tool was planned with the participation of the training representatives in The Burroughs Corporation. Its purpose was to appraise the over-all, world-wide training effort of that company so that the most critical areas of training needs would be identified and priorities assigned for working out the program of improvement. The program was tied in with the company's selection program and geared to the changing demands of the sales market.

The analysis of training requirements for service representatives

[23] Roger M. Bellows, M. Frances Estep, and Charles E. Scholl, Jr., "A Tool for Analyzing Training Needs: The Training Evaluation Check List," *Personnel*, American Management Association, XXIX (1953), pp. 412–18. Acknowledgment is made to A. J. Augustine, C. A. Baker, H. D. Curry, G. S. Kavanaugh, D. J. Lamont, E. W. Uren, and R. A. Wesson for direction, guidance, and participation.

was performed in the marketing activity of the company. Several hundred new service representatives are trained each year. Available data suggest that the company's training and general personnel policies are highly effective.

The serviceman-trainee program is in four phases: service salesmanship, including company policy and information, handling service agreements, selling supplies, and relationships with customers; basic mechanical training on the more widely distributed machines; practical mechanical training on the kinds of machines the trainee will later be expected to service at the customers' offices; on-the-job training under supervision. Additional advanced training given at a centrally located school consists of tailor-made courses for any special groups of individuals from the United States or from foreign branches.

A tentative draft of a check list was drawn up and brought to a committee of service training representatives for comment and criticism. After discussion among the committee members, a few items were split into two, other items were added, and several items were made more specific to the training situation in this company. The final items used pertained to such areas as adequacy of classrooms for training, status of the course syllabi, ratio of the number of instructors to the number of students, and the administrative organization for training. They were categorized into five main headings:

1. Instructor Training Problems
2. Physical Provisions for Training
3. Training Aids and Materials
4. Other Psychological Requirements for Training
5. Organization and Management of Training

Directions were written to train the raters in how to rate the items according to the amount of attention the particular aspect of training required. The four degrees were: "A"—*Outstanding*—contributes materially to the over-all training effort; "B"—*Adequate*—meets training needs; "C"—*Below Requirements*—needs improvement, requires analysis and study; or "D"—*Critical*—needs immediate attention, requires further analysis and study. If the rater felt he did not have enough information to rate the item, he could check the "I" column; if he felt an item was not applicable to the situation, he could check the "O" column. Space was provided to write in and rate additional items which had not been included. A portion of the revised form of the "Training Evaluation Check List" is shown as Figure 14.3.

TRAINING EVALUATION CHECK LIST

Date.....Location Evaluated.....Evaluated by.....

Directions: Evaluate the present condition of each of these aspects of the training program by putting an "X" in the appropriate column. Following are the definitions of each degree:

A—*Outstanding*—contributes materially to the over-all training effort
B—*Adequate*—meets the training needs
C—*Below requirements*—need improvement; requires analysis and study
D—*Critical*—needs immediate attention; requires analysis and study
I—Do not have enough information in order to rate the item
O—Not applicable

When in doubt between *A* and *B*, rate *B*. When in doubt between *B* and *C*, rate *C*. When in doubt between *C* and *D*, rate *C*. If you feel you do not have sufficient information about the item or have not had sufficient opportunity to observe the situation, rate *I*. If you feel the item does not apply to this training program, rate *O*.

If some aspect of training is not contained in the list and you feel it should be, write it in, rate it, and define it briefly at the end of the form for use in later discussion and planning.

Item to Be Evaluated	A	B	C	D	I	O
I. Instructor Training Problems						
1. Selection standards or written specifications for instructors						
2. Job description for instructors						
3. Ratio of number of trainees to each instructor						
4. Present status of quality of instructors						
5. Training in use of training aids and materials						
6. Knowledge of company products being taught						
7. Training in instruction methods						
8. Provision for alleviating monotony among instructors						
9. Grading policy and practices in evaluation of student performance						
10. Training in methods of study						
11. Provision for merit evaluation of instructors						
12. Provision for substitute instructors						
13. Preparation of course materials and daily plans						
14.						
15.						
Over-all Evaluation: Instructor Training Problems						

FIG. 14.3.

A committee of men familiar with the service training program were asked to participate in filling out the "Training Evaluation Check List." The raters were the assistant head of the service division, the field representatives' school supervisor, the supervisor of branch technical training, two service managers from the field, the supervisor of field mechanical training, and supervisor of service-sales training. Ratings were gathered separately for three phases of training: (1) service-sales training; (2) mechanical training in the branches; and (3) training at the field representatives' school. Each rater filled out three check lists in about two hours. Care was taken so that the ratings were made independently, without collaboration among the raters.

The ratings on the check lists were tabulated and scored by assigning weights according to how critical the item was judged to be. *Outstanding* ratings received no weight or score; *Adequate* ratings were scored 1; *Below requirements* ratings were scored 2; and *Critical* ratings were scored 3. The items with the highest scores (meaning they were below requirements or critical) were earmarked to bring to the attention of the training committee. About sixty items, found to require further analysis and study, were summarized into fifteen major headings for discussion.

A report was made to the training committee of the major areas which needed immediate attention. They included:

> . . . instructor training methods, preparation of curriculum and course outlines, reduction of the amount of time spent on oral quizzes by instructors, methods for more objective appraisal of trainee attainment, more rigid selection procedures for service representatives, placing service representatives in training according to their needs, more widespread use of visual aids and other economizing training aids, revision of the training and reference material, and rating and grading policies for trainees in the school and on-the-job.

Research and administrative approaches were recommended on the fifteen areas earmarked for attention. In a meeting with management and training representatives, priorities were assigned for work on each of the several projects. Provision was made to repeat the evaluation periodically to accommodate changing demands for training.

The "Training Evaluation Check List" has been found by those who have used it to be of considerable value in two ways: first, it enables spotlighting the trouble areas—it is a diagnostic trouble-

shooting device; second and perhaps more important, it brings clearly into focus the fact of agreement as to what is wrong, making certain that action is taken. Furthermore, when action is taken, it can be taken without fear of contradiction by other knowledgeable people because the extent of their agreement is a matter of record. The executive is backed up by a recorded consensus of agreement. Often it is only when there is abundant evidence, clearly visible, that conservative managements take action. "We didn't know we agreed on what should be done. Now that we have found that we agree, we can take action with certainty and confidence."

Summary

Training is going on at all levels of management, all the time. Whether it is informal or highly formalized, training aims to bring about a change or improvement in potential behavior patterns for increased efficiency, increased production, or increased service. It is a broad area which is intimately tied in with other personnel areas such as recruiting, induction, and placement; job analysis and job evaluation; merit rating; safety; communications, and many others.

Training has been aided greatly in recent years by two groups: by industrial training managers and by the educational psychologists. Such things as optimum spacing of learning periods, training the trainers, recognition of the great differences among trainees in basic aptitude and in level of achievement are important to economy in training. These principles applied to industrial training will help insure that money and time spent will be beneficial.

Problems require the attention of the training director who would check on the goodness of his training techniques. Such problems include evaluation of instructors, evaluation of the training aids, effectiveness of segregation of trainees according to level of proficiency attained before training, and differences in learning ability. Systematically developed check lists can provide a tool for use in evaluating the many aspects of a training program. Such a tool can spot critical areas that need attention. Experience has shown that a check list facilitates agreement among executives on decisions for improvement of training programs.

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15 Readability of Training Media

TRAINING AND COMMUNICATIONS are all-important to advanced management. They establish effective human relations and develop efficient employees. The main basis for communications and training is language.

Current training programs consist largely of written materials. These go by such various names as *manuals, directions, technical handbooks, catalogs, job guides, job outlines, set-up formulas, go-no-go charts, tech-orders, mecanograms, job memoranda,* and *policy letters.* These are media of training, just as house organs, company releases and letters, and bulletin board announcements are media of communications. Both kinds of media depend largely upon written language.

Psychologists for many years have been working on readability of written materials and on methods of training people to read rapidly and efficiently. Some of the results of these studies are being applied to industrial training and communications problems.

Reading Ability versus Readability

Several studies have shown that readability of training materials does not match the reading ability of the trainees. Carlucci and Crissy studied the employee handbooks of sixteen corporations and found the writing to be generally above the level of understanding of the nonsupervisory employees for whom it was intended.[1] Table

[1] Cosimo Carlucci and William J. E. Crissy, "How Readable Are Employee Handbooks?" *Personnel Psychology,* IV (1951), p. 386.

15.1 shows the comparison of the educational level of the material used in each of the corporations with the median education of its employees. One corporation, Number 14 in the table, had pitched its material at an appropriate level: 6th grade reading ease compared with 6th grade level of education of the employees. This is to be contrasted with Corporation Number 16 which offered college-level material to an audience with a median level of 4th grade education.

TABLE 15.1

A Comparison between the Flesch Reading Ease Scores and Educational Level Required for Understanding with the Median Educational Level of Unskilled, Non-Supervisory Employees

Corporation	Flesch Reading Ease Scores	Educational Level	Median Education of Non-Supervisory Employees
1	57	Some high school	5th Grade *
2	55	Some high school	8th Grade *
4	37	High school or some college	1 yr. high school *
8	74	7th or 8th Grade	7th or 8th Grade *
9	47	High school or some college	8th Grade *
10	56	Some high school	4 yrs. high school **
12	64	7th or 8th Grade	4 yrs. high school ***
13	45	High school or some college	8th Grade *
14	72	6th Grade	6th Grade *
15	53	Some high school	8th Grade *
16	25	College	4th Grade *

Source: Carlucci, Cosimo, and Crissy, William J. E., "How Readable Are Employee Handbooks?" *Personnel Psychology*, IV (1951), p. 386.

* estimated educational level.

** accurate data—65% of total employee force with 4 yrs. or more of high school.

*** accurate data—54% of non-managerial employees with 4 yrs. of high school.

"Plain talk," in many circles, seems to be something of a lost art. Business executives who have been to college lose sight of the fact that most of their employees have not. Memoranda, house organs, and bulletin board materials for the employees of the usual industrial plant might find a wider audience in the faculty club of one of our larger universities. The solution to the problem of improving industrial communications lies in two approaches to the problem: (1) knowing the reading level of the people to be reached and (2) writing and talking in straightforward language that they can understand.

For a long time, two decades at least, psychologists and educators have had quantitative, scientific information regarding differences in reading rate and comprehension. Work in this area was pioneered

by research workers such as Kitson,[2] in the advertising field. In the field of education, early workers were the "word-counters." One of the first was E. L. Thorndike who was concerned with the frequency of use of words.[3] An important study in readability of material was reported by Gray and Leary, emphasizing particularly what makes a book readable to adults with limited reading ability.[4] The directions of these early studies have been continued by more recent researchers. Examination of material on the subject suggests two approaches to improvement of written communications and training materials:

1. Plan to write plainly at a level of difficulty that matches the abilities and reading habits of the readers.
2. Plan techniques for bringing up or improving the general level of comprehension of the readers through training.

Nature of Differences between Readers

How does a poor reader differ from a good reader? One of the differences between them is their speed in covering written material. The poor reader reads from 100 to 150 words per minute, while a good reader covers the ground at 400 or more words per minute. Another difference is their comprehension of what they see. The poor reader comprehends slowly and inaccurately; the good reader comprehends readily and easily. The eye movements of the poor reader are different from those of the good reader. The poor reader pauses at each word in a line, rereads words he has been over once. He also may tire easily and have difficulty in concentrating and remembering what he has read. The good reader, however, covers ground rapidly, takes in whole phrases at a glance, finds it unnecessary to retrace his steps to get the meaning. The poor reader is inactive; he does not tie in and associate what he reads with his own experience or think of ways to use the material. The good reader plans how he will use the material. He uses what he already knows as a framework or skeleton upon which to hang the new material he is reading. A significant difference between the poor reader and the good reader is that the good reader who reads rapidly re-

[2] H. D. Kitson, *The Mind of the Buyer* (New York: The Macmillan Company, 1921), p. 211.

[3] E. L. Thorndike, *Teacher's Workbook of the Twenty Thousand Words Found Most Frequently and Widely in General Reading for Children and Young People* (New York: Teacher's Bureau of Publications, Columbia University, 1931), p. 182.

[4] W. S. Gray and W. E. Leary, *What Makes a Book Readable, with Special Reference to Adults with Limited Reading Ability: an Initial Study* (Chicago: University of Chicago Press, 1935), p. 358.

tains more than the poor reader. A common misconception is that those who read slowly tend to retain the material a long time.

How great are the differences in reading ability among workers? In a study conducted in a manufacturing plant, 100 foremen were given the *Michigan Speed of Reading Test* to measure these differences. A study of the number of paragraphs read by this foreman group is of interest. There was a range from 70 paragraphs for the fastest to 4 paragraphs for the slowest reader in the time allowed. The fastest one of this group of 100 foremen read almost 20 times as much material in the same length of time as the poorest reader! Results of this testing of foremen are shown in terms of school grade equivalent in Table 15.2.

TABLE 15.2

Reading Ability of 100 Foremen in Terms of School Grade Equivalent *

Equivalent Grade in School	Number of Foremen (or Per Cent)
Above 16	4
16	5
15	6
14	3
13	7
12	5
11	9
10	12
9	9
8	18
7	6
6	8
5	5
4	2
3	1

*Source: From an unpublished study by Roger M. Bellows and Don H. Palmer.

The table shows that 40 per cent of the foremen read at an 8th grade level or below; that 8 per cent of them were at 5th grade level or below. On the other end of the distribution, 9 per cent of the foremen read as fast as college graduates or faster.

It is interesting to note two of the individual foremen who were tested: Mr. X who had only 11 years of formal schooling was found to have a reading speed superior to that of the average college senior; Mr. Y finished elementary school, and his rate of comprehension was equivalent to that of 5th graders. He read more poorly than 99 per cent of the 8th graders with whom he was compared.

We can make use of this kind of information by studying critically the written materials intended for employees. Suppose we

use as an example a memorandum from a company president. When analyzed for difficulty, the index of readability is found to be at the 12th grade level. Reference to Table 15.2 shows that 48 per cent, or approximately 1 out of 2 of the foremen, would have trouble understanding what was written. Suppose, however, that the level of difficulty was inadvertently pitched for college graduates. In the case of the foremen group cited above, only 9 per cent of them would be able to read the document with adequate understanding. If the management of this particular company had wanted its material understood by 9 out of 10 of the foremen, it would have been necessary to adjust the material to about a 6th grade difficulty level.

A reading measure, "The Nelson Silent Reading Test," [5] was given to 518 supervisors in seven Indiana manufacturing plants to appraise reading ability.[6] Age and the number of years of schooling were also obtained on each of the supervisors who took the test. The average grade level of reading ability for all supervisors in the group was slightly above the 10th grade, varying in the individual plants from the 9th grade through the 11th grade. However, the age of the supervisors and the number of years of schooling they had were found to have a significant influence on reading ability. The authors of the study concluded that these factors should be considered in making recommendations concerning the appropriate level of reading ease for a particular supervisory group.

The results of this and other similar studies in this area are important to training. Reading ability is tool equipment for the learner. It may either facilitate or hamper his rate of learning. Sectioning, or grouping, of trainees into two or more classes may be necessary to attain maximum economy and effectiveness in the training program. That is the reason for the rule "Plan in terms of individual differences among trainees."

Increasing ability to read. Training in reading skills has been shown to have most satisfactory results in improving the over-all reading efficiency of adults. Seven out of 10 slower than average readers can better than double their reading speed. After 20 hours of corrective reading training, one group of 62 adults increased their

[5] M. J. Nelson, *The Nelson Silent Reading Test* (Chicago: Houghton Mifflin Company, 1931).

[6] Archie N. Colby and Joseph Tiffin, "The Reading Ability of Industrial Supervisors," *Personnel,* American Management Association, XXVII (1950), pp. 154–59.

average reading speed from 197 words per minute to 315 words per minute, a gain of 62 per cent! [7]

The causes of slow reading among adults are probably complex, but some of them can be suggested:

1. *Carry-over from early childhood of oral reading habits, word-for-word rather than phrase reading:* "hearing" each word when reading silently rather than apprehending connected phrases directly.
2. *Over-cautious approach to printed matter because of fear of losing "something important":* there is a tendency to note carefully every word, even when the material does not warrant such close scrutiny. Many executives apparently had never developed the useful arts of selective reading or skimming. The use of key words in extracting the most meaning with the least effort was apparently not a part of the basic reading equipment of most of the executive group.
3. *Difficulty in concentration and remembering:* the length of time required to put words together into meaningful ideas is perhaps often so arduous and time-consuming that material presented in the first part of a paragraph is "forgotten" before the end of the paragraph is reached. Under these circumstances, it is hard for an individual to maintain interest, to concentrate.
4. *Persistence of reading patterns related to particular job duties:* engineers, accountants, and similarly trained executives are likely to persist in the habit of giving close attention to each printed symbol. This overemphasis on the individual symbol is carried over to more general reading in books and newspapers.[8]

There are several instructional approaches to the job of improving reading skills. The important thing is that the trainees be motivated and interested in becoming more proficient. Instruction time generally includes practice under controlled, timed conditions where the trainee is required to absorb the *ideas* in a passage and push himself forward at a rate slightly above what is normal and comfortable for him. Comprehension checks always follow practice exercises. Sometimes short exposure devices such as the *flash meter* or *tachistoscope* are used to help readers increase their "span of apprehension," the number of words taken in at a glance. Good readers get meaning from the printed page by phrases; poor readers often get the meaning of a phrase only by stringing together a word at a time. Improvement is effected by pointing out that the eye and the brain are capable of taking in as a unit considerably more

[7] Norman Lewis, *How to Read Better and Faster* (New York: Thomas Y. Crowell Co., 1944), p. 319.

[8] Carol S. Bellows and Carl H. Rush, Jr., "Reading Abilities of Business Executives," *Journal of Applied Psychology,* XXXVI (1952), p. 4.

than a single word. Vocabulary instruction may be part of a systematic reading improvement program. In almost all cases trainees are given some idea of their relative strengths and weaknesses in reading so that they will know where to concentrate their efforts. Diagnostic information may be obtained from a single test or it may be gathered from a variety of sources, including records of eye movements and personal history data.

At Johnson & Johnson, an informal survey was conducted among executives and supervisors to estimate the time they spent in reading, both in and out of the office.[9] They said they averaged about 4½ hours a day. This would amount to about 1,000 hours a year. Each man then gave his own opinion of his reading ability. All except one classified himself as a poor reader. The company launched a reading-improvement program for executives and supervisory personnel. Two one-hour training sessions a week were scheduled; there were 17 sessions in all. Records were kept of each student's achievement and progress in speed and comprehension. The first six groups of executives and supervisors to take the course started out with an average reading speed of 215 words per minute and an average comprehension score just short of 65 per cent. By the time they completed the course, their average speed had risen to 425 words a minute, an increase of approximately 98 per cent. Comprehension had not improved significantly, moving up only about 3 per cent.

Remedial reading programs are utilized to correct the two great deficiencies: slowness and inaccurate comprehension. These programs have led to the development of specialized mechanical devices for use in remedial reading clinics. Three of the most important of these devices, the reading film, the accelerator, and the tachistoscope, are briefly described below.

1. *The reading film,* the first of these reading-improvement devices, was the core of the Johnson & Johnson program. Called the "Harvard Reading Films" and created by the Reading Clinic at Cambridge, it consists of a series of 16 films possessing some of the advantages of both the accelerator and the tachistoscope. Each film is designed so that at any one moment only one phrase or group of words is in focus and readable; the rest of the page on the screen is blurred. In subsequent films the number of "in focus" groupings

[9] W. V. Machaver and W. A. Borrie, "A Reading Improvement Program for Industry," *Personnel,* American Management Association, XXVIII (1951), pp. 127–28.

in a line is gradually reduced from five to two and the over-all speed is gradually increased from 180 to 470 words a minute.

2. *The accelerator,* or pacer, is a simple device designed to force the reader to read more quickly by preventing regression. Regression, one of the major faults of poor readers, is the act of re-reading a sentence or part of a sentence.

3. *The tachistoscope,* or flash meter, is designed to increase the power of distinguishing separate objects in a brief, single exposure. (This is the device used by the armed forces to teach rapid recognition of planes, ships, and tanks.)

Reproduced below is the training outline of the first session of the Johnson & Johnson program.

INSTRUCTOR OUTLINES—READING COURSE

Session I

I. *Purpose of Course*
   a. Increase reading speed and comprehension.
   b. Improve personal efficiency.
   c. Tap more fully our reading potential. We should be able to cut our reading time in half, read 20 instead of ten books a year.
   d. Make reading easier and more enjoyable.

II. *Why Study Reading*
   a. Most of us are now poor readers.
   b. In most cases our reading training stopped in the fifth or sixth grade.
   c. We have never really learned to read effectively.
   d. Over the years bad reading habits have been developed. We are lazy in this respect.
   e. We do not concentrate.

III. *Learning to Read Is Not Easy*
   a. Each man must have the will not merely a wish to improve himself, because we will be changing specific habits. It will require work on the outside.
   b. This work will not take excessive time, merely concentration. Each of us should become reading conscious; and in the next few months every time we pick up something to read, we should regard it as reading training and exercise.
   c. If we are desirous of attaining the benefits of improved reading, a considerable effort must be expended. The results, however, extending over a period of years, should certainly justify the efforts expended.

IV. *Many Types of Reading*
- a. Newspaper
- b. Technical reports
- c. Poetry
- d. Detailed directives
- e. Fiction, etc.

Different types of reading are, of course, done with different purposes and therefore with different degrees of speed and concentration. Basically our reading habits apply regardless of the types of reading we are doing.

V. *Types of Readers*
- a. Read aloud
- b. Lip readers
- c. Sub-vocalizers
- d. Thought readers

VI. *Course Mechanics*
- a. Films
- b. Selected readings
- c. Use of Science Research Associates reader
- d. Personal reader records

VII. *Explanation of the films*
- a. Prevents regressions
- b. Controls eye movements
- c. Controls span of vision
- d. Subject material designed for comprehension tests.

Caution: First films may be aggravating in that they are slower than we normally read. This is not undesirable. As films progress they are faster and require wider span of vision.
- e. Our eyes may become tired. These films are no more tiring than concentrated reading.

VIII. *Film Number I.* "Ituri Pygmies" (180 wpm., 5 phrases per line)
- a. Test on film
- b. Scoring and discussion of film test by group.[10]

In another study,[11] executives of two industrial plants, two banks, a large department store, and a women's apparel store were used as subjects. They were given a training course in reading. Meetings were held once a week for 10 consecutive weeks. Each period was 1½ hours in length. At the beginning and end of the course, testing took up a considerable amount of time. Regularly,

[10] *Loc. cit.*

[11] Bellows and Rush, "Reading Abilities of Business Executives," *op. cit.*, pp. 1–4.

however, each period was planned to include: (1) a reading speed check; (2) a topic for discussion such as "concentration," "vocabulary building," "skimming," "reading for different purposes," etc., and (3) a pacing exercise, that is, one or two of the Harvard Reading Films [12] followed by a comprehension check.

Objective tests used (alternate forms for initial and final testing) included the "Nelson-Denny Reading Test" and the "Michigan Speed of Reading." The "Michigan Vocabulary Profile Test" was also given so that the participants might gain some insight into their particular strengths and weaknesses in vocabulary. Individual test results were made available to the participants at both the beginning and end of the course.

Results showed a very considerable increase in reading rate of the trainees. The 71 trainees averaged 277 words per minute at the beginning of the course and 440 words per minute at the 10th session. Other findings were: older trainees did not seem to gain as much as the younger ones; vocabulary training "probably requires a great deal more time and effort than was possible in this course."

Increasing Readability of Written Materials

There has been a considerable amount of research on problems of readability of written material. Formulas have been developed for measuring the difficulty of written material so that it can be adjusted to the level of reader understanding. Such formulas may include the number of words used in a sentence, the number of prepositional phrases, and the number of "hard words" in the passage. Irving Lorge has applied his formula to familiar materials like the Gettysburg Address. The address was determined suitable for reading at a 6th grade level by the Lorge formula. Franklin D. Roosevelt usually talked and wrote at a difficulty level of 7th grade.[13]

Rudolf Flesch has done much to develop techniques for making written material more readable. Readership of materials can be increased if attention is given to analysis of materials and study of what Flesch has called *The Art of Plain Talk*.[14] In simplifying language according to Flesch, sentences come first. "Man bites dog" is

[12] *Harvard Reading Films* (Cambridge: Harvard University Press, 1948).

[13] For a discussion of the Lorge formula for computing the readibility of written materials, see "Talk of the Town," *The New Yorker*, August 17, 1946, pp. 14–15.

[14] *The Art of Plain Talk* (1946), *The Art of Readable Writing* (1949), and *How to Test Readability* (1951), p. 51. All published in New York by Harper & Bros.

a sentence. So is the legal phrasing of the lawyer. However, "Lawyers are," as Flesch says, "notorious for their writing of long sentences." He gives what he calls a mild example of unnecessarily long-winded writing:

Sick leaves shall be granted to employees when they are incapacitated for their performances of their duties by sickness, injury, or pregnancy and confinement, or for medical, dental, or optical examination or treatment, or when a member of the immediate family of the employee is affected with a contagious disease and requires the care and attendance of the employee, or when, through exposure to a contagious disease, the presence of the employee at his post of duty would jeopardize the health of others.

Flesch takes this sentence to see what he can do with it. Without changing the word difficulty but rearranging the ideas, he increased the readability as follows:

Employees shall be granted sick leaves for these four reasons: (1) They cannot work because of sickness, injury, or pregnancy and confinement; (2) they need medical, dental or optical treatment; (3) a member of their immediate family is affected with a contagious disease that needs their care and attendance; (4) their presence at their post of duty would jeopardize the health of others through exposure to contagious disease.[15]

The trick that Flesch advocates is to work the sentence down into shorter units that express one idea. Every sentence should be a set of words that is complete in itself. It has a subject and a predicate and conveys a statement, question, command, or exclamation. Flesch suggests that very difficult sentences have 29 or more words. Standard or average sentences have 17, and very easy sentences have 8 or less words.

The second topic that Flesch emphasizes for increased readability is the choice of words. He quotes Fowler in *The King's English* as stating

Anyone who wishes to become a good writer should endeavor, before he allows himself to be tempted by the more showy qualities, to be direct, simple, brief, vigorous, and lucid. This general principle may be translated into practical rules in the domain of vocabulary as follows:

Prefer the familiar word to the farfetched;
Prefer the concrete word to the abstract;
Prefer the single word to the circumlocution;
Prefer the short word to the long;
Prefer the Saxon word to the Romance.

[15] Flesch, *The Art of Plain Talk*, p. 36.

These rules are given roughly in order of merit; the last is also the least.[16]

Flesch says that the trouble with complicated language is that it has too many affixes. The more affixes, the more difficult a passage is likely to be. To achieve the art of plain writing it is necessary to use the fewest possible affixes.

The third technique that Flesch advocates for simplifying language and for making it interesting is the use of personal references such as: *man, child, he, my, mother, Mr. Smith.* If the passage contains 2 or less personal references per 100 words, the passage is likely to be difficult. If it contains 19 or more per 100 words, it is probably easy material. The standard or average number of personal references per 100 words is 6. That number would be found in feature articles in popular magazines. Love stories in pulp magazines that are considered easy to read run to about 20 such words in 100; that means that every fifth word in such fiction refers to a person. Very difficult scientific material, of course, may be written without mentioning any persons at all. Flesch's material is standard, containing 6 personal references per 100 words.

Paterson and Jenkins demonstrated the need for simplification of language used by management in sharing information with workers. Their article [17] was one of the first from technicians explaining the usefulness of readability indices for improving management communications. They gave a sample study of a general information blank for job applicants in a clothing factory. The readability index of Form *A* indicated that it was hard reading, like a typical academic magazine, and would require high school or some college education to understand it. Form *B* was easy, comparable to the pulp magazines—constructed for 5th grade reading ability. Census statistics show that about 85 per cent of the adult population have attained 5th grade or beyond, so that 9 out of 10 of the general population could read Form *B*. On the other hand, census statistics indicate that only a fourth of the population has graduated from high school, so that probably less than 3 out of 10 of the general population could read Form *A* of the information for applicants.[18]

[16] From *The King's English* by H. W. Fowler. Used by permission of the Clarendon Press, Oxford.

[17] D. G. Paterson and J. J. Jenkins, "Communication between Management and Workers," *Journal of Applied Psychology,* XXXII (1948), pp. 71–80.

[18] It should be noted that in addition to simplifying the language, Paterson and Jenkins also altered the type face in which the section headings were set. In Form

In working with suggestions of employees, it is sometimes necessary to reject a suggestion. In one company, the rejection letters were found to lack clarity, simplicity, and human interest.[19] The one who receives a rejection letter is keenly interested in it—"What did they say was wrong with my suggestion?" Such letters have a double-barreled purpose: to cushion the blow of disappointment and also to encourage continued participation in the plan. Analysis by means of the Flesch readability yardstick, yielding measures of reading ease and human interest, showed that letters contained in the files of member companies of the National Association of Suggestion Systems bordered on difficult writing, easily understood by only about 24 per cent of U.S. adults.

Here is an excerpt from a rejection letter to a watchman who had suggested car pools.

In the case of this particular proposal, there are so many adverse factors involved that the idea is not, we regret to inform you, recommended. To properly institute such a procedure would require a full-time staff, with the company assuming full responsibility for the proper administration of the plan. The company is engaged in the meat packing business. It maintains a fleet of trucks, repair garages, etc., for the purpose of transporting our meat products to the dealers, who in turn purvey the products to the consumer public. This is properly a vital part of the meat packing business. The adoption of your proposal would involve entering the transportation field, where, generally speaking, the company has no business to be. It would be extremely difficult to show a logical relationship between the meat packing business and the general passenger transportation business, which it would be necessary to do in order to obtain proper authorization from the State Railroad & Warehouse Commission permitting our entry into the carrier field.

The same letter could have been rewritten:

Unfortunately, your suggestion for a car pool doesn't seem workable. It brings up so many problems. First, our company would have to be responsible for the operation of your plan. We would need a full-time staff, proper insurance, and so on. Second, the State Railroad and Warehouse Commission would not permit us to enter the transportation field. A third drawback is one we all remember. You may recall that we started something like this during the war. It didn't work out because of the changes and differences in quitting times. Added to that was the number of quits.

A, headings were set in all capitals. In Form *B*, capitals and lower case of boldface type are used. This was done in order to increase speed of reading and readability. See D. G. Paterson and M. A. Tinker, *How to Make Type Readable* (New York: Harper & Bros., 1940), p. 209.

[19] Kenneth F. Schenkel and Donald G. Paterson, "What Was Wrong with My Suggestion?" *Personnel*, American Management Association, XXVII (1950), pp. 212–15.

We think people would be less willing to fit into the plan now, too. Today we have more tires, autos and gas.[20]

In commenting on the present inadequacy of written materials for employees, Paterson and Jenkins [21] stressed the fact that little has been done to simplify the material by applying an index of readability. They point out that the advertising psychologists have known about and used such techniques since Kitson's early publication in 1921. These techniques have not been applied in industry to the all-important area of everyday management-employee communications. This is true in spite of the fact that some observers, notably Roethlisberger, Mayo, Gardner, and others, have emphasized the need for improvement of communications.

Robert Gunning [22] developed a simple readability formula, used in Standard Oil Company (N. J.). It uses only two factors: the average number of words in sentences and the number of multisyllabic words for each 100 words of text. Gunning calls the index a "fog index." He uses it as a readability grade. The figure or index is roughly comparable to grades in the school system. The formula is:

$$\frac{SL + 2\ PS}{5} + 3 = \text{fog index}$$

In this formula SL equals length of sentences (for easy reading a sentence should include twenty words or less). PS equals per cent of polysyllables. These are words of three or more syllables (for easy reading polysyllables in one sentence should not exceed 10 per cent). Gunning does not count as polysyllables any words that are capitalized or words that are combinations of short familiar words (such as *bookkeeper, butterfly*) or words which become polysyllabic by the addition of *ed* and *es*. The sum of SL plus PS should not exceed thirty. If a large number of long words must be used, balance may be maintained by keeping sentences short. According to Gunning, there are no "rules" by which an individual can create "good" writing. "Writing," he says, "is an art, but there are principles which guarantee clarity of writing." He further presented ten principles to aid clear writing:

[20] Kenneth F. Schenkel and Donald G. Paterson. "What Was Wrong with My Suggestion?" *Personnel*, American Management Association, XXVII (1950), p. 213.

[21] D. G. Paterson and J. J. Jenkins, "Communication Between Management and Workers," *Journal of Applied Psychology*, XXXII (1948), pp. 71–80.

[22] Gunning's formula is discussed in Raymond W. Peters, *Communication Within Industry* (New York: Harper & Bros., 1950), pp. 148–49.

1. Keep sentence average short—twenty words or less.
2. Keep sentences variable in length.
3. Prefer the simple to the complex.
4. Prefer the familiar to the farfetched.
5. Keep verbs active.
6. Avoid unnecessary words.
7. Use terms your reader can picture.
8. Relate to your reader's experience.
9. Write as you talk.
10. Write to EXpress rather than to IMpress.

A "Comparator" [23] is shown as Figure 15.1. By turning the "dial," the reading ease of several issues of General Motors' publications can be seen in the round windows at the lower part of the Com-

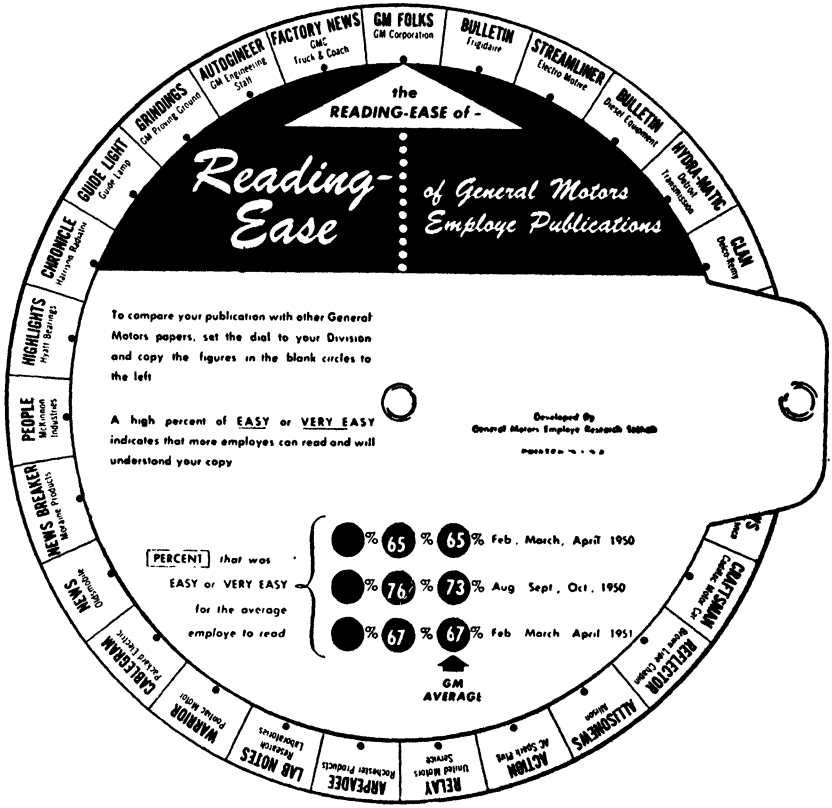


FIG. 15.1. The Comparator, a device for reporting the reading ease of management publications to the plant paper editors.

[28] Developed by Employee Research Section, General Motors Corporation.

parator. It will be noted that the names of the publications are indicated around the edge of the dial. The dial is set at the section for the employee periodical *"GM Folks,"* showing the per cent of the employees that can read the copy easily as compared to the average of General Motors Employee Publications.

A survey in one company has shown that writers of industrial training media could do a better job if they were trained for writing their material.[24] Charles E. Scholl, Jr., developed a readability clinic for this company. The plan of the clinic, described below, has general applicability to many companies who employ writers for preparing training materials.

The series of topics outlined below serve as the basis for reading and class participation. Preparatory reading is not mandatory, but it is suggested that writer-trainees become acquainted with some of the materials pertaining to readability. The first part of the course is devoted primarily to analysis of the audience and the situation in which materials are to be used and to the background of the study of readability. Then the Flesch procedure is presented, followed by individual practice in the application of the Flesch formula. The ways of making writing more attractive are also considered. The final section of the clinic is devoted to evaluation and synthesis of material covered.

The purpose of the clinic is achieved through use of the information presented in the clinic. As noted in the outline of topics below, half of the meetings are concerned with individual practice, materials, evaluation, and critique.

OUTLINE OF TOPICS

Topic	*Number of Meetings*	
1	1	Overview of Clinic Approaches Improving Readability
2	2	Audience Analysis *The nature of differences among readers*
3	1	Situation Analysis *The requirements of the situations in which materials are to be used*
4	1	The Fog Index *The history and development of methods of measuring readability*
5	1	The Recommended Technique *The Flesch procedure*

[24] A service project by Roger Bellows and Associates, Detroit.

OUTLINE OF TOPIC

Topic	Number of Meetings	
6	2	Individual Practice *Application of the Flesch procedure*
7	1	Presentation of Material *Ways of making writing attractive*
8	1	Evaluation *Review of information covered in clinic*
9	1	Critique *Discussion of review and summary of clinic*

Summary

It is surprising to realize that training directors and industrial editors have not made much use of the valuable techniques for making written and spoken materials understandable to the employee. Such techniques have long been available having been developed in the advertising field more than 20 years ago, and one wonders at their disuse in view of the extreme need for simplification in the industrial communications field.

Management might take into account the great variability in reading ability of employees. Whereas poor readers plow along ineffectively at the rate of 100 words a minute, good readers flash over a page with facility at 400 or more words per minute. Training courses in reading ability are appropriate since it is entirely possible to increase the reading ability of employees 60 per cent or more within a few months.

When the level of understanding of written material is analyzed, it is found necessary to write company letters, employee handbooks, and training materials at 5th grade reading level if management wishes to reach 9 out of 10 of its employees. Unfortunately, some manuals and letters are written at a college reading level that could be understood by only the upper 5 per cent of the general population.

There are two approaches to improvement of training materials and human understanding through the printed page and the spoken word. One approach is to increase the speed and comprehension of the readers of the information. The second way of increasing human understanding is to use techniques for measuring, analyzing, and improving the level of readability of communications materials. Flesch and Paterson and Jenkins have contributed notable work in this direction. Flesch has emphasized the need for short sentences, for less complicated words, and for the use of personal references in writing. He has provided a measuring stick that will

yield an index of the difficulty level of written material. Paterson and Jenkins have pointed out the need for the application of the Flesch principles by industrial editors and personnel directors.

SUPPLEMENTARY READINGS

BELLOWS, CAROL S. and CARL H. RUSH, JR., "Reading Abilities of Business Executives," *Journal of Applied Psychology*, XXXVI (1952), pp. 1–4.

BENTLEY, GARTH, *How to Edit an Employee Publication*. New York: Harper & Bros., 1944, p. 200.

BURSK, EDWARD C. and DONALD T. CLARK, "Reading Habits of Business Executives," *Harvard Business Review*, XXVII (1949), pp. 330–45.

FARR, JAMES N., JAMES J. JENKINS, and DONALD G. PATERSON, "Simplification of Flesch Reading Ease Formula," *Journal of Applied Psychology*, XXXV (1951), pp. 333–37.

FLESCH, RUDOLF, "A New Readability Yardstick," *Journal of Applied Psychology*, XXXII (1948), pp. 221–33.

———, "Measuring the Level of Abstraction," *Journal of Applied Psychology*, XXXIV (1950), pp. 384–90.

HOTCHKISS, SANFORD N., and DONALD G. PATERSON, "Flesch Readability Reading List," *Personnel Psychology*, III (1950), pp. 327–44.

JENKINS, J. J. and R. L. JONES, "Flesch's Measuring the Level of Abstraction," *Journal of Applied Psychology*, XXXV (1951), p. 68.

LEWIS, NORMAN, *How to Read Better and Faster*. New York: Thomas Y. Crowell Co., 1944, p. 358.

16 Criteria of Performance

A PROCEDURE BASIC to personnel methods is the development and evaluation of a measure of worker proficiency. Such a measuring stick is essential before we can arrive at personnel actions of any dependable sort. Unless we can supply such evidence we operate without checks on the personnel action itself.

An example of the need for measurement is seen in wage payment. Which man of the several who are working on the same job should receive most money—and why? What are the earmarks that distinguish proficiency on the job?

Research problems which involve use of dependable measures of employee success include evaluation of training and morale procedures as well as employee selection methods.

A measure of success on the job is called a *criterion.* We may speak of a speedy worker as one who turns out 50 units of work per hour. In this case, we designate units per hour as success, and the more units turned out per hour, the greater the degree of success. Again, a new man receiving the foremanship of his department is discussed via grapevine, and the remarks made may be: "Oh, yes, he deserved the promotion. Everybody knew he was the best qualified to be the leader of the department. He knows how to handle people; he uses good judgment; he makes friends with everybody."

In most cases, relative success is difficult to measure and can be approached only by use of the combined best judgments of a number of persons. These judgments are known as ratings, or merit evaluation of employees.

Why Criteria?

During the past several decades, a most pressing problem has been to find better, more dependable criteria of good and poor workers. Psychologists faced the technical challenge realistically: Item by item, a test was analyzed for its ability to differentiate between good and poor workers. If the items, or the test as a whole failed to identify the poor from the good, it could not be called a satisfactory, or valid, test. Although considerable sophistication in validation procedure could be seen, the criteria themselves often did not stand up. Production records, used as criteria, were found to display too little of the important aspects of individual worker performance. Some criteria, used in good faith, turned out to be mere measuring sticks of the limits of the machinery for which production records were obtained. Other criteria, instead of measuring success on the job, reflected the amount of experience or age of the workers. Ratings made by supervisors were often unreliable; there tended to be disagreement among several raters as to the true worth of workers.

These, and similar difficulties, were of gravest concern to the military psychologists of World War II. The immediate problem was to identify good criteria—developing tests and other predictors constituted a less worrisome problem.

As Jenkins summed it up:

> The events of World War I taught American psychologists the *necessity* of validation. The experiences of the next two decades taught them much about the *technique* of validation. It remained for World War II to drive home to the psychologists at large the necessity of devoting much time and thought to the *basis* for validation.[1]

The basis for validation is the criterion.

Form of the Criterion

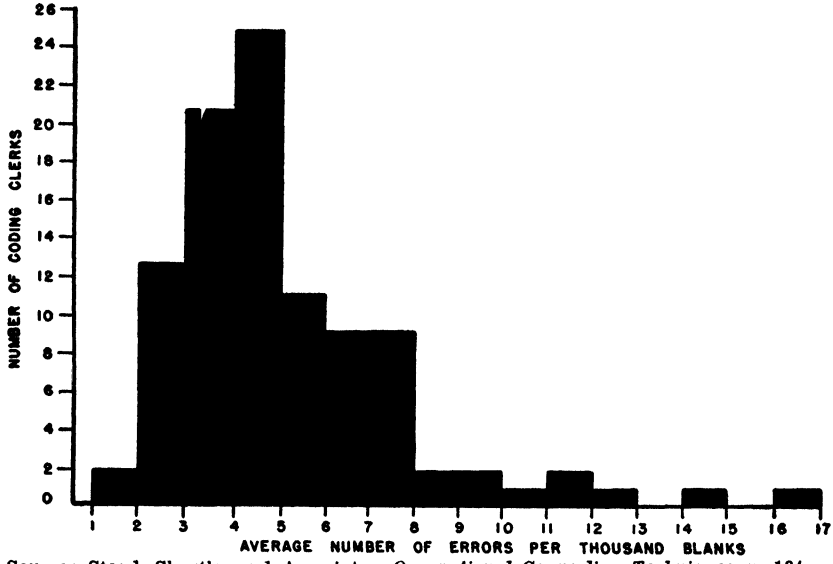
The criterion may assume several forms—it may be an *objective* criterion, one which does not depend on subjective judgment, or it may be *subjective,* the basis of which is judgment by others of the men's worth.

Objective criteria. An objective criterion is most commonly thought of as a production record or a written record of the worker's

[1] John G. Jenkins, "Validity for What?" *Journal of Consulting Psychology,* X (1946), p. 93.

output. In the shop, this would be the number of pieces turned out per hour, per day, or per week. It also might be the measured amount of scrap of the worker, in pounds, in units, or in dollars. It might be the number of rejects (pieces which fail to pass inspection) that the worker produces.

An objective criterion might consist of a combination of two or more other criteria. For example, in a study of Hollerith machine operators [2] the criterion used was errorless production. It was found



Source: Stead, Shartle, and Associates, *Occupational Counseling Techniques*, p. 184.

FIG. 16.1. Distribution of the average number of errors made by coding clerks.

that if an error was made in card-punching, to correct it required the equivalent of the time of punching 13.75 additional cards. Consequently, the production of the card-punch operators was diminished by 13.75 for each error made. In Figure 16.1 the average number of errors made by a group of these coding clerks is shown. It is a fairly typical distribution for errors, since a few people will make a large number of errors, although most are fairly accurate.

In a retail store, an objective criterion might be the number of sales per day or the dollar amount of sales. These items were recorded for a sample of department store salespersons: [3]

[2] William H. Stead, Carroll L. Shartle, and Associates, *Occupational Counseling Techniques* (New York: American Book Co., 1940), pp. 140–44.

[3] William H. Stead, Carroll L. Shartle, and Associates, *Occupational Counseling Techniques* (New York: American Book Co., 1940), pp. 79–81.

Number of sales	Daily sales quota
Average per sale	Day's selling
Actual credits	Actual quota
Total credits	Bonus
Total net sales	Extra selling cost

In one study, net sales alone was considered to be the most representative measure of job performance. In another study, gross sales, returns, number of sales, and quota were combined to give an index of proficiency on the job.[4] In a third department store study, each of several such items was judged by store executives for the proportion of its importance as an index of job performance; combination of these items was accomplished by weighting each according to its importance. Ohmann's [5] experience in studying sales criteria indicated that net commission earnings represented the best criterion.

As an example of the various kinds of criterion measures which may be considered, Ghiselli and Brown suggest a list for measuring job performance of streetcar motormen:

Number of collisions with vehicles
Number of collisions with pedestrians
Number of traffic violations
Number of complaints received from public
Number of commendations received from the public
Number of times company rules are broken
Number of sleep-overs (tardiness in reporting)
Number of times schedules are broken
Number of reprimands received from inspectors
Ratings by inspectors
Errors reported by dispatchers [6]

Wherry has described a list of six ways in which employees affect profits.[7] He pointed out that no single measure of "success" embraces all of the six areas. A partial list of criteria which are included in each of the areas follows:

[4] A statistical technique for combining criteria is described: see H. A. Edgerton and L. E. Kolbe, "The Method of Minimum Variation for the Combination of Criteria," *Psychometrika*, I (1936), pp. 183–87.

[5] O. A. Ohmann, "A Report on the Selection of Salesmen at the Tremco Manufacturing Company," *Journal of Applied Psychology*, XXV (1941), pp. 18–20.

[6] By permission, *Personnel and Industrial Psychology* by E. E. Ghiselli and C. W. Brown, p. 84. Copyrighted 1948 by McGraw-Hill Book Co., Inc.

[7] Robert J. Wherry, "Criteria and Validity," *Handbook of Applied Psychology*, ed. Douglas H. Fryer and Edwin R. Henry (New York: Rinehart & Co., Inc., 1950), chap. 27, pp. 170–77. All but one of the items listed—5e in the list—are objective criteria, although some of them, *e.g.*, 5c, may be based on either subjective or objective data.

1. Bearing on output per unit of time
   a. Units produced
   b. Number of sales
   c. Items coded
   d. Earnings on a commission basis
   e. Words typed
2. Bearing on quality of production
   a. Number of rejects
   b. Cost of spoiled work
   c. Coding or filing errors
   d. Returned goods (sales)
   e. Disgruntled customers (complaints)
3. Bearing on lost time
   a. Days present
   b. Number of tardinesses
   c. Days sick
   d. Visits to first aid section
   e. Length or frequency of unauthorized rest pauses
4. Bearing on turnover
   a. Length of service
   b. Quits
   c. Discharges
   d. Transfers due to unsatisfactory performance
   e. Transfers at request of employee
5. Bearing on training time and promotability
   a. Training time to reach standard production
   b. Cost of material spoiled during training
   c. Rate of advancement
   d. Training courses successfully completed since enrollment (number of jobs in plant for which employee is qualified)
   e. Merit ratings (times recommended for promotion)
6. Based on employee satisfaction
   a. Number of grievances registered
   b. Morale survey standing
   c. Visits to plant psychiatrist
   d. Participation in plant athletic contests
   e. Contributions to "suggestion system"[1]

He noted that the above list was suggestive rather than exhaustive.

Where objective criteria are available, it is desirable to examine them for possible use since generally they are more dependable than subjective estimates of workers' proficiency made by supervisors.

Subjective criteria. In some cases—in fact, unfortunately, in most

cases—objective criteria either are not available or else they are deemed unsuitable for use. The necessity then arises of securing judgments of the workers' proficiency. For example, it is difficult to evaluate the file clerk's performance in an office. Even if it were feasible to count the number of items filed, it is not readily noticeable how many are filed incorrectly. Such work might better be appraised by the immediate supervisor who has observed the file clerk's performance over a period of time and who can allow for differences in opportunity of workers to produce. The dependability of any such merit rating is limited. Discussion of this problem of the reliability of merit rating will be presented in chapter 17, "Employee Evaluation Programs."

In some cases, it may be desirable to use a work sample as a basis for making judgments of worker proficiency. This was done when studies were conducted in developing the *Minnesota Mechanical Ability Tests*.[8] Students in a sheet metal shop were asked to make a foot scraper, a dustpan, a funnel, a rectangular box, and a cookie cutter. The quality of these objects was graded subjectively, and the grade was used as a criterion.

It is necessary, in considering work samples, that care be exercised to use representative and important phases of the job itself. For example, it would not be defensible to measure the proficiency of calculating machine operators by calling only for demonstration of the adding operation; the operator who had difficulty with division or multiplication would not be observed. It would be advisable to identify the various tasks of the worker by job analysis (chapter 9) before attempting to measure his work proficiency.

Miscellaneous criteria. In some instances an adequate criterion might well be the length of time it takes an operator to reach a satisfactory performance level. Assuming that the worker is assigned duties on which he had no previous experience, this measure is frequently realistic and indicative of his value to the firm.

Job tenure is another possible, useful criterion. Certain jobs are inherently undesirable because of work surroundings, such as the jobs of tannery oiler, hide pickler, and flesher in the tanning industry, or because of work hazards, such as those experienced by joist setters, rivet catchers, and rivet passers in the structural steel industry. The worker's value in such cases may be measured in part in terms of the length of time he remains on the job.

[8] D. G. Paterson, R. M. Elliott, *et al.*, *Minnesota Mechanical Ability Tests* (Minneapolis: University of Minnesota Press, 1930), p. 147.

Absenteeism may be useful as a criterion. In a research study by Fox and Scott,[9] this criterion was defined in terms of number of absences. Any absence comprising a consecutive number of days, as in the case of illness, was counted as one absence.

Several of the criteria which the Worker-Analysis Section of the Occupational Research Program developed for selected occupations —including several clerical occupations—for use in aptitude studies, are: [10]

Occupational Sample	*Criterion*
Adding machine (ten-key) operator	Work sample
Bookkeeping machine operator	Per cent efficiency rating (a weighted measure of the number of errors in work)
Bookkeeping machine operator (students)	Time to complete final school test
Cafeteria floor girl	Subjective rating
Calculating machine operator	Work sample
Calculating machine operator (students)	Average of five examinations
Can packer (hand)	Average number of cans packed per hour (work sample)
Card-punch machine operator	Average number of cards punched per hour, adjusted for errors
Coding clerk	Average number of returns coded per hour, adjusted for errors
Department store salesperson	Composite of sales production variates
Index clerk	Ratio of errors to production
Invoice typist	Work sample
Lamp shade sewer	Average units of production per hour
Merchandise packer	Per cent efficiency (per cent ratio of earned hours to clock hours)*
Phonographer	Average number of lines typed per hour, adjusted for errors
Toll bill clerk	Average number of toll tickets billed per day

* *Earned hours* represents the time set by the company for completing a unit of work and was determined from results of motion and time studies. *Clock hours* represents the actual time the worker required to complete the unit of work.

[9] John B. Fox and Jerome F. Scott, "Absenteeism: Management's Problem," *Business Research Study No. 29* (Boston: Harvard University, Graduate School of Business Administration, 1943).

[10] William H. Stead, Carroll L. Shartle, and Associates, *Occupational Counseling Techniques* (New York: American Book Co., 1940), pp. 218–19.

Brogden and Taylor apply the concept of cost accounting to the construction of criteria.[11] A worker's effectiveness is determined by his contribution to the objectives of over-all efficiency of the organization, and this contribution can be best expressed in dollars and cents. Any criterion measure such as production, accidents, wastage, or errors, *can* be expressed in these units. The dollar unit serves as a numerical unit by which subcriteria can be placed on comparable scales, thus affording a basis for combining them. The variation in dollar values found for a given criterion can be used as a means for determining the weight to be assigned the criterion. Implications of the cost accounting concept for ratings and for problems in selection and classification are important.

Specific Uses of Criteria

If one were to examine the psychological literature for references to specific personnel techniques that have been developed for selection, such as tests, he would find psychologists amazingly prolific. However, until recently, only a few studies are to be found relating to the criteria against which these devices should have been validated or proved. Margaret Hubbard Jones has examined over 2100 references on employee selection covering the period 1906 to 1948. She eliminated from detailed analysis all references which did not give complete validation information data, the names of the specific tests, the number of cases, and the job studied. There remained 427 reports, or 20 per cent of the total number of references which she has analyzed in some detail. Concerning the criterion for these studies, Jones wrote,

> The criterion is, of course, a question of utmost importance. . . . Entirely aside from the question of the applicability of the criterion as a real measure of job success—the validity of the criterion—we find a problem in the reliability of the criterion. Only 95 reports, or 22 per cent of the 427 acceptable reports, make some attempt to include measures of the reliability of the criterion, and yet it has a profound influence upon the results of the validation procedures. . . . Surely, if a study is worth doing at all, the reliability of the criterion should be ascertained. . . . Finally, if we count the total number of reports which are satisfactory in all respects, [give complete descriptive and statistical information for an

[11] H. E. Brogden and E. K. Taylor, "The Dollar Criterion—Applying the Cost Accounting Concept to Criterion Construction," *Personnel Psychology*, III (1950), pp. 133–54.

outside observer to evaluate the study] we discover only eight, or .4 per cent of the 2100 references with which we started.[12]

This seems a surprising oversight on the part of academicians, yet it is a condition which has persisted for years. During World War II there was some evidence that German psychologists still had not adequately realized the necessity of such studies of criteria or else did not have time to work through research on them. The amount of work which has been done and reported in the literature on criteria for test validation is still rather meager.

Research uses of criteria. *Training.* It is assumed that training is worthwhile to a company because it does improve work performance. There is no advantage in giving training to the man who has already attained a satisfactory level of performance. Unless the measures of job performance before and after training are known, the personnel officer is in the dark when he tries to explain the values of his training program and justify expenditure of training budgets. Likewise improvement of training programs depends upon evaluation of each kind of training procedure by use of criteria.

Dependable criteria have implications, also, for the placement of those who complete the training program. A criterion in use is the level of achievement indicated by the grade in the training course; another is the length of time required by the trainee to master the skills or principles set forth in the training. Either of these criteria gives indication of the trainee's potentiality and has usefulness for the most advantageous placement of the trainee.

Selection. When the word "criterion" is mentioned, it is most frequently used in reference to its use in validating or evaluating selection devices. Thus, tests—a common selection tool—to be really useful in predicting which applicants are likely to be successful on the job, must be tried out on those who are on the job, to see which, if any, actually differentiate between good and poor workers. A test may have face validity—it may "look good and sound good" —but unless it tends to pick, time after time, the successful from the unsuccessful workers, it is of no real value.

On the other hand, tests which have demonstrated their ability to pick good people from poor people are said to be "valid"; they succeed statistically in discrimination. An example is the intelligence test developed in World War II, the "Army General Classi-

[12] Margaret Hubbard Jones, "The Adequacy of Employee Selection Reports," *Journal of Applied Psychology,* XXXIV (1950), pp. 222, 223.

fication Test" (AGCT). It was shown by personnel technicians that a man who made a standard score of 110 on the AGCT was a good bet for Officer Candidate School. However, there was a War Department regulation which permitted men with two years of ROTC (Reserve Officers' Training Corps) training to enter OCS. At Fort Benning, 35 men admitted under this regulation were found to have scores below 110 on AGCT. Only 3 of the group passed officers' training.[13] The criterion used was simply pass or fail in the training course. This example of evidence of validity is typical.

In its broadest view, the criterion is useful in development and verification of methods because it makes standards available which will spread present workers along a scale as being poor, fair, or good. Having any such measures of success identified, we can then proceed with various kinds of research studies which depend upon differentiation of workers.

Morale. Do high production and high morale go hand in hand? Some recent studies have demonstrated a relationship; others have not. This is a crucial question. Its answer depends upon improved criteria. If accurate criteria of productiveness can be developed, then, and only then, can working conditions that contribute to high production and high morale be established. The program research now being conducted in these areas is seen to depend on adequate criteria.

Administrative uses of criteria. *Promotion.* The application of criterion data to personnel action is direct. In promotions, analysis of the data can determine the level of proficiency required for a position of responsibility. Once the requirements for a position are determined, cumulative criterion records of a candidate for promotion may be examined to see whether he has the necessary characteristics.

Promotion on the basis of cumulative criterion records will be most useful only after jobs have been analyzed within the company to determine what they require of an incumbent.

Separation. Workers who fail to come up to the standards of proficiency designated as a requirement of the job can be removed from the job or the company, preferably by counseling the worker to change to another job environment where he may achieve greater

[13] Walter V. Bingham, "Inequalities in Adult Capacities—From Military Data," *Science*, CIV, No. 2694 (1946), pp. 147–52.

work success, or possibly by layoffs or termination because of unsatisfactory service.

Placement and transfer. Here the personnel officer has real need of criterion data. One prime duty of any personnel man is to get the right worker on the right job, if he is said to aid in the effective use of manpower. Thus, he must not only know the job duties to be performed by an incumbent, but he must have ways and means of screening until he locates those with the ability to reach these standards. This may be most effectively accomplished by the criteria of job success and by the use of validated tests, as predictors of job success, or in a few places, by the use of validated non-test predictors, such as those items found on application blanks which can be shown to differentiate between successful and unsuccessful workers. Criteria of job success are essential to the validation of test and non-test predictors.

Wage administration. Particularly significant is the administrative use of the criterion in sound wage programs. Workers can be brought to realize that they differ among themselves a great deal in job proficiency when criterion evidence is available. Some of them are able to perform more adeptly, more accurately, more swiftly than others. These differences are compensable. The first step in sound wage administration is to make sure that the jobs themselves are scaled relative to each other, that is, that a job requiring basically more education, more skill, or more hazard shall be worth more itself than one with lesser requirements. (See chapter 18, "Evaluating the Job.") The next task of the wage administrator is to evaluate fairly the individual workers in the department to see how they distribute themselves along the scale in performing the duties described for their job. Those who have exceptional criterion records are worth more in dollars. In a company which has a bonus or wage incentive system, sound criteria must be carefully developed.

Use of the criterion as a predictor. It so happens that the criterion which we have defined as a measure of job success, though normally used for administrative purposes or to check on the value of a selection test or other predictor device, may itself be used as a predictor. This seems like a contradiction of terms, but it really is not. Two examples may help clarify the use of the criterion as a predictor.

In situation *A*, a criterion consisted of a work sample test. Em-

ployees who were packing cans in a can manufacturing plant were measured on the job, and their scores were used as a criterion. This work sample test was used purely as a basis for validating tests. This unpublished study was conducted in 1936 at the Baltimore Center of the Occupational Research Program. Of the several variables analyzed for relationship to the criterion, it was found that education was negatively related to success as defined by the work sample test. The predictor was education; the criterion was a work sample test.

In situation *B*, a work sample test used as a predictor was the applicant's ability to type from rough copy. The criterion was merit rating by supervisors of typists in the typing pool. In this example, the predictor was a work sample test, the criterion was merit rating by supervisors.

Personnel technicians who commonly deal with these different types of situations clearly state whether the measure they are using is a criterion or a predictor, in terms of the situation.

Criterion Contamination

Criteria have often been carelessly gathered, with no checks on the worth of the criterion itself before it was used in research studies, in the development of personnel policies, and as a basis for administrative personnel actions. All too often the criterion has been tacitly assumed to be good, without evidence to support the assumption.

Contamination through knowledge of predictor data. A readily recognized source of criterion contamination is the use of predictor information, such as scores on tests, for preparing records which are, in turn, used as criteria. For example, instructors in industrial trade schools are particularly prone to make this sort of error in grading. Many instructors have a copy of the psychological test scores of their trainees. When the grades are prepared at the end of the course, some trainers use the psychological test grade as a partial basis for the trainee's course grade, assuming, if they have doubts about the proper course grade, that the student's intelligence score is a guide. In such cases, grades are passed out on the basis of predictor information. When these grades are used later for research criterion purposes, say for the validation of the test which yielded the predictor information, they will doubtless show

a considerable relationship, viewed by unknowing researchers as evidence for the validity of the test. Such evidence is spurious.

One study undertaken to validate the tests of the American Institute of Accountants for a local situation was abandoned because of contamination of criteria. It was desired to determine how useful these tests were in predicting accounting success of persons taking the tests. Merit ratings were not usable, since all raters admitted that they had carefully studied the test scores for counseling purposes. Use of such a criterion probably would have resulted in ranking the individual ratees more on the basis of test scores than on the basis of actual performance on the job. Supervisors who have available to them any shred of evidence of differences in their employees are likely to seize upon it as substantiating evidence that their ratings of the men are right, when actually they use this knowledge as the basis for making the ratings.

As a safeguard against this influence on the criterion, it is best to obtain criterion information before any predictor data are released. Thus, supervisors must rate their men before they have knowledge of test scores. Instructors in industry should be warned against their tendency to grade in terms of intelligence or aptitude test scores rather than actual performance in the course.

A closely related source of contamination is subtle but it may have considerable influence upon the usefulness of the criterion which is obtained. This might be described as favoritism to workers known to be good because of high aptitude test scores. Men who have the reputation for being fast producers are sometimes given advantages in a shop: better machines, favorable lighting conditions, etc. It is no wonder that these "good" workers develop into even "better" workers as a result of their favored position from the standpoint of either the physical or psychological work environment.

The experiment described at the Hawthorne Plant of the Western Electric Company [14] is a case in point. The authors of the reports of this study acknowledge that although they varied physical conditions of work, such as ventilation, lighting, hours of work and rest pauses, the work production of the experimental group remained at a higher level than that of the control group. The reason: the experimental employees were motivated indirectly through their recognition as "special employees." Any records of their production were influenced in an indeterminate amount by an im-

[14] F. J. Roethlisberger and W. J. Dickson, *Management and the Worker* (Cambridge: Harvard University Press, 1939), p. 615.

proved psychological environment—the recognition which spurred them on to higher productivity.

In one department store the junior executive group, mostly college graduates, are screened partly on the basis of grades in college. Promotions in the company are often underwritten with a statement to the effect that the young man was outstanding in his college career. Studies afterward undertaken to determine the relationship between grades in college and subsequent success in a career will be contaminated.

Contamination through artificial production limitations. Under discussion of the various kinds of criteria, it was mentioned that objective criteria are usually best, where available. Production records, all else being equal, would seem to be an easily obtained, easily used criterion. The more a man produces, the better he is, and the more his reward should be. Ideally, this would be true. In a number of instances, however, operators are penalized unknowingly by the machinery used for production. Thus, motor-driven machines capable of producing 500 units per hour are not comparable to hand-driven machines limited to 250 units per hour, and operators on the two should, of course, not be subjected to the same production standards. In offices, there is a difference between office machines made by rival concerns. Typewriters equipped with 16-inch carriages facilitate the work of certain kinds of typing. Operators forced to use a machine with a 12-inch carriage cannot be criticized for turning out less work in the same period of time. Records kept on any of these variable kinds of equipment are open to question, since operators cannot be said to be doing comparable work unless the machines themselves are studied and equated.

Often, to use production records is meaningless because all operators, no matter how exceptional, could turn out only the maximum units for which the machine is set. Governors regulating production at 100 units per hour pace the performance which anyone can achieve. Average, even substandard, employees can attain the same output as the most skilled operators. In such instances, another form of measurement of the worth of workers is indicated—perhaps through merit evaluation by the departmental supervisor.

Similar is the contamination of the criterion data in department stores where some selling stations are more advantageous than others. Where U-shaped islands jut out into the normal flow of traffic, salespeople stationed nearest the aisle have the greatest opportunity for sales, since they are the first employees noticed by

prospective customers. Other salespeople, forced to "cover" the infrequently shopped side aisles, find themselves ending the week with fewer sales to their credit. This is sometimes a form of employee dissatisfaction and can be adjusted by adroit supervision. On the research side, records of departmental sales by individual salespeople, where this sort of curtailment affects the sales records, cannot be considered demonstrative of different levels of selling performance. These conditions are artificial limitations of production; they represent lack of equal opportunity to demonstrate proficiency.

Contamination by experience. Sometimes the length of time a worker has been on the job will determine, in part, his relative proficiency. Jobs which require a substantial in-training period will reflect this. Any worker's record may merely measure achievement to date, but not necessarily forecast the final performance rating the worker is likely to attain. Under such circumstances these records could not be combined with those of more experienced workers. An example of this influence is shown in Figure 16.2. Remarkable differences are noticed between the inexperienced lamp-shade sewers (those on the job under ten months) and experienced lamp-shade sewers (those on the job more than ten months).

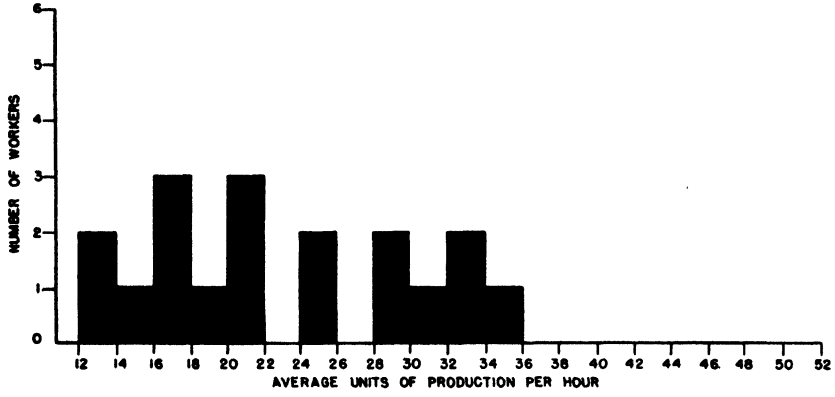
A similarly unsuitable criterion would be one based on the number of accidents of workers. Accident rates have been shown in certain situations to be related to experience. The more experienced workers have fewer accidents. Therefore, a criterion defined as "accidents per unit of time" would be reflecting experience on the job rather than accident-proneness.

Of course, it is not always possible to obtain a perfectly homogeneous group so far as experience is concerned. This factor of variable amounts of experience can be corrected to some extent through statistical procedures.[15] It must be recognized that even the correction factors are not entirely accurate. They do improve, however, upon otherwise sizable errors which criterion records, contaminated by the experience factor, may contain.

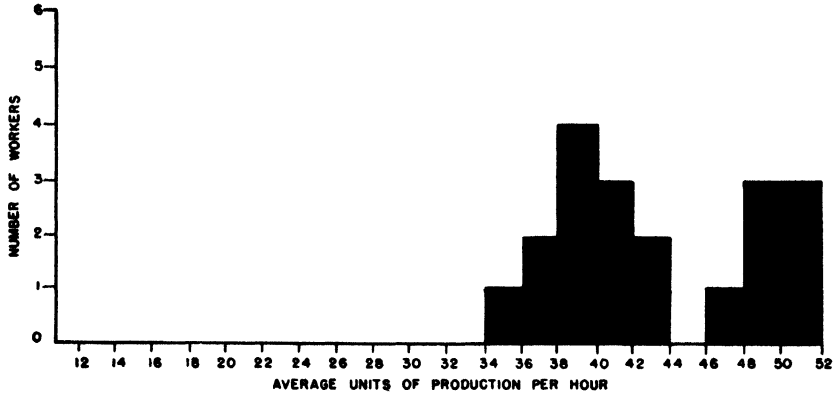
Brogden and Taylor classify various kinds of biasing factors in criteria according to the following scheme: (a) criterion deficiency, omission of pertinent elements from the criterion, (b) criterion contamination, introducing extraneous elements into the criterion, (c) criterion scale unit bias, inequality of scale units in the crite-

[15] Stead, Shartle, and Associates, *Occupational Counseling Techniques*, Appendix VII, pp. 258–60.

rion, and (d) criterion distortion, improper weighting in combining criterion elements. Specific problems of bias are discussed in relation to production records, ratings, and job sample measures; as are some of the problems encountered in criteria construction and suggestions for minimizing the various kinds of criterion bias.[16]



INEXPERIENCED LAMP SHADE SEWERS



EXPERIENCED LAMP SHADE SEWERS

Source: Stead, Shartle, and Associates, *Occupational Counseling Techniques*, p. 91.

FIG. 16.2. Differences in production between inexperienced and experienced lamp shade sewers.

Seven Checks on the Criterion

The following characteristics of a good criterion are given for evaluation of the criterion before administrative action or research procedures can be dependent upon it.

[16] Hubert E. Brogden and Erwin K. Taylor, "The Theory and Classification of Criterion Bias." *Educational and Psychological Measurement*, X (1950), pp. 159–86.

(1) **The criterion must be reliable.** Reliability of a criterion means that we must be able to depend upon it to show the same pattern of relationships, continually. Generally, reliability refers to the internal consistency of data. If we were to take production records (free from artificial limitations and other contaminating influences) for a group of workers on May 1, and if we repeated the step and took records again on May 6, we should get, within limits, the same relative standing in amount of individual worker output on both dates. If the worker who was high on May 1 is the low worker on May 6, this is indication that the criterion is not reliable. Perhaps the record reflects defective machinery which was being repaired, use of inferior materials for one group of employees, or absenteeism, rather than production. Whatever the source at fault, if the criterion data are not reliable, they cannot be used for validation purposes in research. Obviously, we would have difficulty predicting a changeable criterion.

Also, subjective criteria are often unreliable. Two or more raters have different views as to which workers are the better and which are poorer. Unless there is a fair amount of agreement between the raters, there is suspicion that the truly good workers are not properly identified or that different standards are being used for judging the worth of workers. It is impossible to develop and validate predictive procedures until we have a reliable criterion.

(2) **The criterion must be realistic and representative.** The criterion which is finally used must be a fair sample of job duties. For example, difficulty with the criterion was encountered in a department store study because a selection procedure had been developed around "good clerks," that is, good in the sense that they could write saleschecks readily and count out change accurately. However, the selection procedure did not predict good clerks consistently because it was found that a large part of the clerk's success depended upon how well she could sell. This factor was not taken into consideration when the criterion was developed for test validation. It was assumed that the good clerk was simply the one who was good in the clerical, and relatively inconsequential, duties.

(3) **The criterion should be related to other criteria.** If several measures of performance—such as scrap record, production record, or error record—are available for the job, the one which is finally used will usually be best if it shows a high degree of relationship to the others. In other words, some isolated part of the job might have all other requisites of a good criterion but may represent too

little of the job as a whole or, rather, may show an inverse relationship to other measures of success in that particular work.

(4) **The criterion should be acceptable to the job analyst.** This is a subjective consideration, but it is important, particularly where contamination might be suspected. The job analyst, through his acquaintance with the intimate details of each job, has opportunity to know whether or not the machinery itself might limit production. He has firsthand information if there is strategic placement of employees within the department, some being in more favorable spots for production than others. He also may know if the union has slow-down policies operating which are influencing the goodness of the criterion.

The job analyst's judgment based on the situation is one additional check toward the identification of the best possible criterion. Dorcus, however, has criticized this earmark of a criterion, saying that the job analyst's observations may be faulty, and therefore his advice on criteria will be unsound. ". . . the characteristics which are thought to be essential for the job do not turn out to be of major importance." [17]

(5) **The criterion should be acceptable to management.** Members of management may or may not be fitted to judge the soundness of the criterion chosen by the personnel technician. However, for a program of improved personnel methods, the criterion which management suggests for use should be carefully examined. If it does not hold up under close scrutiny, the technician should propose a better criterion, presenting the justification for it clearly and in nontechnical language.

(6) **The criterion should be evaluated for constancy from one situation to another.** After the particular personnel program based on a criterion has been in operation for a while, it may be found that the criterion is no longer operative, that the situation has altered so that a new criterion is indicated and needed. Consider, for example, technological change. Selection procedures that had been effective in picking girls who could produce well in hand-sorting cards were no longer effective when sorting was done by machine and the job became one of machine operation. New criteria of success became necessary for the purpose of validating new tests and training procedures. The job duties themselves may change, and this in turn influences the goodness of the criterion.

[17] Roy M. Dorcus, "Methods of Evaluating the Efficiency of Door-to-door Salesmen of Bakery Products," *Journal of Applied Psychology*, XXIV (1940), pp. 587–94.

(7) **The criterion should be predictable.** In deciding between several criteria which are judged to be equally satisfactory on the basis of the internal and subjective checks, or upon which the other checks cannot be made, it not infrequently happens that the criterion most predictable by psychological tests and personal data items is adopted. The investigator may conclude that criteria must be unsatisfactory if they cannot be predicted by tests and items found to be "valid" for other somewhat similar situations.

If a criterion is contaminated by spurious use of predictor data, it will, of course, be highly related to predictor scores. If it is predictable to some degree, it will have some degree of reliability. If it is contaminated by artificial limitations of production, it will not be predictable by either aptitude or proficiency tests. If an experience influence is present in great degree, aptitude tests will not predict it to any great extent, but proficiency tests should be highly correlated with it.

The fact that investigators sometimes resort to predictability as a basis for criterion evaluation further emphasizes the difficulty inherent in the problem of criterion evaluation. Whereas in test validation the criterion is used as the external standard, in criterion evaluation there is no external standard except the predictors themselves. If an external basis is to be used, it is necessary for the investigator to reverse himself, as frequently happens, and to be content to check his standard against that which he is evaluating. The circle in which he must place himself is unfortunate.

When all possible criteria have been surveyed, they would be tested against the checks on the goodness of the criterion described above. Those which are free from contamination may be retained for further study. If, however, several criteria remain, there is a problem of determining which criterion is best, or which combination of the several criteria is best. Furthermore, the situation itself may change, so that a criterion in use over a period of time must be evaluated against situation changes.

Cureton has suggested that the personnel department keep records of all potential criteria over a period of several years and correlate these with actual earnings of the company (or department) to see which were really important determiners of costs and profits.[18]

[18] Cited in Robert J. Wherry, "Criteria and Validity," *Handbook of Applied Psychology*, ed. Douglas H. Fryer and Edwin R. Henry (New York: Rinehart & Co., Inc., 1950), p. 174.

Toops has suggested that the criteria might be combined by asking several experts to assign points, and, after statistical treatment, weights are derived for the several criteria.[19]

There are several ways which have been described in the technical literature for combining several criteria statistically to give a single index of job success.[20] Determining how much weight should be assigned to each of the subcriteria is a difficult task, and statisticians are not agreed upon the best method for doing it.

Summary

The main conclusion that may be drawn from study of criteria of performance is that realistic criteria, defined as measures of worker performance, are crucial. Criteria are fundamental to development of personnel methods. They are basic to any personnel action, such as promotion, separation, transfer, increase in pay rate. They are fundamental to evaluation of personnel practices and programs. They are essential to the research development and evaluation of selection and placement devices.

A criterion may be objective or subjective. Objective criteria are exemplified by production records, scrap or reject records, errors, bonuses earned, number of sales, returns, net sales, per cent selling cost, quotas reached, absence and lateness records, and length of time on the job. Subjective criteria, which consist of judgments of supervisors or co-workers, are exemplified by rating scales on which the rater evaluates characteristics such as accuracy, speed or industry of the employee, performance in getting along with fellow workers, customers, or clients.

Criteria are fallible; none is perfect. Their imperfection is a matter of degree—some are simply not workable, have no utility for any purpose; some are barely workable; others are realistic, dependable and useful. In checking the validity of criteria, it is well to observe sources of their contamination and to consider several characteristics of the "good" criterion. A good criterion should be:

[19] H. A. Toops, "The Selection of Graduate Assistants," *Personnel Journal,* VI (1928), pp. 457–72.

[20] H. A. Edgerton and L. E. Kolbe, "The Method of Minimum Variation for the Combination of Criteria," *Psychometrika,* I (1936), pp. 183–87; Paul Horst, "Obtaining a Composite Measure from a Number of Different Measures of the Same Attribute," *ibid.,* pp. 53–60; Harold Hotelling, *Analysis of a Complex of Statistical Variables into Principal Components* (Baltimore: Warwick and York, Inc., 1933), p. 299; Robert J. Wherry, "An Approximation Method for Obtaining a Maximized Multiple Criterion, *Psychometrika,* V (1940), pp. 109–15.

reliable, realistic and representative of the job, related to other criteria, acceptable to the job analyst, acceptable to management, uncontaminated by various distorting influences, and predictable.

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17 Employee Evaluation Program

EVERY EMPLOYER evaluates his employees. Does he do this haphazardly, without recording judgments, or systematically? Managements can, by use of systematic, dependable evaluation, pave the way for a cumulative personnel report which can be used in conjunction with other indicators of performance in making personnel decisions. Such evaluation can be useful also as criteria for the improvement of personnel methods through research, as discussed in chapter 16.

There has been wide acceptance of systematic rating devices. Surveys show that almost half of the firms responding use periodic ratings.[1] But attention needs to be channeled to the aims of such activity within the broader framework of personnel administration, and to testing and improving the utility of rating judgments. Few personnel men actually check on the usefulness of ratings. The growth in industry of techniques for appraising the worth of employees has been accompanied by insufficient checks on the utility of such systems. Careful planning will help insure that the rating tool will do its job of employee evaluation. Without such foresight, management remains unaware of its progress toward the goals of effective use of employees and employee satisfaction.

What Employee Evaluation Is and What It Should Accomplish

Employee evaluation, sometimes referred to as *merit rating,*

[1] W. D. Scott, R. C. Clothier, and W. R. Spriegel, *Personnel Management,* 4th ed. (New York: McGraw-Hill Book Co., Inc., 1949), Appendix A, p. 587.

employee rating, efficiency rating, progress report, or *personnel review,* is a systematic periodic evaluation of the worth of an individual to the organization, usually made by a supervisor or someone in a position to observe his performance.

The total worth of an individual to his organization is in terms of a combination of factors, part of which are quantitative, such as the number of pieces he produces an hour, number of rejects, or absences from work; and part of which are qualitative, such as the goodness of his work or his attitude on the job.

An index of the quantitative aspects of his success would seem to be available from records which relate to his performance. However, for other factors, which are highly subjective, some device is required for adequate appraisal of the work performance. Rating scales serve to direct consideration to all factors essential to the job in a logical fashion, furnishing a method of placing a value on possession of each aspect of performance. The rating scale furnishes, in the end, an assessment of the total worth of each individual which can be related to the worth of all other employees.

It sometimes may not be worthwhile to rate performance subjectively if more tangible, objective measures of performance, such as production records, are available. Nevertheless, in the survey of employee rating practices, made by Mahler,[2] the most frequently used rating item of 132 rating plans was quantity of work (59 per cent). In most plants, there are production records which could furnish this information.[3] As pointed out in chapter 16, "Criteria of Performance," the production records might be inaccurate owing to artificial limits imposed on production. Where a machine is set to turn out only a certain number of pieces per hour, there is not much discrimination possible between an average worker and a superior worker, each of whom has turned out the maximum pieces possible per hour.

Uses of merit rating. Appraisal of the worth of employees is but the means to an end. Ratings may be used either for administrative or research purposes. For example, they may serve:

[2] Walter R. Mahler, "Some Common Errors in Employee Merit Rating Practices," *Personnel Journal,* XXVI (1947), p. 70.

[3] However, Smyth and Murphy point out that while objective information may be available in one department, such as in a machine department, in another, such as a storeroom, similar records are impossible to obtain, and so performance for all employees must be rated. R. C. Smyth and M. J. Murphy, *Job Evaluation and Employee Rating* (New York: McGraw-Hill Book Co., Inc., 1946), p. 210. See also George D. Halsey, *Making and Using Industrial Service Ratings* (New York: Harper & Bros., 1944), p. 2.

1. As a basis for payment of wages, salaries, and bonuses;
2. As an aid to supervision in assigning work;
3. As an aid to training;
4. As an aid to employee counseling;
5. As a motivational device.

Research technicians, on the other hand, may use the ratings:

1. For evaluating personnel and management practices;
2. As a criterion against which the relative value of worker characteristics is ascertained.

This last is the large area of selection and placement in which a criterion is necessary to obtain statistically reliable measures of worker performance for validating test batteries.[4]

Advantages of an employee evaluation program. The advantages of an employee evaluation program are numerous and result in improvements for the employee (ratee), and for the supervisor (rater), as well as for management. Not all rating plans are designed to achieve all the possible objectives mentioned. It is desirable for any specific company to decide what it hopes to accomplish from the employee evaluation program and, having set its goals, design a plan of rating which meets its particular needs.

Advantages to the employee (ratee). If the rating program has been properly planned and presented to the ratees, it can help to increase morale and confidence in the fairness of management. When employees realize that their work and attitudes are under constant but impartial scrutiny, they feel more assured that advancement will be based on demonstrated merit and not favoritism or influence. Armed with this security, the employee is motivated to improve his job performance for financial gain and for recognition. The impartial ratings furnish something definite upon which to base future efforts. As periodic ratings are made, the employee is kept informed as to his progress. Trainees are known, through experiments of educational psychologists, to learn more rapidly when they have knowledge of their results.

Employee ratings often reveal undiscovered weaknesses of employees that require attention, by on-the-job training. Bringing hidden abilities into the open tends to forestall maladjustments stemming from failure to recognize a worker's real worth.[5]

[4] For a discussion of some of these statistical problems, see D. J. Bolanovich, "Statistical Problems of Worker Evaluation," *Personnel,* American Management Association, XXIII (1946), p. 210.

[5] Bernard J. Covner, "The Communication of Merit Ratings: a Philosophy and a Method," *Personnel,* American Management Association, XXX (1953), pp. 88–98.

Advantages to the supervisor (rater). Ratings assist in measuring the degree to which individuals meet specifications of performance. Repeated ratings aid in highlighting improvement in work, which furthers a fair promotion policy. Whatever action he recommends—promotion, transfer, rate change, or discipline—may be substantiated by cumulative records.

The supervisor, by making his ratings systematically, is made aware of the weaknesses or strength of his men which should be followed up. Recognition and stimulation of hidden talent promote better relations between supervisor and employees. By gaining a better knowledge of individual capacities and limitations, supervisors are able to assign work more discriminately, based upon ability to perform. This permits fuller utilization of each worker.

Advantages to management. Each advantage mentioned for the employee and for the supervisor is, of course, an advantage to management, inasmuch as each contributes to improved relations and greater understanding within the organization. A survey of the ratings of the total employed force often reveals to management what areas particularly need to be stressed in a training program to develop each employee to his greatest potentiality.

Personnel actions recommended by the supervisor can be reviewed by higher management, aided by merit evaluations of employees. Records are provided so that management can judge the fairness, severity, or leniency with which supervisors evaluate their subordinates. These are available in permanent form to protect the company against possible charges of discrimination which might be filed. Those employees not capable of performing satisfactorily over a period of time may be discharged or transferred on the basis of the employee rating records. Employee evaluation is seen as an effective check on the recruiting and placement processes and aids in improving and extending the testing and employment procedures.

In a broader view of management's interest, the rating program is coordinated with the job evaluation program needed as an additional basis for wage and salary administration. Job evaluation establishes foundations for wage and salary differentials, based upon a sound conception of the relative differences in job requirements. An individual is placed on the wage scale within the limits of the rate range in which his job falls. As he progresses in skill in

performing his job, as indicated by merit, his rate of pay rises within the rate range.

Problems in Administering the Program

In setting up an employee rating system within an organization, management will be faced with several problems. There will be considerations such as how often to rate, who shall do the rating, and how the employee shall be told of his rating. Only careful deliberation and planning will assure appropriate decisions for each step.

Once it has been decided to establish a formal rating plan, it might be well to designate a steering committee to assume a major portion of the responsibility for the development and operation of the program. Such a committee would be similar to those suggested for job analysis and job evaluation programs. Its function would be to discuss the selection and training of raters, different types of plans, the administration of the rating procedure, including the method of presentation of results to the employees (ratees). This committee would bring together representatives of management as well as members of the employee group, plus a technician in evaluation procedures. The team spirit fostered by committee discussion and approval helps insure mutual agreement in the mechanics of the rating procedure and will tend to minimize employee misunderstanding of the techniques used.

Even after the rating plan has been put into operation, this same committee normally continues to act in a review capacity, evaluating and improving the rating system. It may also operate as a committee to review the actual ratings.

Theoretically, the more ratings obtained for any one individual, the more reliable would be the rating of his performance. However, as the industrial scheme has become more and more specialized, direct supervision is narrowed to a very few people who have enough contact with any employee to rate him accurately. In view of this the selection of raters becomes arbitrarily restricted. This assumes, of course, that rating will be done by supervisors. Some plans have been successful in which rating is done by subordinates or by peers.[6] In a carefully controlled quantitative study, including four factor analyses, Wherry and Fryer found that buddy ratings (rating by peers) have reliability, identify high and low members of a group

[6] See bibliography of Walter R. Mahler, *Twenty Years of Merit Rating, 1926–1946* (New York: The Psychological Corporation, 1947), p. 73.

on "leadership" earlier than some other criteria, have high predictability, and agree with personnel actions based on other measures.[7]

If it is not possible to exercise much selectivity in designating raters, it is important at least to train present supervisors to rate their men carefully. In meeting with the rater group, the purposes of the employee evaluation program are gone over thoroughly, emphasizing the uses to which the results will be put. At this point, the particular plan or method chosen is explained in detail, so that each person will understand his part in the program.

It is also advisable to warn the raters of common pitfalls of rating. For example, if a rater is reminded that he might tend to rate everyone at the middle of the scale or average, he is apt to be a little more cautious in considering his employees from every angle. It might be expedient to have a miniature problem in rating demonstrated so that the raters will have the opportunity to participate and ask questions as they go along. At the same time, the trainer will be able to correct mistakes or misunderstandings. This technique will help stir up enthusiasm and interest in the ratings and give the raters practice for the job before them.

If the main objective is to review the progress of employees for purposes of upgrading or wage increases, it is necessary to rate only often enough to reflect changes in the employees' performance. A six-months' interval is probably about right. A survey of 94 concerns on the frequency of making ratings showed that one-third of the respondents rated once annually; about 14 per cent stated that they rated once or twice annually; about one-third rated twice annually. Only 2 per cent rated as often as monthly.[8]

An employee evaluation program should be assured operation for at least a year before attempting to evaluate its worth. It is sometimes difficult to get management to agree to this, particularly if there has been any unfavorable reaction on the part of the employees to the program. It is almost imperative that someone in top management support the program until enough information is collected for a true evaluation.

Sometimes the effects of rating are not seen for three or four years. It will take some time to convert the ratings into usable bases

[7] Robert J. Wherry and Douglas H. Fryer, "Buddy Ratings: Popularity Contest or Leadership Criteria?" *Personnel Psychology,* II (1949), pp. 147–59.

[8] National Industrial Conference Board, Inc., "Plans for Rating Employees," *Studies in Personnel Policy No. 8,* June, 1938, p. 14.

for making wage and salary adjustments. Employees will be motivated to improve their performance only as they begin to believe in the fairness of the raters and the good intentions of management.

Types of Rating Methods

By what technique can employee evaluation be most effectually carried out? Such an array of plans seems available that the company making a choice is frequently uncertain, although basically there are only a few rating plans to consider. Parts of these plans have been combined into new plans, so that virtually every plan in operation contains elements of the methods discussed below.

Several general types of rating methods will be discussed. These are:

1. Graphic Rating Scale
2. Forced Distribution
3. Man-to-Man Comparison
4. Ranking or Order of Merit
5. Paired Comparison
6. Check List
7. Forced Choice

Investigation of existing rating systems has revealed a common tendency to construct scales seeking to measure inferred traits such as loyalty, industriousness. This is difficult to do accurately. It is better to rate on the goodness of performance, which is generally more concrete, more readily observed, and more easily defined by the rater. Observation of actual performance rather than inference of worth of an employee is a good rule. This approach will be kept in mind in describing the various rating methods.

Graphic rating scale. A survey made by Mahler [9] demonstrated the popularity of the graphic rating scale method. Of 125 companies participating in his survey, 106 (85 per cent) used this form of merit-rating scale.

The graphic rating scale is easy to use in industry. There are many graphic rating forms now in use. Basically all such plans consist of a list of performance traits to be rated. Each trait is represented by a line, or "scale," on which the rater is to mark the degree to which he believes the employee possesses that trait and displays it in the performance of his work. This assumes that all employees

[9] Walter R. Mahler, "Some Common Errors in Employee Merit Rating Practices," *Personnel Journal*, XXVI (1947), p. 68.

not only possess some degree of the trait, but also have equal opportunity to display it. A typical item is illustrated:

COOPERATION:					
	1 Poor	2 Fair	3 Average	4 Good	5 Excellent

The graphic rating scale has several weaknesses. In describing the degrees of the trait, frequent use is made of such words as "poor," "fair," "average," "good," and "excellent," as in the illustration shown. There is no basis for comparison—it is an absolute rather than a relative or comparative procedure. The rater often asks, "Good—compared with what?" The scale that provides definitive and descriptive phrases is an attempt to sharpen up the absolute judgments. For example:

COOPERATION:					
Does he hold up his end with superiors and fellow workers?	*Poor* Unwilling to take part.	*Fair* Not a good team worker.	*Average* Usually a good team worker.	*Good* Always ready to do his share willingly.	*Excellent* Goes out of his way to cooperate cheerfully.

A second weakness of the graphic rating scale is the distribution of degrees along the line. The system assumes that performance can be measured linearly from absence of the trait to possession of a great degree of the trait. It may be difficult to decide exactly what point on a line best describes the ratee's position. It is even more difficult to defend placing one worker at the extreme right (or "excellent") end of a classification, whereas another worker in the same classification is placed near the left (or "poor") end. What specific items of performance can be pointed to for justifying such distinctions?

Where five or seven degrees of performance are defined, there is the assumption that the intervals between the degrees are equal. However, it is not necessarily true that a man in the "fair" category is as far from average as a man placed in the "good" category. Nor is it probable that the difference in measurements of performance between "average" and "good" are equal to the measurements of performance between "good" and "excellent."

Probably the most serious criticism of the graphic rating scale is

the opportunity which it provides for "halo effect." Generally, several scales of performance traits are presented on one sheet, with the low end at the left of the sheet and the high end to the right. In rating John Jones, the rater says to himself, "Jones is a good worker—does well on everything." So he goes down the right-hand side of the page, checking Jones high on each trait. It is not probable that a true evaluation for each item is made, since the rater is letting his general impression of the man influence his judgment on specific items of performance.

Various techniques have been improvised to circumvent this difficulty. One solution is to break up the pattern of traits, so that the low end is on the left of the page for one trait and the high end on the left for the next. This is designed to encourage a momentary hesitation, so that the rater will pause to reflect on the man's real worth. Another possibility is to present one performance item to a sheet; this is feasible if few items are being rated. A third solution is to rate all employees of the ratee group for only one specific item at a time. A fourth solution has become more formally known as the "forced distribution" system.

Forced distribution. For any specific trait, a large population tends to spread itself in the form of a normal curve, with a few people exhibiting superior performance and a few showing inferior performance. (See Figures 13.2 and 13.3.) Most of the members of the population cluster about the middle or average.[10] The forced distribution technique may be applied to any graphic rating scale, involving a whole range of characteristics of job performance, with the definite advantage of forcing a spread of the ratings over the "normal" distribution, or bell-shaped, curve. In one situation [11] in which this technique was used, employees were rated on two traits only: job performance and promotability. For job performance, a five-point scale was used. Each rater was asked to allocate approximately 10 per cent of his men to the high end of the scale, 20 per cent in the next category, 40 per cent in the middle bracket, 20 per cent in the bracket next to the low end, and 10 per cent in the low

[10] This well-known fact is discussed by Bingham: "With respect to almost any measurable ability or trait . . . , most of us differ but little from the average of the general population; some differ by moderate amounts; and relatively few are found near either limit of the range." Walter V. D. Bingham, *Aptitudes and Aptitude Testing* (New York: Harper & Bros., 1937), p. 26.

[11] Joseph Tiffin, "Merit Rating: Its Validity and Techniques," *Rating and Training Executives and Employees, Personnel Series No. 100* (New York: American Management Association, 1946), pp. 20–22.

bracket. By forcing the distribution of the employee ratings in this manner, the tendency for some raters consistently to use only the high or the middle part of the scale was avoided. Each rater used the same percentage distribution: 10-20-40-20-10.

Figure 17.1 is an example of a merit evaluation form suggested for office employees, which calls for forcing a distribution. It asks for judgment on three general areas of performance: performance in work, performance in working with people, and general items of performance. Note that there is not included a single "trait," as inferred on this scale; rather all items are amenable to *observation of performance.* Instructions for using the form included:

> It is, of course, conceivable that many ratees supervised by a rater are outstanding in performance on some items. In such cases the rater's percentage of checks in the higher brackets would be greater than in the case of other raters. The rater is cautioned, however, not to check in the top two brackets without certainty that the ratee compares favorably with superior and outstanding workers in performance in the characteristic being judged.

In a company where the plan has been used, a department head who had eleven persons under his supervision protested that his group was too small to be rated under the forced distribution plan. Rather arbitrary decisions would have to be made in placing only one person on the top, two in the next bracket, etc. His objection seems reasonable and suggests that the plan is probably more useful for larger groups.

Man-to-man comparison. One of the early rating techniques was the man-to-man comparison method developed in 1917 by the Bureau of Salesmanship Research for rating salesmen. At the outbreak of World War I, it was adapted to meet the needs of the Army.

In this plan, a human measuring scale called a "master scale" is developed by each rater, usually showing five levels of performance of each job characteristic. For example, to prepare a master scale concerning the exhibition of leadership qualities, the rater selects the individual within his acquaintance whom he believes to be the most able leader. He then selects the least effective leader he has known. These two men are the extremes of his five-point master scale. Next he selects a man of average ability to serve as midpoint, and two men of intermediate ability, one midway between the highest and the average man, and the other between the average and the lowest man.

Person Rated_____ Date Employed_____

Rated by_____ Period Rated: from _____ to _____

(Sections *I* through *IV* to be completed by ratee's immediate supervisor.)

Rated as:_____
(Enter job title of ratee)

	Not Applicable	Inadequate Observation	Low 10% Unsatisfactory	Next 20% Borderline	Middle 40% Average	Next 20% Good	Top 10% Outstanding	Numerical Summary
I. Performance in clerical, typing, secretarial, stenographic, or other office work. (Underscore one or two of the four.)								
1. Working accurately in routine office work:	___	___	.	..	...	..	.	___
2. Working rapidly in routine detail work:	___	___	.	..	....	..	.	___
3. Planning work in advance:	___	___	.	..	....	..	.	___
4. Producing clean, neat, and orderly work:	___	___	.	..	....	..	.	___
5. Knowing office methods and routine:	___	___	.	..	....	..	.	___
6. Learning new office methods:	___	___	.	..	....	..	.	___
II. Performance in working with people.								
1. Making an appropriate appearance:	___	___	.	..	....	..	.	___
2. Making appropriate use of language:	___	___	.	..	....	..	.	___
3. Keeping business confidence:	___	___	.	..	....	..	.	___
4. Cooperating with fellow workers:	___	___	.	..	....	..	.	___
5. Accepting supervisor's suggestions and criticism:	___	___	.	..	....	..	.	___
III. General items of performance.								
1. Arriving on time; punctuality:	___	___	.	..	....	..	.	___
2. Meeting work deadlines promptly:	___	___	.	..	....	..	.	___
3. Showing appropriate initiative:	___	___	.	..	....	..	.	___
4. Assuming appropriate responsibility:	___	___	.	..	....	..	.	___
IV. Performance in supervisory duties. (For rating office supervisors only.)								
1. Supervising clerical and office employees, deriving maximum efficiency and value:	___	___	.	..	....	..	.	___
V. Overall value of ratee to the firm. (To be completed by office executive):								

Numerical Summary (Total of Items *I*, *II*, *III*):..... _____

Total of all items (supervisors):..... _____

Outstanding objectionable or favorable traits, or notable factors influencing performance:_____

_____

_____

FIG. 17.1. Forced distribution rating form.

These five men serve as standards of judgment for all those whom he rates on leadership. (See Figure 17.2.) The rater considers each of his employees as he compares them to the five men on his master scale. For example, in the figure shown, when he is determining a rating for McCabe, the rater asks himself whether McCabe is a better leader than Anderson. If he answers yes, then he must consider whether or not he is as good as Brown. If not, then McCabe's rating would fall above Anderson and below Brown. He continues this process until all men are rated on the human measuring scale.

This system necessarily involves the preparation by the rater of a separate master scale for each of the characteristics of job performance on which rating is to be made. In practice, this proves to be time-consuming and cumbersome. These features have resulted in its decreasing use. There is an additional criticism: even when the rater has finished with his ratings, there is no comparability of his judgments to those of anyone else. It is almost certain that he is the only person who has known the same five men who comprise his master scale. Another rater, who necessarily constructs his own master scale, will probably use five different men as standards for comparison. The degree of equivalence of the two master scales is unknown.

Ranking or order of merit. A simple method is the ranking or order of merit method. The rater arranges all ratees in order, from best to worst. For example, in rating a group of fifteen men, he would select the best individual as Number 15 and the worst as Number 1. In ranking on one specific job characteristic at a time rather than on the total or over-all value of individuals to the firm, it is necessary to repeat the process of ranking as many times as there are characteristics to be rated.

The rank-order method is most effective in a moderate size group of ten to twenty ratees. If there are more than that, the system could be unwieldy. The supervisor soon discovers that discrimination becomes fuzzy and his decisions uncertain especially toward the middle of his group, the extremes being relatively easy to rank. Should it be necessary for him to defend his decisions, he might be unable to justify his ranking.

There are several other disadvantages or limitations to the ranking method. One is the problem of giving due weight to the extreme cases in the sequence. In a group of fifteen ratees, the difference between Number 15 and Number 14 is statistically greater than the

Trait to be evaluated: Leadership

(Master Scale)	*(Employees Being Rated)*
Greatest leader I have known — Jones	
Possesses a high degree of leadership ability — Brown	
	McCabe
Demonstrates leadership of average ability — Anderson	
	Wilson
	Lawrence
Has very little leadership ability — Thompson	
	Geddes
Least effective leader I have known — Smith	

FIG. 17.2. Example of a master scale for man-to-man comparison system.

difference of degree between Number 8 and Number 7. There is no easy way of reflecting this in the results of the rating, since each person is assumed to be separated from the next by an equal interval.

Another objection is that the rankings are obviously not comparable in the case of two men from groups of different size. A man who ranks highest in a group of three would tend to be inferior to one who ranks highest in a group of thirty. Correction tables for this have been prepared, however; and because these tables are easy to interpret and use, this is not a serious objection.[12]

[12] Tiffin, "Merit Rating: Its Validity and Techniques," *loc. cit.*

On the whole, the system is appealing in its simplicity; it is easily explained to raters and to ratees. In some situations, the ranking or order-of-merit method has yielded very high reliability.

Paired comparison. Another method of rating which by technical investigation has been found to be reliable in many situations is the paired comparison of ratees. It is historically quite an old procedure for making discriminations in a systematic way, and was developed by early psychologists during the middle of the nineteenth century.

In this method, names of 2 ratees are presented. One of the pair, judged the more valuable to the firm, is underlined by the rater. A second pair of names is considered in like manner. Thus, if we were rating five men, Jones, Smith, Brown, Anderson, and Thompson, ten comparisons would be made, each man against each other man, and the more valuable man underlined of each pair:

Jones-Smith
Jones-Brown
Jones-Anderson
Jones-Thompson
Smith-Brown
Smith-Anderson
Smith-Thompson
Brown-Anderson
Brown-Thompson
Anderson-Thompson

The simple formula for the number of comparisons is $N\ (N - 1)/2$ when N is the number of people to be rated.

A rank-order list is made on the basis of the number of times each employee was higher of the pair.

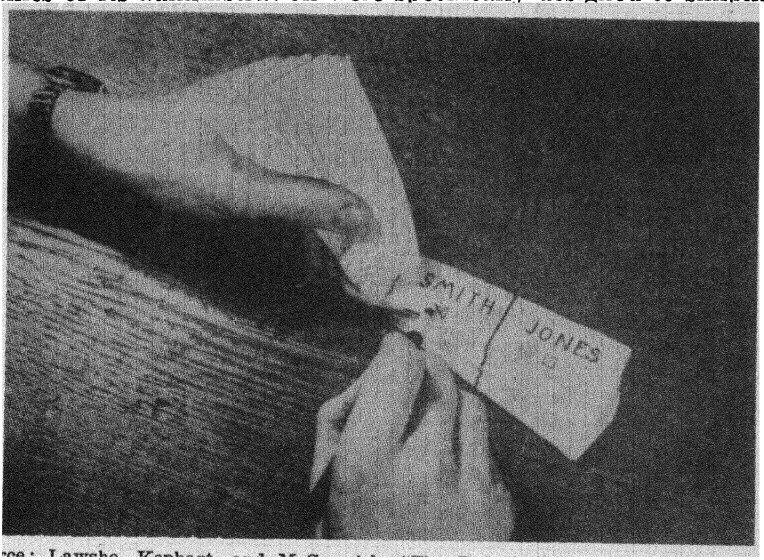
Name	*Tabulation*	*Rank*
Jones	///	4
Smith	/	2
Brown	////	5 (or highest)
Anderson	//	3
Thompson	0	1 (or lowest)

This is an effective method for a medium-sized group, about ten to thirty. In a group of thirty ratees, 435 simple comparisons would be necessary.

Here again we meet the objection that was noted for the ranking

or order-of-merit method: that a man who is tenth in a group of twelve is in a better position than a man who is tenth in a group of thirty. A standard statistical method of adjustment or conversion may be applied, as was the case for the ranking method.

Lawshe [13] and others have devised a system for rating job performance by the paired comparison technique, in which the mechanics of its administration were specifically designed to simplify



Source: Lawshe, Kephart, and McCormick, "The Paired Comparison Technique for Rating Performance of Industrial Employees," p. 70.

FIG. 17.3. Method of marking pairs in the rating booklet made with the Personnel Comparison System materials.

The procedures involved in the administration of the system and the subsequent scoring of results follow:

1. The names of individual pairs are typed on the separate sections of the forms according to a pre-determined order which is presented in table form. The table provides for pairing each employee with each other employee.
2. The sections are separated on the perforations and the slips are assembled into a booklet by means of a paper fastener inserted through prepared holes.
3. The rater checks the preferred name on each slip.
4. The number of times each individual is preferred is tallied on a summary sheet.
5. A performance rating index is derived from a table,* the specific index being determined by the number of times each individual was preferred and the number of individuals being rated.

* The indexes in the table are based on the proportion of times each individual is preferred, converted to standard score units. These units are based on a mean of 50 with a standard deviation of 10. Indexes range from approximately three standard deviations below the mean to approximately three standard deviations above the mean (actually from 23 to 77).

[13] C. H. Lawshe, N. C. Kephart, and E. J. McCormick, "The Paired Comparison Technique for Rating Performance of Industrial Employees," *Journal of Applied Psychology*, XXXIII (1949), pp. 69–77.

the various procedures. It is called the "Personnel Comparison System." [14] The system provides a booklet of slips of paper about one inch by six inches. (See Figure 17.3) Each slip contains a pair of names. The booklet has most often been used to rate over-all job performance, mainly because several factor analysis studies of ratings reveal that only one factor is usually contained in the various ratings of factors typically "measured" on ratings scales.

There are several variations of the paired comparison method. The one just described contrasts pairs of names in appraising the ratee's over-all value to the firm. It is also possible to compare specific performance items. In this method, a list of items for rating John Jones is presented, such as "sociable" or "unsociable," "cooperative" or "uncooperative." One of the two which is more applicable is underlined.

Rating for John Jones

Consider the employee on each of the following pairs of characteristics. Underline one of the words of each pair which is more descriptive of his usual behavior.

Sociable—Unsociable

Cooperative—Uncooperative

Shy—Aggressive

etc.

Bittner and Rundquist [15] have devised a combination of the methods of paired comparison and ranking for obtaining rating criteria. The procedure requires only a short time, can be used to evaluate large numbers of ratees, and is simple in use. In two studies, the reliabilities of the obtained ratings were quite high.

Check list. Simply stated, the check list consists of a series of statements, phrases, or adjectives which are characteristic of job performance. The rater merely checks on the list any of the items which he feels are applicable to the performance of the ratee under scrutiny. For example, a number of descriptive phrases such as "does her share of the work," "loses temper easily," "poor head-

[14] Available from Mayer and Company, 15 East Eighth Street, Cincinnati 2, Ohio.

[15] R. H. Bittner and E. A. Rundquist, "The Rank-Comparison Rating Method," *Journal of Applied Psychology*, XXXIV (1950), pp. 171–77.

work in emergencies," "never quits ahead of time," etc. are typical of the sort of item which would be included in the list.

Much of the early work with the check list system was done about 1927 by J. B. Probst,[16] then of the St. Paul Civil Service Commission. He conducted a number of experiments in the wording of the phrases, the order of the phrases on the list, and on groupings of negative and positive phrases. His early work pointed the way for careful construction of the check lists.

CASE GOODS SALESMEN RATING

Below are a number of statements that have actually been made about Procter and Gamble case goods salesmen. Read each statement, and put a plus sign (+) before it if it applies to this man. Put a minus sign (−) before it if it does not apply. Use a question mark (?) if you are not sure.

_____ He is somewhat in a rut on some of his brand talks.

_____ He tends to keep comfortably ahead of his work schedule.

_____ He is a good steady worker.

_____ He is weak on planning.

_____ He is making exceptional progress.

(etc.)

Source: Richardson and Kuder, "Making a Rating Scale That Measures," pp. 36–40.

FIG. 17.4. Sample of the Procter and Gamble check list rating method.

Very often, in preparing a check list for a specific company, the supervisors who are to do the rating will supply the phrases which make up the rating form. This is generally advantageous in developing any rating procedure because it not only gets the supervisors interested in the rating device but it also enables them to make the ratings in the terms in which they normally think of the performance of the ratees.

Although the check list appears to be a simply constructed device, actually more is involved than a random collection of statements. A check list which has been technically and statistically well-constructed may result in sound ratings. An example of a carefully prepared check list is one by Richardson and Kuder de-

[16] J. B. Probst, *Measuring and Rating Employee Value* (New York: The Ronald Press Company, 1947), p. 166.

veloped for rating Procter and Gamble case goods salesmen.[17] The authors of this plan collected over 500 statements used by supervisors in appraising the work of their salesmen. Ratings of the men were customarily made by statements such as "He is always on the job," "He needs to be pepped up occasionally." (See Figure 17.4.)

These 500 statements were carefully edited and then were submitted to 14 judges who were asked to sort each statement into categories of effectiveness of performance, ranging from 1 (a description of a man failing to do a good job) to 7 (description of a highly successful man). Where close agreement of the judgments occurred concerning the meaning of an item of behavior, that item was retained for further study. Successive trials on ratee groups refined the check list to a final form of 51 items.

When this type of scale is finished, it has the merit of being easy to interpret and easy to score. It also has the distinction of being written in a language familiar to the raters.

An unpublished study conducted by the writer in 1946 in a large motor company demonstrates the workability of the method. The problem was to develop a tool for the evaluation of junior executive trainees in the company's orientation program. Preliminary experiments with graphic rating scales had revealed the weakness of this device because halo effect tended to creep into raters' judgments.

Groups of good and poor trainees were selected on the basis of an over-all criterion, and items on a check list were validated against these groups. The original list of 123 items was reduced to 61; each of these 61 items was known to have relationship either to success or failure as an executive trainee. Some of the items typical of a good trainee were:

Quick and active
Learns new things easily
Very orderly and systematic
Good head work under pressure
Has effective personality in classroom discussions
Freely exchanges ideas with others
Always frank but friendly in his dealings with others

[17] M. W. Richardson and G. F. Kuder, "Making A Rating Scale That Measures," *Personnel Journal*, XII (1933–1934), pp. 36–40. See also the more recent work in that firm by R. S. Uhrbrock, "Standardization of 724 Rating Scale Statements," *Personnel Psychology*, III (1950), pp. 285–316.

Items typically checked for a poor trainee were:

Indifferent
Generally looks for the easy assignments
Needs considerable supervision
Does not plan or organize his assignments effectively
Seldom, if ever, asks questions of instructors or supervisors of field work
Clings dogmatically to his own opinions

Forced-choice ratings. In rating the merit of employees and in self-ratings, the errors of favoritism, "halo," and "contagious bias" are persistent. A recent development in the rating area seems to show considerable promise for reducing the amount of rater error. It is called "forced-choice" rating.[18] This technique, if properly developed and verified for particular situations, may provide an improved way for rating employees and may furnish a better criterion for personnel research. Its advantage is that the person filling out the rating form has no way of knowing whether he is giving a high or a low mark to the ratee.

This plan was developed for the armed forces, during the latter part of World War II, by the Personnel Research Section (now Personnel Research Branch) of the Adjutant General's Office. Some 10,000 temporary officers were selected for retention in the regular army in 1945 and 1946 by use of the forced-choice system of rating combined with other validated techniques. A product of personnel research, the forced choice procedure differed from previous methods by requiring that the rater choose from among several phrases

[18] For a summary of the short history and present status of this development see E. Donald Sisson, "Forced-Choice—the New Army Rating," *Personnel Psychology*, I (1948), pp. 365–81; Donald E. Baier, "Reply to Travers' 'A Critical Review of the Validity and Rationale of the Forced-Choice Technique,'" *Psychological Bulletin*, XLVIII (1951), pp. 421–34; Marion W. Richardson, "Note on Travers' 'Critical Review of the Forced-Choice Technique,'" *Psychological Bulletin*, XLVIII (1951), pp. 435–37. An early forerunner of the forced choice employee rating method was developed for personality measurement by C. E. Jurgensen, "Report on the Classification Inventory, a Personality Test for Industrial Use," *Journal of Applied Psychology*, XXVI, 1944, pp. 445–60; for research results on fakability of this earlier method, see C. E. Jurgensen, "Fakability of the Jurgensen Classification Inventory." *Journal of Applied Psychology*, XXXVII, 1953, pp. 86–89; see also James R. Berkshire and Richard W. Highland, "Forced-choice Performance Rating—a Methodological Study," *Personnel Psychology*, VI, 1953, pp. 355–78. The forced-choice procedure has been tried experimentally and applied in a number of industrial situations during the past five years. A manual by Rogert M. Bellows and M. Frances Estep describes the development, evaluation, and application of forced-choice personnel evaluation procedures: "How to Prepare Forced-Choice Ratings" (Detroit: Roger Bellows and Associates, 1953), pp. 1–24.

the ones most descriptive and ones least descriptive of the person he is rating. He was required to report these items. He was no longer required to judge how much of a particular characteristic a person possessed, a task which can seldom be validly performed. The items, of course, had been carefully selected.

The items which are used for this rating technique are simple, descriptive phrases or sentences such as, "He is well-liked by others," "He is frequently late to work." They are the kind of phrases most supervisors or interviewers use when they informally describe a person. Uhrbrock [19] has published a list of 724 rating scale items (for a different procedure of rating) which may suggest the kind of trial items to use for the development of forced-choice rating procedure.

A group of company supervisors is asked to rate each of the items for its appropriateness as a description of either a very successful or a very unsuccessful incumbent on the particular job for which the rating procedure is developed. From their ratings, two indices can be prepared which will be used to select the items most likely to predict potentially good employees.[20] One of these indices is a "Preference Index" (abbreviated P. I.). This index indicates the willingness or readiness of raters to say this particular thing about a good or poor employee. There are some things that often we are not willing to say that are nevertheless characteristic of a person we are rating. The other index, the "Discrimination Index," (abbreviated D. I.) is a value which shows how well the item discriminates between successful and unsuccessful employees. If this index value is low, the item does not distinguish well between high-rated and low-rated persons; it is said as often about one as about the other. If the value of D. I. is high, it is more discriminating; the item is probably descriptive of some action which is different in good or poor employees. Both indices are used when selecting items.

Once the two indices have been prepared, the items can be selected for the rating form. The object is to make up pairs of items: one, an item usually said (by raters) about a poor employee, and one which is usually said about a good one. However, both items must *appear* about equally favorable (or unfavorable, as the case

[19] Richard Stephen Uhrbrock, "Standardization of 724 Rating Scale Statements," *Personnel Psychology,* III (1950), pp. 285–316.

[20] The two indices described here are the conventional ones most widely used. New experimental indices are being developed. For example, see Joel T. Campbell and Edward A. Rundquist, "Scaling Items for Inclusion in Forced-Choice Rating Forms," *The American Psychologist,* V (1950), p. 280 (*abstract*).

may be) so that when the pair of items is considered by a rater, he cannot tell from the items themselves whether he is going to be giving a favorable or unfavorable rating to the ratee.

The final rating form usually consists of a series of "blocks" of four items each, one pair of which appears unfavorable and one pair of which appears favorable. One item of the favorable pair was rated as characteristic of good employees, and one item of the unfavorable pair was rated as characteristic of poor employees by the supervisors who participated in developing the form. In some forms, an additional item may be put in the block as a distractor. The rater actually using the form in the operating situation has no way of knowing which items to check for making a good rating. He is thereby forced to choose which items are characteristic of the person he is rating.

Figure 17.5 shows a portion of a forced-choice rating form used for rating field technical personnel.

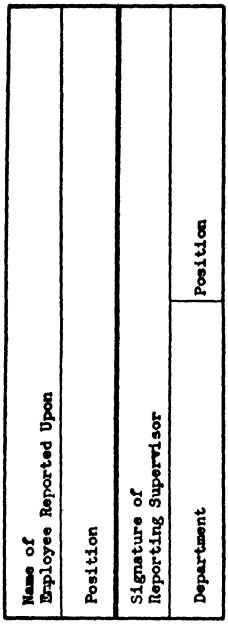
The significant thing about this method is that the items in the form have been item-analyzed, and a stencil or scoring device is available in a central office. The rater's response to certain of the items yields a picture of a good worker and responses to other items picture him as a poor worker; this can be known only by use of the scoring stencil. By the design of the form, the rater himself cannot tell which items to check to give an excellent or poor rating. For this reason, favoritism and the lenient tendency, two of the serious pitfalls in the use of the usual subjective rating procedure, tend to be avoided.

The scoring key must be revised periodically. The reason for its revision is that the criterion which described a successful employee may have changed considerably. The criterion must remain the same, and so must the job situation, or else the items may not distinguish between the good and poor groups as before.

Since the forced-choice rating tool requires item analysis, it is somewhat laborious and painstaking in the development stage. Its application in the operating situation is straightforward and simple.

The forced-choice system has shown considerable promise in the few practical as well as experimental situations in which it has been used. Industrial personnel management in the future may find it valuable in the rating of supervisors, foremen and sales personnel as well as in the evaluation of rank and file workers. Managers considering the installation of the forced-choice system of merit evaluation will need the help of a personnel technician in

CONFIDENTIAL



PERFORMANCE REPORT

for

Field Technical Personnel

FORM F

Directions

This form is made up of blocks of five statements which have been used to describe field technical personnel. Read all the statements in each block carefully; then decide which one of the five statements is MOST DESCRIPTIVE of the man. Under the word Most, circle the letter that goes with that statement. You may rightly think that no one of the five statements is an exact description of the man, but, nevertheless, you must make the best choice you can. Then, from the four remaining statements, select the one that is LEAST DESCRIPTIVE of the man and his work performance, and, under the word Least, circle the letter that goes with that statement. Mark all of the blocks in the same manner -- select one statement as MOST DESCRIPTIVE and another as LEAST DESCRIPTIVE. Neither omissions nor ties are allowed.

You may feel that some of the judgments required are very close, but it is this closeness of judgment that produces trustworthy reports. Except for the two circles, make no marks or alterations in the blocks. If you desire to explain or qualify some of your judgments, use the space labeled REMARKS ON PRECEDING SECTION on the back page of this form.

When you have completed all of the blocks, turn to the back page of this form and fill out the SUPERVISOR'S SUMMARY in accordance with directions given on that page.

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A21

Source: Employee Relations Dept., Standard Oil Co. (N.J.), *Made to Measure*, Appendix, Chart A21.

FIG. 17.5. Performance report for field technical personnel.

Most	Least	1.
A	A	Appreciates the problems of others.
B	B	Needs more practical experience.
C	C	Doesn't see the over-all picture.
D	D	Works on things he is interested in.
E	E	Takes considerable pride in his personal appearance.

Most	Least	2.
A	A	Lacks thoroughness.
B	B	Creative.
C	C	Lacks self-confidence.
D	D	Is not always punctual.
E	E	Is unbiased in opinions.

Most	Least	3.
A	A	Doesn't like to admit his own errors.
B	B	Has a "big head."
C	C	Has excellent working knowledge of basic principles.
D	D	Lacks real interest in his work.
E	E	No foreseeable limitations in ultimate advancement.

Most	Least	4.
A	A	Is amenable to criticism.
B	B	Has confidence of operating people.
C	C	Has trouble grasping things rapidly.
D	D	Daydreams.
E	E	Has a genuine interest in his job.

Most	Least	5.
A	A	Capable of correlating masses of data and determining influence of fundamental variables.
B	B	Tends to overwrite and give too many details.
C	C	Always accepts additional work with a smile.
D	D	Believes that this company is the best in the business.
E	E	Works slowly.

Most	Least	6.
A	A	Requires constant supervision.
B	B	Sometimes acts as if he feels he is being imposed upon.
C	C	Sticks to business.
D	D	Can handle many types of problems well.
E	E	Not very friendly.

Most	Least	7.
A	A	Doesn't think other departments do a good job.
B	B	Pleasant to work with.
C	C	Diplomatic.
D	D	Needs direction in his work.
E	E	Does more than he is asked to do.

Most	Least	8.
A	A	Possesses all the ordinary virtues.
B	B	Prefers job security to possibilities for greater personal advancement.
C	C	Can plan long-range programs.
D	D	Does not distribute his energies effectively among his various duties.
E	E	Somewhat egotistical.

Most	Least	9.
A	A	Is unable to advance higher due to general attitude.
B	B	Tends to sacrifice accuracy for speed.
C	C	Holds his temper.
D	D	Usually has a good alibi.
E	E	Is resourceful. If one proposal fails, he is ready with another.

Most	Least	10.
A	A	Lacks confidence of co-workers.
B	B	Doesn't talk very much.
C	C	Is not easily discouraged.
D	D	Outstanding technical ability.
E	E	Is not tied down with detail work.

Most	Least	11.
A	A	Lacks aggressiveness.
B	B	Results of his work have to be carefully gone over for errors.
C	C	Expresses thoughts extremely well in letters or reports.
D	D	Agrees with superior regardless of his own feelings on matters.
E	E	A very conscientious worker.

Most	Least	12.
A	A	Applies practical knowledge.
B	B	Has an analytical mind.
C	C	Isn't going anywhere.
D	D	Tends to be argumentative.
E	E	Does every job but his own.

Most	Least	13.
A	A	Learns quickly.
B	B	Needs to develop a little more decisiveness.
C	C	Talks too much.
D	D	Spends too much time on unimportant things.
E	E	Accepts suggestions readily and willingly.

Most	Least	14.
A	A	Organizes his work well.
B	B	Has inferiority complex.
C	C	Turns out accurate work.
D	D	Work sheets not always orderly and neat.
E	E	Ability to analyze a problem is fair.

A22

FIG. 17.5. (Cont.)

setting it up. The statistical spade work and item analysis procedures essential to the success of this plan can be directed only by a specially trained person.

An important contribution to rating system evaluation is a re-

Most	Least	15.
A	A	Knows how to instruct others.
B	B	Domineering.
C	C	Always willing to consider suggestions.
D	D	Puts his heart into his work.
E	E	Is above average of technical employees in intelligence and technical competence.

Most	Least	16.
A	A	Concentrates well.
B	B	Is not familiar with Company policy.
	C	Aggressive.
	D	Passes mistakes off on others.
E	E	Doesn't mind extra work, the more the better.

Most	Least	17.
A	A	Will do anything you ask him to do.
B	B	Is methodical.
C	C	Is imaginative.
D	D	Often shows poor judgment.
E	E	Not capable of handling more responsibility.

Most	Least	18.
A	A	Lacks enthusiasm.
B	B	Has reached the limit of his capacity.
C	C	Easily adapts himself to social groups at all levels.
D	D	Willing to spend considerable effort in acquiring mastery of a new situation.
E	E	Persuasive.

Most	Least	19.
A	A	Controls his emotions.
B	B	Goes out of his way in assisting others.
C	C	Is biased in his decisions.
D	D	Is sharp to grasp anything.
E	E	Exhibits very little intellectual curiosity.

Most	Least	20.
A	A	Does routine work well.
	B	Has excellent ability for analyzing.
	C	Is not a convincing speaker.
D	D	Does not try to understand relationship of his job to others.
E	E	Handles more than one job at a time.

Most	Least	21.
A	A	Is not too eager to present new ideas.
B	B	Poor faculty for discerning errors.
C	C	Too elaborate in some projects that don't require it.
D	D	Makes calculations rapidly and accurately.
E	E	Appreciates the problems of others.

Most	Least	22.
A	A	Is good at devising methods for improving his ideas.
B	B	Remains cool and calm at all times.
C	C	Is not suited for supervisory work.
D	D	Doesn't see the operator's point of view.
E	E	Has trouble with memory.

Most	Least	23.
A	A	Sets a very high standard.
B	B	A typical, average man.
C	C	Has an excellent sense of humor.
D	D	A slow and methodical thinker.
E	E	Very conscious of real or imagined slights.

Most	Least	24.
A	A	Is not a convincing speaker.
B	B	Profits by past mistakes.
C	C	Sometimes off the beam in logic.
D	D	Stubborn.
E	E	Should receive a promotion to the first suitable opening.

Most	Least	25.
A	A	Arrives at logical conclusion from data.
B	B	Is willing.
C	C	Gets along extremely well with all associates.
D	D	Hates to admit being wrong.
E	E	Unsuited to present type of work.

Most	Least	26.
A	A	Doesn't express himself orally too well.
B	B	Has a good memory for figures.
C	C	Seeks advice when needed.
D	D	His conclusions do not always follow his premises.
E	E	Is constantly trying to improve methods of doing a job or producing a product.

Most	Least	27.
A	A	Unable to stick to subject in conversation.
B	B	Takes responsibility for his own work.
C	C	Exercises good judgment.
D	D	Appears to appreciate himself very much.
E	E	Not adaptable.

Most	Least	28.
A	A	Untidy in personal appearance.
B	B	Studies a problem at length before making decisions or conclusions.
C	C	Is not a very clear thinker.
D	D	Works rapidly without sacrifice of accuracy.
E	E	Is not considerate of others.

A23

FIG. 17.5. (Cont.)

port by Taylor and Wherry [21] who studied the relative amounts of bias found in graphic and forced-choice rating procedures. The

[21] E. K. Taylor and R. J. Wherry, "A Study of Leniency in Two Rating Systems," *Personnel Psychology*, IV (1951), pp. 39–47.

study involved hundreds of cases and utilized data obtained in the extensive research conducted in connection with the development of the Army Officer Efficiency Report. Bias was considered to be reflected in changes occurring in the mean values and the shapes of the distributions of ratings between two situations: where ratings were made with the understanding that they would be used solely for research purposes; where ratings were to be used for administrative purposes. The increase in mean values from the experimental to the administrative situation (leniency error) was much greater for graphic ratings than for forced-choice. The shape of the distribution curves for the forced-choice method was about the same in the two situations. For the graphic method, there was marked increase in skewness of the distribution when used in the administrative situation, and the discrimination at the high end of the scale was greatly reduced.

Although it is thought that the forced-choice method will be developed to a considerable extent in the future, it is actually used infrequently at the present time. Many industrial psychologists consider it to be in the experimental stage. The next section will consider further aspects of preparation of more popular types of rating scales.

Considerations in Developing Rating Scales [22]

Plans for preparation of a graphic rating scale may be made in anticipation of certain problems. Some problems encountered are: selecting the performance items to be included, determining the significance of relationships of the items, developing adequate and clear definitions, weighting the items, and deciding the number to include.

Selection of performance items to be rated. Decision as to the performance items to include depends on the objectives of the rating program. If the purpose is to locate employees of supervisory calibre, the scale will include a number of items concerned with the employee's ability to direct and get along well with others, also his resourcefulness and ingenuity when faced with new problems. The traits selected would be those characteristic of the work actually performed. Items might include: working accurately, being on time, correcting his own errors, and accepting fair criticism.

[22] An excellent discussion will be found in Reign H. Bittner, "Developing an Industrial Merit Rating Procedure," *Personnel Psychology*, I (1948), pp. 403–32.

The performance items included should be as distinct from one another as possible without overlapping in what is being measured. If ten or twelve traits are used, these sometimes can be reduced by statistical analysis to three or four factors which yield as accurate a final score as did the ten or twelve original items.[23]

The definition of each of the selected job characteristics should of course be in simple and clear language. It has been found that adjective-adverb definitions are better than none at all; descriptions by phrases are superior to adjectives or adverbs; and definitions by means of sentences or paragraphs superior to phrases.[24] Defining the trait in terms of observable behavior may be better, Yoder [25] suggests. The rater merely checks the behavior he believes to be characteristic of the ratee.

Use of job analysis and critical requirements. Flanagan discusses the possibility of an approach to employee evaluation through the establishment of critical requirements for different jobs. These critical requirements can be established only by the careful study of the behavior of the workers on the job, that is, by job analysis. A critical requirement is defined as "a requirement which is crucial in the sense that it has been responsible for outstandingly effective or definitely unsatisfactory performance of an important part of the job or activity in question." [26]

He feels that determination of critical requirements in terms of behavior is a necessary condition to an adequate definition of the job in terms of behavior.

Number of traits. According to Mahler's survey [27] the number of traits included on present scales in industry is anywhere from 1 to 33. Probst's check list had more than 100 items. The average number used varies with the type of group being rated. The average for wage groups is approximately 8; for clerical and nonsupervisory

[23] E. Ewart, S. E. Seashore, and J. Tiffin, "A Factor Analysis of an Industrial Merit Rating Scale," *Journal of Applied Psychology,* XXV (1941), p. 485.

[24] R. C. Smyth and M. J. Murphy, *Job Evaluation and Employee Rating* (New York: McGraw-Hill Book Co., Inc., 1946), p. 220.

[25] Dale Yoder, *Personnel Management and Industrial Relations,* 3rd ed. (New York: Prentice-Hall, Inc., 1948), p. 341.

[26] John C. Flanagan, "Critical Requirements: A New Approach to Employee Evaluation," *Personnel Psychology,* II (1949), p. 420. *Ibid.,* pp. 419–25; see also Flanagan, "A New Approach to Evaluating Personnel," *Personnel,* American Management Association, XXVI (1949), pp. 35–42; and Flanagan, "Job Requirements" in *Current Trends in Industrial Psychology* by W. Dennis, *et al.* (Pittsburgh: University of Pittsburgh Press, 1949), pp. 32–54.

[27] Walter R. Mahler, "Some Common Errors in Employee Merit Rating Practices," *Personnel Journal,* XXVI (1947), p. 69.

employees, 9; for supervisors and executives, 12. This is not illogical in light of the increasing complexity of job performance requirements encountered as one rises in the organization.

The number of items to be rated should be determined by the purpose of the rating as well as by the type of employee being rated. For entering results of rating on the employee's permanent personnel record card, perhaps no more than 5 items are necessary. However, for motivational, training, and counseling purposes, it may be desirable to rate on as many as 10 or 11 aspects of performance to provide the supervisor with more suggestive information for counseling the employee. Statistical analysis of one rating situation by Tiffin [28] revealed that only 3 factors or influences were operating in judgments of 12 traits. These factors he named *performance on the job, quality of work,* and *health.* Raters generally do not like a small number of traits since they do not have confidence that such rating is sufficient. A compromise can be made in order to get their support of the merit-rating program. Enough traits should be included to cover the job but not so many as to duplicate each other or to discourage the rater before he begins.

Weighting the traits. In recent years it has been recognized that equal weighting of each quality may adversely influence the value of total ratings. This is true especially if certain qualities are more important to the job than others. Thus, more weight should be placed on the appearance of a sales employee who is required to attend to grooming and dress than on the appearance of a shop worker for whom such details are of little importance. For this reason, many firms now weight individual characteristics differently for different jobs. Weighting of the traits according to the job requirements of the ratee group seems essential and must be handled in a careful manner. Perhaps this phase of planning should be handled by a technician.

Number of degrees for each trait. Four or five degrees for each trait is usually about right for a graphic type of scale.[29] If there are too few, the distinction will be so rough that it will be meaningless. If there are too many, obviously the rater will have difficulty in discriminating between degrees. Theoretically there should be as many degrees as there are just noticeable differences.

[28] Joseph Tiffin, *Industrial Psychology,* 3rd ed. (New York: Prentice-Hall, Inc., 1952), pp. 331–36.

[29] Walter R. Mahler, "Some Common Errors in Employee Merit Rating Practices," *Personnel Journal,* XXVI (1947), p. 73.

Order of the traits. Arranging the job performance characteristics in the order of their statistical validity and reliability is sometimes of importance. If there is a carry-over from item to item of a "mental set," or preconceived attitude toward the ratee or "halo" (known as the halo effect), it will be determined by the impression brought about by the first item being rated. Consider, for example, the influence which the order of the following three traits might have in making a decision:

1. Job Performance
2. Promotional Possibilities
3. Personal Qualities

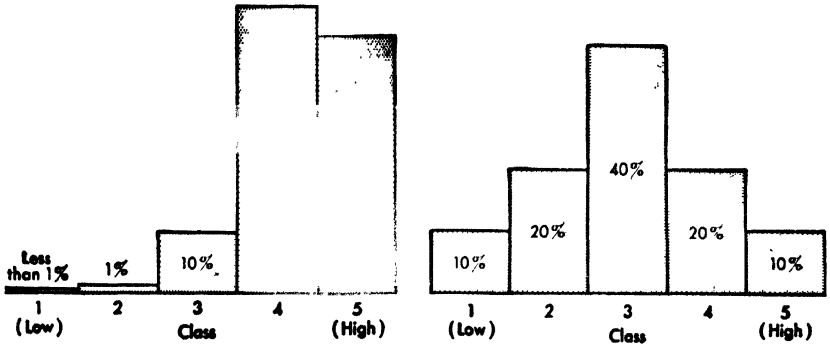
What would be the attitude toward rating an individual's promotional possibilities if his job performance had been rated low? Probably a low rating on promotional possibilities would seem logical to the rater. Likewise, if personal qualities preceded promotional possibilities, a very pleasing person might receive a favorable promotional possibilities rating, whereas had the rating been made after a consideration of job performance, the rating on this factor might be lower. The best order of items can often be determined by study of the items. Statistical analysis will help obtain the optimal order of the traits. Through experimentation, the order which is most valid and reliable can be determined.

As suggested at the beginning of the chapter, ratings in isolated cases in the past have been used unfairly by supervisors to discriminate against certain employees and play favorites with others. The rating procedure thus unfortunately offers a way to manufacture evidence that an employee is undesirable.

Just as injurious is the conception that once a rating has been made across the board, a perfect, lasting measure of the worth of all employees is guaranteed. It is pointed out that workers change in their performance on the job; also, as new employees enter the organization structure, old relationships are upset. It is only through systematic ratings over a period of time that a dependable cumulative record on each employee can be obtained to back up personnel actions. Even then, the ratings themselves are not to be recommended as the only basis for personnel actions. At best, they should be used in conjunction with other indices of the performance and potential worth of each employee.

Misuse of Ratings in Practice

Often a rating plan is doomed to early failure because the raters have not been sufficiently trained in the theory, use, and pitfalls of ratings. Rating forms are sometimes given to a rater without preparing him for the rating job either by a training session or through a manual of instructions. Figure 17.6 shows what may happen when raters are untrained. Most ratees were placed on the high end of the rating scale. The tendency to rate nearly all persons above average on all traits is called the *lenient tendency* or *generosity error*. Untrained raters seem to feel more comfortable if they are "kind" to their ratees. A type of plan such as the forced distribu-



Source: Willard E. Parker, *Human Relations in Supervision* (New York: McGraw-Hill Book Co., Inc., 1951), pp. 280–81.

FIG. 17.6. Actual distribution of ratings on over 1,000 men, and the way the distribution of ratings might have looked if raters had been properly trained and had followed instructions.

tion plan would minimize this error of leniency, since it distributes the performance of employees in a normal curve—10-20-40-20-10.

The use of more than one rater will decrease the likelihood of ending up with ratings of relatively little value. Some check on the reliability of the evaluation is possible if at least two ratings are available for each employee.

Ratings based on observable behavior (performance) are likely to be better than those of inferred traits, such as industriousness. In the merit rating for office employees (see Fig. 17.1), only observable characteristics of performance were presented for evaluation.

If the rating system has been carefully conceived, items will not be included for rating which are not actually present as part of the job as shown by job analysis; for example, "working rapidly over

long periods" would not be included when this is not called for on the job.

Abstract traits like "loyalty" or "honesty" will not be included when it is possible to present concrete behavior or performance items. Such traits do not refer to a single type of activity and, accordingly, tend only to create confusion in the mind of the rater when he tries to place a measuring-stick against the performance he observes.

Frequent use is still made of general terms such as "very good," "below average," and "excellent." Some companies are beginning to provide detailed descriptions of on-the-job performance as a guide to the rater in making his decisions.

A total rating score derived by adding up the scores on individual items may not always be useful or meaningful. Numerical scores alone are dangerous to use as a basis for making decisions since two employees may have the same total score and yet have an entirely different pattern of work characteristics. In addition, each numerical rating is subject to error which, in some cases, may be very large. It is recognized that recording numerical equivalents of ratings is merely a convenience from an administrative point of view.

Summary

If not properly done, merit ratings incur the distrust of employees who claim that raters have favorites. A merit-rating committee, comprised of members of the employee group as well as members of management, may be called to work out the system for use. This same committee follows up the program for its improvement; in some companies it reviews the ratings.

The merit-rating plans discussed are representative of kinds which are in use. The simple graphic rating scale is the most popular (favored by 85 per cent in a survey) although open to several criticisms. The man-to-man comparison system, which depends upon the development of a master scale for each performance item, is time-consuming and cumbersome, and, as a result, its use is decreasing. The ranking method is effective in a moderate sized group of 10–30 ratees; its simplicity accounts for its widespread use. A system, paired comparison, was developed during the middle of the nineteenth century. Each ratee is compared with each other ratee of the group; a systematic elimination of the less valuable of each pair yields a ranking for each individual. The forced choice

plan, the latest variation of the paired comparison, is coming into favor as a sound and workable system. It is highly technical in the developmental stages although relatively simple in use. The check list form of rating is made up of a series of remarks concerning important aspects of the employee's job performance. The rater merely checks any of these which are applicable to the employee.

Care must be exercised in the construction of any rating scale. The merit-rating procedure lies open to malpractices if it is not supervised properly and followed-up consistently.

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18 Evaluating the Job

HOW CAN THE JOB of a washroom porter be compared in terms of wages to that of a machine operator? Are the unpleasant duties of the porter worth more than the skill and training possessed by the machine operator? How much should a chemist earn in relation to a foreman supervising 100 employees? Should we pay more for the responsibility of the foreman than for the dangers faced by the structural steel riveter?

In essence, job evaluation is simply holding up a yardstick to all the different jobs in the company. The task is to create the yardstick. The "length" or value of a specific job can be perceived to bear a definite relation to all other jobs being measured; for example, the job of a floorsweeper is "shorter" or of less over-all value than that of a foreman. This relationship can be judged and agreed upon by everyone participating in the job evaluation. The yardstick must be used in an orderly manner, to measure and compare the "length" of jobs. It must be acceptable to employees and management alike if the evaluation is to be conducted in a fair, objective way, gaining and holding the support of all. The system developed —the yardstick—must be easily understood if it is to be approved and accepted.

Job evaluation as a formal procedure has developed within the last 40 years. One study showed that over one-third of retail firms surveyed reported using one of the several formal job evaluation systems.[1] Another survey in 1951, also of department stores, re-

[1] An unpublished survey by R. M Bellows, M. F. Estep, and D. K. Cox, *Department Store Personnel Practices Survey*, 1947.

ported only 22 job evaluation plans in operation in 207 firms surveyed, although an additional 62 firms were currently installing or planning to install plans.[2]

A survey made by the Industrial Relations Section of Princeton University disclosed that 56 per cent of the companies trying job evaluation had been generally satisfied with their plans, 15 per cent definitely dissatisfied, and 29 per cent had had both satisfactory and unsatisfactory experiences.[3]

Job Evaluation Viewed As Systematic Wage Negotiation

Where only one man is responsible for the entire production and operation of an establishment, problems of wages are nonexistent. That man receives all income from the enterprise, whether he calls this money "wages" or "earnings" or "profits." However, once the man hires an assistant to help him with the duties of producing goods and operating the establishment, he must immediately review in his own mind how much the services of the assistant shall be worth. The assistant receives as much money for his participation as he and the owner agree upon. He continues to work for this sum until one of the parties to the agreement finds cause to suggest (or demand) changing it.

Most companies today are far removed from this simple way of bargaining and adjustment of wages. Although only 2 per cent of all companies belong in the "Big Business" category, this represents 55 per cent of the people employed in business.[4] Several companies in the United States employ as many as three or four hundred thousand persons. Under such conditions it is virtually impossible to conduct any sort of individual bargaining for wages.

Inspection of present wage payments of most firms will probably reveal a widespread lack of uniformity in different departments of the firm for the same job. Workers are keenly aware that unjustifiable differences in pay rate exist from one position to another. If they should discover that pay inequalities exist among positions that appear to be the same, plant-wide unrest and grievances would be created. Very often these differences have resulted from the

[2] William R. Spriegel and Elizabeth Lanham, "Job Evaluation in Department Stores," *Personnel Series, No. 2* (Austin, Texas: University of Texas, 1951), p. 1.

[3] H. Baker and J. M. True, *The Operation of Job Evaluation Plans: a Survey of Experience* (Princeton: Industrial Relations Section, Princeton University, 1947), p. 13.

[4] Committee on Economic Development, "Meeting the Special Problems of Small Business," *A Statement on National Policy* (June 1947), pp. 13–19.

influence of certain individuals who have been able to talk supervisors into putting through a rate increase for them—"the squeaking wheel gets the grease."

Job evaluation does not remove the judgment factor in appraising the worth of the jobs. However, it does call for the combined judgments of several individuals in preparing the final system and also provides a scheme for this evaluation to be done in an orderly way, with checks and controls on the reliability of the judgments. In this sense it is a peaceable way of negotiating wages and should tend to prevent strife based upon wage inequalities.

A job evaluation program helps to formulate sound policies of wage and salary administration by

1. establishing the relative worth of each job in the plant;
2. setting up a guide for estimating the wage rate of a newly created job;
3. furnishing a framework to keep the company rates in line with community rates for a similar job;
4. supplying a structure within which employees may progress along defined lines to a higher wage grade;
5. minimizing grievances about wages by providing a way of keeping the entire plant informed of the reasons for wage decisions.

The Job Evaluation Program

Before discussing specific systems of job evaluation, it is well to outline the general procedure for organizing a program. These basic steps are suggestive of ways which help insure participation and cooperation of employees.

Write the plan. The plan of the program is worked out by specialists and presented in written form. It may be presented to the employees either by a member of top management or perhaps jointly by union and management. The written plan must anticipate the objectives and needs of the various department heads. One of the objectives of the program will be to remove unfair wage differences. The plan will also state the several uses for the results of the job analyses.

Included in the written plan is an estimate of the number of personnel needed, facilities needed, and the cost of the project. These conditions will vary with the size and type of the organization and with the scope of the program. The time required to complete the

study depends partly on the number of jobs to be analyzed and the number of job analyses that can be written per day. It is possible to use many analysts and finish the evaluation in a short time, or one or two analysts may be used over a longer period of time. It is frequently desirable to allow the program to extend over a greater time period, so that familiarity with the system may encourage the employees to accept it. If the program is developed hastily, there is less opportunity to publicize its purposes.

The cost of a job evaluation program depends on several factors. These include the size of the plant, the availability of personnel to assist in initiating and administering the program, and how swiftly the company wants the work completed. A large steel company which had evaluated 3,000 jobs, estimated that the cost of installation was about .5 per cent of the annual payroll.[5] Another study reported the same percentage, with maintenance costs about .1 per cent of the payroll.

Select the job evaluation committee members. Selection of committee members for the program must be done with care. The job evaluation committee is to approve in session each phase of the program. Such a committee usually consists of representatives from management, from labor, and from the department in which the job analyses are currently being made and, of course, the chief job analyst. These people should be impartial and emotionally stable —"troublemakers" are a definite handicap to a committee effort. Worker participation in such committee meetings has communication value. The committee discusses and verifies the description and specification for each job, evaluates the job by rating it, and ultimately decides the wage rate range in which it falls. Since few officers in a company are familiar with all jobs, they receive indoctrination and education concerning the various jobs in the firm.

For most effective coordination of efforts, this group ought to be trained in the technique of making judgments objectively. This can be done by having the members of the group demonstrate their skill in writing good job descriptions, in recognizing weaknesses and omissions in the job analyses, and, finally, by experimenting with a miniature job evaluation. As each member ranks the jobs according to their worth, his judgment can be checked against the consensus of opinion of the group. Where he has deviated grossly from the average, this can be pointed out to him, with suggestions for

[5] H. B. Rogers, "What's Your Job Worth?" *Iron Age,* CXLIV (1939), pp. 42–45.

increasing the accuracy of his judgments. Such preliminary training of the committee precedes the job evaluation proper.[6]

Select the personnel. When the written plan is authorized and the committee chosen, the necessary operating personnel may be selected and assigned duties. It is assumed that management has discussed how quickly they expect the evaluation to be completed, and have authorized the number of analysts to be used in line with the time allowed for the project. The selection of the job analysts could be based on the specifications set forth in chapter 9, "Job Analysis: A Basic Tool." It may be expedient to call in a consultant to aid in developing the program, one who is familiar with the operation of various plans of evaluation and the technical aspects of interpreting the results.

Prepare the job analyses. One of the first tasks on the job evaluation agenda is to get the analyses written, in one of the following ways, or a combination of them:

1. by the employees on the job;
2. by the foreman, supervisor, or department head;
3. by a job analyst through observation and discussion with employees and supervisors.

As each job analysis is written, it must be edited and inspected for consistency and completeness before it is presented to the job evaluation committee for approval. How quickly this can be done depends upon the frequency of the committee meetings and the amount accomplished during sessions. Extreme care in this phase is stressed. This discussion of the description of duties, skills, and requirements of each job is vitally important to the quality of the resulting wage and salary system. Any differences in opinion are discussed to the satisfaction and mutual agreement of the group. When all jobs of the program are analyzed and approved, the job analysis phase is completed.

Convert the products of the job analyses into usable form. Some of the data gathered in the job analyses can be used immediately as by-products of the job evaluation program. For example, job specifications can be easily transferred to cards for the employment interviewer to use. The job analyst may have observed hazardous conditions which safety engineers might investigate for remedy. Special training areas recognized from a survey of analyses may be emphasized. New and simpler job methods are sometimes sug-

[6] Edward N. Hay, "Training the Evaluation Committee in Factor Comparison Job Evaluation," *Personnel*, American Management Association, XXIII (1946), pp. 46–56.

gested. The organization chart may be drawn directly from the job relationships listed in the job descriptions. These by-products can be realized prior to completion of the job evaluation phase of the program.

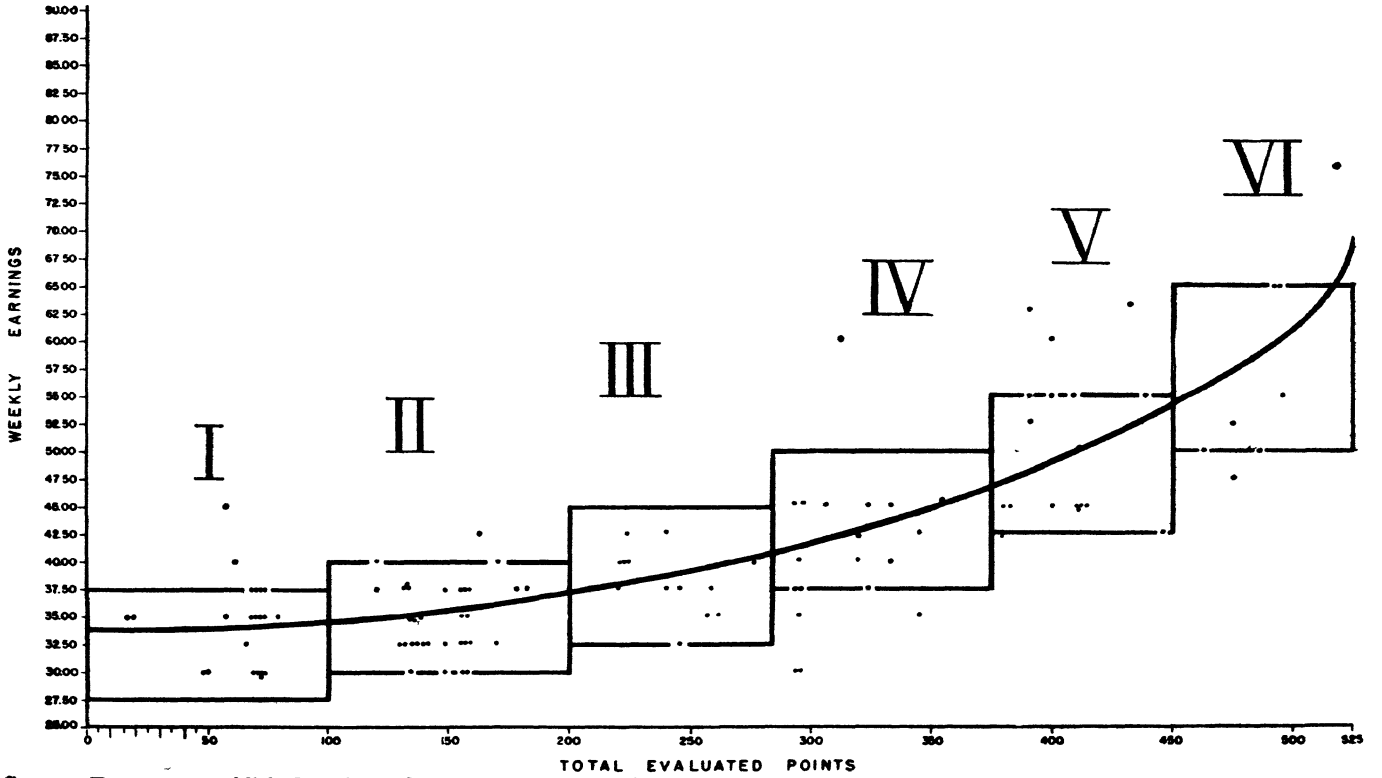
Perform the evaluation. Regardless of the system of evaluation used (to be discussed later), the committee decides the relative worth of the jobs. This is the major task of comparing the characteristics unique to each job with the end in view of placing it fairly on a company-wide wage scale. Close agreement among committee members is possible if training in the technique of making judgments has preceded the formal evaluation.

Make community wage survey. To secure a check on the worth of the company's jobs in comparison to similar jobs in the community, a wage survey is made. The rates for a few key jobs which are similar in different companies are compared critically. Rates unreasonably out of line with the average of the community can be adjusted over a period of time. There will probably be jobs in other companies with the same job titles as those in this evaluation; this does not mean that job duties are the same. Wage surveys are thus to be used with caution.

Assign wage rates to jobs. When the present wages are plotted on a graph against evaluated ranks of jobs, jobs which are out of line are easily spotted. The points tend to fall in an inclining trend line (see scattergram in Figure 18.1) and generally cluster fairly closely. Minimum and maximum limits for each job are decided upon. These are often referred to as labor grades. Five labor grades are shown in Figure 18.1. A labor grade is a step interval, or a rate range, preferably based on job evaluation. This rate range is in terms of money, such as \$50–\$56 per week. Workers who are earning less than the minimum for their labor grades can be raised as quickly as is practical, but those above the maximum rarely, if ever, should be lowered (especially during a period of increasing rates). Workers earning more than their jobs are worth can be placed on higher-paying jobs if their worker characteristics make it possible. Where change is not possible, it is better to leave the rate alone and let turnover take care of the adjustment.

The National Industrial Conference Board conducted a survey in 1950 of the job evaluation plans of several hundred companies.[7] Seventy companies furnished information about how they handled

[7] Herbert S. Briggs, "Cost of Installing a Job Evaluation Plan," *Management Record,* National Industrial Conference Board, Inc., XIII (1951), pp. 422–23.



Source: From an unpublished study by Roger M. Bellows, 1948.

FIG. 18.1 Scattergram of jobs within a women's apparel company, showing relation of evaluated points to earnings.

employees under the minimum rate: 26 said they raised the employees immediately, 8 said they raised them within 6 months or some other definite period, and 36 said they raised them gradually. The cost of adjusting salaries to the minimum was expressed as a percentage of the total payroll of the evaluated employees and reported by 37 companies. Thirteen said it cost less than 1 per cent of the total payroll of the employees evaluated to adjust the salaries to the minimum; 3 reported 1 per cent; 6 reported 2 per cent; 5 reported 3 per cent; 2 reported 4 per cent; 6 reported 5 per cent; 1 reported 7 per cent; and 1 reported 15 per cent.

Merely preparing job analyses and affixing wages to each job does not constitute a completed job evaluation program. The old relationships of jobs may be altered each time a new job is introduced, or as technological changes make old jobs obsolete. Job evaluation, therefore, is a dynamic system which is constantly undergoing readjustment. For this reason, a trained job analyst is normally retained on the staff to maintain the technical aspects of the system.[8]

As the boundaries of wage payment are set, all job incumbents are, in many companies, systematically reviewed for their position within the rate range. This is done by one of several systems of employee evaluation or "merit rating" (see chapter 17). Heretofore, the emphasis has been placed on the worth of the jobs themselves. Now the worth of the men performing the jobs is considered. As a man's worth is shown to be greater to the company, his wage is increased within the limits of the labor grade (or rate range) for his particular job. As he reaches his maximum, it may be possible to promote him to a higher wage bracket. In some companies, particularly in shops, a man's position within the rate range is determined partly or wholly on the basis of seniority. Seniority may be taken into account along with merit evaluation for final determination of pay rate.

Methods of Job Evaluation

There are four basic types of job evaluation plans, progressing from a fairly simple plan to more complicated procedures:

1. The Ranking Method
2. The Classification Method

[8] A check list of things to be done in maintaining an up-to-date job evaluation is described by Kathryn C. McDermott, "Job Evaluation Maintenance," *Personnel Journal*, XXXVI (1947), pp. 222–26.

3. The Point Methods
4. The Factor-Comparison Method

Smyth [9] studied job evaluation plans in 72 companies. He found that ranking and classification systems were used by 6 per cent of the companies, point methods by 81 per cent, and factor-comparison methods by 13 per cent.

Ranking System—Classification System		Point System—Factor Comparison System	
The Job Analysis—A narrative description of the job with the duties, responsibilities, degree of difficulty, and required qualifications clearly brought out.		The Job Analysis—A narrative statement of duties and qualifications. In addition, the jobs are broken down into the important compensable factors, such as required experience and training, mental effort, and physical effort. The amount to which each factor is present in the job is indicated by a short narrative statement.	
Method of Relating Jobs	Method of Relating Jobs	Method of Relating Jobs	Method of Relating Jobs
Jobs are ranked in their order of relative difficulty or value to the company, and grade levels are sometimes defined after the jobs have been ranked.	Jobs are allocated to grade levels which are defined arbitrarily prior to evaluating jobs.	Jobs are related by factors. A restricted number of fairly specific factors are selected for application to a limited number of types of work. The point values are predetermined before analysis of jobs and are decided arbitrarily, and the degree of each factor is expressed by a definition.	Jobs are related by factorial comparison. The factors used are assumed to be fundamental to all jobs and of universal application; the point values are set after analysis of jobs from existing rates of key jobs, and the degrees of each factor are expressed by sample jobs.

Source: *Information Manual on Job Evaluation Systems.* Washington: War Manpower Commission Bureau, 1943, p. 24.

FIG. 18.2. Comparison of the four basic systems of job evaluation.

A comparison of the four basic systems is presented in Figure 18.2. There are also many other systems which adapt parts of these plans to fit the needs of the individual organization.

The ranking method. The simplest and probably the earliest job

[9] R. C. Smyth, "Job Evaluation Plans," *Factory Management and Maintenance,* CX (1952), pp. 118–21.

evaluation system is the ranking method, sometimes nicknamed the "card-sorting" system.[10] By this method, each job title is recorded on a small card and a pack of these cards is given to each job evaluation committee member. The committee members are asked to rank the jobs in order of over-all worth from lowest to highest. Members are guided by their own interpretations of job characteristics, such as difficulty of work, training or education requirements, supervision given and supervision received, responsibilities inherent in the job, and the working conditions. The average of rankings by the different members of the committee determines the order of jobs. (See Table 18.1.)

After a rank or order has been obtained for the jobs in each department, it is necessary to combine them into a grand ranking for

TABLE 18.1

Example of Jobs Arranged in Average Rank by Committee Members *

Order of Rank	Job Title
16	Tool and die maker A
15	Tool inspector A
14	Machinist
13	Carpenter A
12	Pipe fitter A
11	Machinist B
10	Turret lathe operator A
9	Inspector B
8	Expediter
7	Painter
6	Carpenter B
5	Engraver
4	Utility inspector
2.5**	Truck driver
2.5**	Milling machine operator B
1	Assembler

*Source: Adapted by permission from *Job Evaluation and Employee Rating*, by R. C. Smyth and M. J. Murphy, p. 12. Copyrighted 1946 by McGraw-Hill Book Co., Inc.
**In case of ties, equal ranks are assigned to both jobs.

the entire organization. It will probably be found that few people in the organization have had experience enough to judge the relative value of the jobs from one department to another. Certainly members of management should sit in on this phase of the ranking, to insure sufficient perspective.

While such a system is readily understood, it is open to criticism.

[10] E. N. Hay, "Designing and Administering Job Evaluation Systems," *Conference Board Management Record*, National Industrial Conference Board, Inc., Vol. VI, (1944), pp. 87–90.

Ranking as it is done here may easily be influenced by the rankers' impressions of the performance of the present incumbents or by the salaries being paid. The opinion of one ranker may thus be entirely different from the opinion of another.

Another criticism is that when the total evaluation in terms of ranks has been completed, it is assumed that the intervals between successive jobs are equidistant and wage rates may be set accordingly. This is particularly false if the top ranking job is, for example, a department head and the next nearest job is a bookkeeper.

The classification method. The classification method is a refinement of the ranking method. The committee members inspect the job analyses to determine the basic types of duties or levels of work which are present in the group of jobs being evaluated. Thus they may find such functions as office work, creative work, administrative work, etc. They define major grades or levels of these functions which are common in some degree to all jobs. (See Figure 18.3 for an example of description of each major grade.)

One by one the job descriptions are read and the duties in performing the job are compared to the defined grades or job classes. The jobs are then classified within specific grades. It is apparent that the discriminating line between grades must be carefully drawn and generally understood if classification is to be accurate.

The classification system is open to the same criticisms as the simple ranking method: the judgments of the committee allocating the jobs into grades or job classes are apt to be influenced by knowledge of the present salary attached to the job or by the effectiveness of the present incumbent. There is no safeguard provided to prevent thinking of the man on the job rather than the job itself. Because each member of the committee must make a subjective interpretation of the job's requirements, inequalities of the old system might be perpetuated.

Notwithstanding the foregoing criticism, the classification system can be used successfully if the company is small and if the jobs are not too complex. Its great value lies in its simplicity.

In other instances, a number of classifications are set up and defined. The level of each job is based on its duties and minimum hiring requirements, determined by job analysis. Each level is assigned a pay rate range. Jobs in government service are usually classified according to this method.

Positions in the governmental public service can be analyzed and

Job Class or Grade	Description of Job Classes
A	Work of office or messenger-boy character.
B	Simple operation. Use a few definite rules. Routine operations performed under close supervision. 1. Simple clerical work requiring no experience or training, and no experience on simple machines such as sorting, punch, ditto, and adding machines. 2. Simple clerical work but requiring some experience to perform job satisfactorily. 3. Outside training but little experience on more difficult machines such as typewriter, non-listing calculators, multigraph, etc.
C	Requiring recognized clerical ability. Application of a large number of rules though definite and specific; or considerable experience on machines listed under B-3. 1. Requiring recognized clerical ability but the exercise of no definite responsibility, either because of the character of the work or the closeness of the supervision. 2. Experienced operators on following machines: typewriter, non-listing calculators, bookkeeping, and tabulating machines. 3. Work of C-1 character but of more responsible nature.
D	Requiring complete and intensive knowledge of a restricted field. 1. As above. 2. Work of D grade plus supervisory responsibility of a minor character.
E	Requiring knowledge of general policies; command of general rules and principles with application to cases not previously covered and may require long experience with the company. 1. Work of the above character where experience is not necessarily long but must have been gained within the company. 2. Work of a more technical or more difficult character but experience not necessarily within the company. 3. Work of E-1 grade plus supervisory responsibility. 4. Work of E-2 grade, with long experience with the company. Or work of D grade which is not subject to check and therefore where the promotion of the employee on the job is generally undesirable.
F	Work of a highly technical or confidential nature or of semi-executive supervisory character. 1. Highly technical confidential work. 2. Semi-executive and supervisory in character.

Source: E. H. Little, "Some Considerations in Installing A Salary Administration Plan," *Office Executive Series, No. 27.* New York: American Management Association, 1927, p. 18.

FIG. 18.3. An example of the classification system of job evaluation.

classified by kind of work and by level, according to Baruch.[11] The factors used in determining level include: difficulty and complexity

[11] Committee for Position Classification in the Public Service (Ismar Baruch, Chairman), *Position Classification in the Public Service* (Chicago: Civil Service Assembly of the United States and Canada, 1941), p. 92.

of duties, nonsupervisory responsibilities, supervisory and administrative responsibilities, and qualification standards.

For an office position in the government service, a statement of duties is prepared, frequently by the worker himself. This is reviewed by one or more supervisors. A "desk audit" may be made under the supervision of a classification officer. Dissatisfaction and misunderstanding result from the fact that the United States Civil Service Commission makes little definite information available to government employees regarding specific bases for classification. There is misuse of the system. Employees find out that "loading" is used in statements of duties and qualifications.

Shartle says he has observed

> . . . many cases where a mere change in wording has resulted in a higher grading of the position even though there was no change in duties. In one agency the responsibilities of many employees were actually decreased, but the positions were "better" written and salaries went up. Many believe that the federal position classification system would be greatly improved if some of the job analysis and classification methods developed in modern industry were adopted.[12]

Until 1949, positions in the federal government were classified into four divisions or services:

P—Professional and Scientific
SP—Sub-Professional
CAF—Clerical, Administrative and Fiscal
CPC—Custodial, Protective and Crafts

The new General Schedule was adopted in accordance with the Classification Act of 1949. It is a single scale with eighteen grades. Figure 18.4 shows the basic pay rates for the grades and provides a conversion table to the old P, SP, CAF, and CPC system; it also shows step intervals for promotion within grade. In addition to the eighteen grades shown in the figure there are four additional grades for crafts and protective and custodial positions. This is called the CPC schedule.

The point methods. The point methods can be traced back to about 1925, to a basic design of Merrill R. Lott.[13] The point plans

[12] Carroll L. Shartle, *Occupational Information*, 2nd ed. (New York: Prentice-Hall, Inc., 1952), pp. 145–48.

[13] Merrill R. Lott, *Wage Scales and Job Evaluation* (New York: The Ronald Press Co., 1926).

THE PAY SCALES OF THE
CLASSIFICATION ACT OF 1949

General Schedule

(The rates for the General Schedule are in boldface and are listed immediately below the corresponding rates of the former Professional and Scientific, Subprofessional, and Clerical, Administrative, and Fiscal Services.)

Service & Grade				Basic Pay Rates								
P	SP	CAF	GS									
	1	1		2020	2086 2086	2152 2152	2218 2218	2284 2284	2350 2350	2423.04 2423.04	2498.28	
	2		1	(2200)	-- 2200	2152 2280	2218 2360	2284 2440	2350 2520	2423.04 2600	2498.28 2680	2573.52 (2680)
	3	2		2284	2350	2423.04	2498.28	2573.52	2648.76	2724		
			2	2450	2530	2610	2690	2770	2850	2930		
	4	3		2498.29	2573.52	2648.76	2724.00	2799.24	2874.48	2949.72		
			3	2650	2730	2810	2890	2970	3050	3130		
	5	4		2724	2799.24	2874.49	2949.72	3024.96	3100.20	3175.44		
			4	2875	2955	3035	3115	3195	3275	3355		
1	6	5		2974.90	3100.20	3225.60	3351	3476.40	3601.80	3727.20		
			5	3100	3225	3350	3475	3600	3725	3850		
	7	6		3351	3476.40	3601.80	3727.20	3852.60	3978	4103.40		
			6	3450	3575	3700	3825	3950	4075	4200		
2	8	7		3727.20	3852.60	3978	4103.40	4228.80	4354.20	4479.60		
			7	3825	3950	4075	4200	4325	4450	4575		
		8		4103.40	4228.80	4354.20	4479.60	4605	4730.40	4855.80		
			8	4200	4325	4450	4575	4700	4825	4950		
3		9		4479.60	4605.00	4730.40	4855.80	4981.20	5106.60	5232		
			9	4600	4725	4850	4975	5100	5225	5350		
		10		4855.80	4981.20	5106.60	5232	5357.40	5482.80	5608.20		
			10	5000	5125	5250	5375	5500	5625	5750		
4		11		5232	5482.80	5733.60	5984.40	--	6235.20			
			11	5400	5600	5800	6000	6200	6400			
5		12		6235.20	6474.60	6714	6953.40	7192.80	---			
			12	6400	6600	6800	7000	7200	7400			
6		13		7432.20	7671.60	7911	8150.40	8389.80	--			
			13	7600	7800	8000	8200	8400	8600			
7		14		8509.50	8808.75	9108	--	9407.25	9706.50			
			14	8800	9000	9200	9400	9600	9800			
8		15		--	--	10,305	10,330	--	--			
			15	10,000	10,250	(10,500)	10,500	10,750	11,000			
			16	11,200	11,400	11,600	11,800	12,000				
			17	12,200	12,400	12,600	12,800	13,000				
			18	14,000								

FIG. 18.4. Classification of positions in the federal service according to pay grades.

discussed today are not the same as Lott's in every respect, because details have been altered with subsequent research and application to different classes of jobs.

The plans have proved so successful that they are now probably the most widely used job evaluation plans. A survey of experience

with job evaluation plans,[14] conducted by the Industrial Relations Section of Princeton University, revealed that since the 1930's the tendency has been away from ranking and classification systems and toward point and factor comparison systems. The latter types of plans were adopted to overcome some of the shortcomings and inadequacies of the former. Where point or factor comparison systems did subsequently fail, it was usually because the companies tried to follow some system which did not recognize changes in the labor market and the effects of collective bargaining.

The National Electrical Manufacturers' Association estimates that their point plan has been installed in 1,200 to 1,500 plants. The National Metal Trades Association alone has used a similar plan in over 500 plants, ranging from small to very large concerns.[15]

To perform a job evaluation under the point systems, it is first necessary to determine which kinds of jobs are to be evaluated. It is not always necessary or desirable to try to include all jobs in a single study. Executive or professional jobs are seldom included. Thus, the group of jobs brought into the scope of the study might be only the office personnel, or perhaps only production workers.

Under the point systems, the jobs are defined in terms of factors which are common to all, in varying amounts, such as responsibility, skill, education, working conditions, and the like. A range of possible points for each factor is arbitrarily set by the job evaluation committee. Some systems break down the factors into several degrees, with points assigned to each degree. An example is shown in Table 18.2.

TABLE 18.2

Example of Points Assigned to Factors

Factors	*1st Degree*	*2nd Degree*	*3rd Degree*	*4th Degree*	*5th Degree*
Education—Experience	20	40	60	80	100
Working Conditions	10	20	30	40	50
Mental Requirements	15	30	45	60	75
Physical Demands	10	20	30	40	50
Responsibility	25	50	75	100	125
Skill	20	40	60	80	100

[14] H. Baker and J. M. True, *The Operation of Job Evaluation Plans: A Survey of Experience* (Princeton: Industrial Relations Section, Princeton University, 1947), p. 14.

[15] R. C. Smyth and M. J. Murphy, *Job Evaluation and Employee Rating* (New York: McGraw-Hill Book Co., Inc., 1946), p. 29.

Each job is then compared against the point scale. The committee members decide independently on the number of points to assign a specific job for its mental requirements, for responsibility, and other requisites. Individual judgments are pooled, and the group average represents the final or best estimate. When the points for all the factors of the job are summed up, the relation between jobs is apparent by virtue of the number of points representing each job.

Ultimately, the points are converted into a labor grade and wage grade for each job. Minimum and maximum points may be established for each labor grade or wage rate range according to the total points for the jobs. (See Table 18.3.) It is unlikely that any job included in the evaluation will reach the maximum number of points possible. A few jobs, such as the supervisor or a technically trained administrator, might, however, be near the top.

TABLE 18.3

Example of Point Ranges for Labor Grades

Labor Grade	Point Range
I	0–100
II	101–200
III	201–300
IV	301–400
V	401–500

It is interesting to note that two extremely different jobs may have the same point value. This is possible because each job involves varying amounts of the factors. This is illustrated in Figure 18.5. Job 1 might represent an analysis of a white-collar or office job while Job 2 obviously represents a great amount of physical demands of the incumbent; both jobs are evaluated at 220 points and both would presumably fall in the same wage classification or labor grade.

The factor-comparison method.[16] The factor-comparison method was originated about 1926 by Eugene J. Benge, under the direction of Thomas Mitten, for the Philadelphia Rapid Transit Company.[17] It has been a particularly useful system for comparing very different kinds of jobs, such as manual, creative, executive, and clerical, in one evaluation.

[16] A series of articles by Edward N. Hay describe in some detail considerations in establishing factor comparison job evaluation. These articles are listed in the collected references at the end of this chapter.

[17] E. J. Benge, S. L. H. Burk, and E. N. Hay, *Manual of Job Evaluation* (New York: Harper & Bros., 1941), p. 198.

The principle involved in making a factor-comparison evaluation is somewhat different from that of point methods. Essentially, factor comparison consists of ranking about 20 key jobs according to several different factors common to all the jobs. A proportionate amount of the present wage for a key job is represented by each of the factors. The sum of the amounts paid for each of the factors is the money rate for the job.

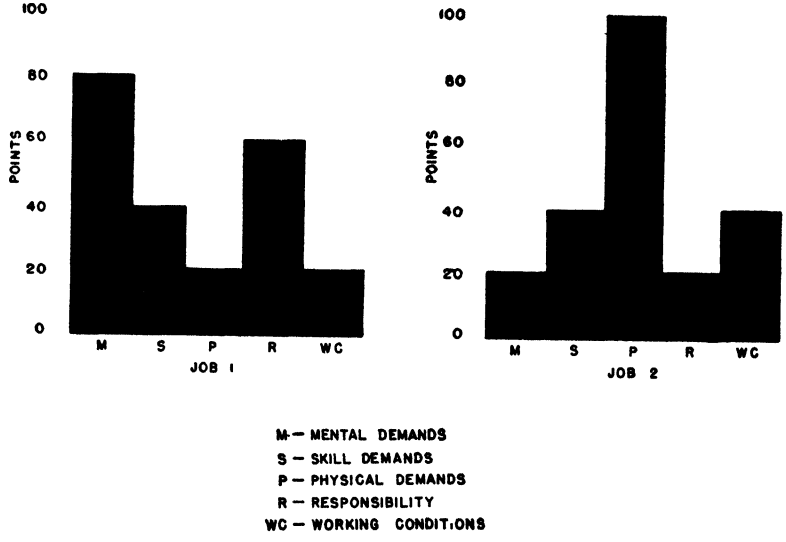


FIG. 18.5. Illustration of two jobs with the same evaluated points but with different emphasis on factors.

Generally about five factors that are considered to be general to all jobs are utilized in making the job evaluation. Such factors may be skill, mental requirements, physical requirements, responsibility, and working conditions. In some companies it may be desirable to break down these factors into even more detail, such as responsibility for materials, for the work of others, for money, for public and for customer relations; working conditions may be divided into hazards and other aspects of the work environment—for example, those influencing health. The factors should be well defined, aiming at uniformity of their interpretation by committee members. The accompanying definitions are suggested by Benge:

MENTAL REQUIREMENTS—either the possession of, and/or the active application of, the following:

A. *Inherent:* mental traits such as intelligence, memory, reasoning,

facility in verbal expression, ability to get along with people, and imagination.

B. *Acquired:* general education, such as grammar and arithmetic; or general information as to sports, world events, etc.

C. *Acquired:* specialized knowledge such as chemistry, engineering, accounting, and advertising.

SKILL REQUIREMENTS—

A. *Acquired:* facility in muscular coordination, as in operating machines, repetitive movements, careful coordination, dexterity, assembling, sorting, etc.

B. *Acquired:* specific job knowledge necessary to muscular coordination only; acquired by performance of the work and not to be confused with general education or specialized knowledge. It is very largely training in the interpretation of sensory impressions (in operating an adding machine, the knowledge of which key to depress for a subtotal would be skill).

PHYSICAL REQUIREMENTS—

A. *Physical effort:* sitting, standing, walking, climbing, pulling, lifting, etc.; both the amount exercised and the degree of the continuity should be taken into account.

B. *Physical status:* age, height, weight, sex, strength, and eyesight.

RESPONSIBILITIES—

A. For raw materials, processed materials, tools, equipment, and property.

B. For money or negotiable securities.

C. For profits or loss, savings, or methods of improvement.

D. For public contact.

E. For records.

F. For supervision:

1. Primarily the complexity of the supervision given to subordinates; the number of subordinates is a secondary feature. Planning, direction, coordination, instruction, control, and approval characterize this kind of supervision.
2. Also the degree of supervision received. (If much supervision is given but little is received, the highest rating is given; if much is given and much received, the next highest rating is given, etc.)

WORKING CONDITIONS—

A. *Environmental influences:* atmosphere, ventilation, illumination, noise, congestion, fellow workers, etc.

B. *Hazards:* from the work or its surroundings.

C. *Hours.*[18]

[18] Eugene J. Benge, *Job Evaluation and Merit Rating* (Deep River, Conn.: National Foremen's Institute, 1941), p. 71.

About 15 to 25 key jobs are selected which are representative of the range of jobs involved, from the lowest to the highest paid. These should be jobs about which there is general agreement concerning the description of the duties involved and rates being paid. The selection of the key jobs will be approved by agreement among the members of the job evaluation committee.

Now the job evaluation committee begins the task of reviewing all key jobs with respect to one factor at a time. For example, each of fifteen key jobs are ranked according to the mental requirements involved in those jobs. In a similar manner, the jobs are ranked according to the physical requirements, skill requirements, responsibility, and working conditions. A summary of the jobs in one evaluation is shown on the key-job ranking sheet in Table 18.4.

TABLE 18.4

Ranking of Key Jobs *

Rank	Mental Requirements	Skill Requirements	Physical Requirements	Responsibility	Working Conditions
1	Patternmaker	Patternmaker	Rammer	Substation Operator	Rammer
2	Substation Operator	Machinist	Poleman	Patternmaker	Poleman
3	Machinist	Substation Operator	Laborer	Machinist	Laborer
4	Pipe Fitter	Pipe Fitter	Pipe Fitter	Pipe Fitter	Pipe Fitter
5	Painter	Painter	Machinist	Drill Press Operator	Painter
6	Drill Press Operator	Drill Press Operator	Painter	Painter	Drill Press Operator
7	Carpenter's Helper	Carpenter's Helper	Patternmaker	Carpenter's Helper	Machinist
8	Poleman	Poleman	Carpenter's Helper	Poleman	Carpenter's Helper
9	Laborer	Rammer	Drill Press Operator	Rammer	Patternmaker
10	Rammer	Laborer	Substation Operator	Laborer	Substation Operator

*Source: *Industrial Job Evaluation Systems*, War Manpower Commission. Washington: Government Printing Office, August 1943. Appendix IV, p. 26.

To make these rankings as dependable as possible, it is desirable that the rankings be made on different occasions by the same group of raters. It might be advisable to wait for ten days or two weeks before another ranking is attempted. Where differences appear, they can be ironed out in session of the job evaluation committee.

Edward N. Hay has found impressive consistency from one rater to another, which he attributes to careful training and indoctrina-

tion of the raters. For example, in a utility organization, an evaluation of 382 salaried and wage jobs was being performed by 8 raters (4 of the group were management executives and 4 were union men). The total number of judgments required was 15,280, and yet there was 62 per cent agreement within 1 or more steps (a "step" representing a difference in ranking by 1 unit within the factor); 92 per cent agreement within 2 or more steps.[19]

TABLE 18.5

Summary Data Sheet of Key Jobs *

Job Title	Present Rate In Cents	Mental Requirements	Rank	Physical Requirements	Rank	Skill Requirements	Rank	Responsibility	Rank	Working Conditions	Rank
Patternmaker	92	26.8	1	10.2	7	33.4	1	15.8	2	5.8	9
Machinist	88	21.7	3	12.2	5	32.1	2	13.8	3	8.2	7
Substation Operator	82	24.9	2	4.1	10	21.1	3	27.7	1	4.2	10
Pipe Fitter	68	11.1	4	14.0	4	20.1	4	12.2	4	10.6	4
Painter	60	10.1	5	10.8	6	18.8	5	10.6	6	9.7	5
Poleman	52	5.6	8	19.2	2	7.2	8	6.9	8	13.1	2
Drill Press Operator	50	8.8	6	8.2	9	14.2	6	10.5	5	8.3	6
Rammer	48	3.2	10	21.9	1	4.2	9	5.0	9	13.7	1
Carpenter's Helper	46	7.8	7	9.0	8	13.2	7	8.9	7	7.1	8
Laborer	42	5.5	9	17.7	3	3.0	10	4.1	10	11.7	3

*Source: *Industrial Job Evaluation Systems*, War Manpower Commission. Washington: Government Printing Office, August, 1943, Appendix IV, p. 27.

Next the committee divides up, by factors, the present wage paid for the key jobs. By definition, a key job has a wage which the committee members agree is fair. The wage is split into amounts paid for each of the factors involved in the performance of the job. For example, the hourly wage of $1.39 for a shop clerk may be split in this proportion:

Factors		
	Mental requirements	$ .39
	Skill requirements	.27
	Physical requirements	.10
	Working conditions	.19
	Responsibility	.44
	Total wage	$1.39

As a breakdown is made for each of the key jobs, successively, it is entered in its proper place on a summary data sheet. (See Table 18.5.)

[19] Edward N. Hay, "Characteristics of Factor Comparison Job Evaluation," *Personnel*, American Management Association, XXII (1946), p. 373.

The job evaluation committee proceeds with the remainder of the jobs in the evaluation according to the master scales set up by ranking key jobs on each of the factors. The committee considers one job at a time. A job is considered first in its relative position to the key jobs on mental requirements. A wage can be assigned to the job for the mental requirements. It is, in turn, studied from the viewpoint of skill requirements, physical requirements, responsibility, and working conditions. The total of the wages paid for each factor will be the agreed upon rate for the job.

It should not be assumed that any one of the foregoing methods is immediately applicable to a company just starting out a job evaluation program. The selection of a particular system of job evaluation must reflect the kinds of jobs to be studied, the method of wage payment, and the number of jobs included. In a textile mill, a comparison was made between ready-made and custom-made systems of job evaluation.[20] The ready-made system used in the study was a twelve-factor point system described in Smyth and Murphy.[21] The custom-made plan was a modification developed to fit the key jobs more accurately than the first method. Only three of the fifty jobs were evaluated exactly the same by both methods. Nineteen additional jobs were misevaluated sufficiently to be significant in the amount of pay the worker would have received. The authors of this study concluded that "the greater accuracy [of custom-made job evaluation] would seem to justify construction of a system of job-evaluation to fit the jobs being evaluated. . . ." [22]

The Trend towards Abbreviated Job Evaluation Systems

Psychologists are concluding, on the basis of recent research, that job evaluation can be done as reliably, and in much less time, by using fewer factors.

Considerable research exploring the reliability and other characteristics of the point system has demonstrated that a small number of factors three or four might produce the same final spacing of jobs as a system employing a large number of scales. Lawshe and Wil-

[20] J. Stanley Gray and Marvin C. Jones, "Ready Made versus Custom Made Systems of Job Evaluation," *Journal of Applied Psychology,* XXXV (1951), pp. 11–14.

[21] R. D. Smith and M. J. Murphy, *Job Evaluation and Employee Rating* (New York: McGraw-Hill Book Company, 1946), p. 255.

[22] Gray and Jones, *op. cit.,* p. 14.

son [23] suggest that judgments made on general schooling, learning period, working conditions, and job hazards may be quite as good as more elaborate plans, such as that of the National Electrical Manufacturers' Association which calls for evaluation on eleven job factors. They note the need for training raters, in order to increase the reliability of judgments.

Job analysis and evaluation were shown by Rush and Bellows [24] to be applicable to a small business of 60 employees with 24 jobs. The two factors used in the job evaluation were (a) responsibility and (b) training and education. The two factors were found to be so highly intercorrelated that it was suggested that either factor alone would have yielded about the same results.

Davis and Tiffin [25] demonstrated that weights derived for abbreviated job evaluation systems, developed through factorial analysis, hold up when applied in new situations. Cross validations of this kind, though most important, are seldom accomplished.

Several other studies have indicated that the number of factors used in job evaluation can be reduced. Ash [26] performed a multiple factor analysis of eight factors used in the job evaluation of each of three classes of positions (clerical, subprofessional, and professional) involving some 800 positions. Two significant factors emerged in the analysis: supervisory responsibility and general skill demands. Some other factors such as job complexity and nonsupervisory authority were found to be specific to a few job classes.

In the Aluminum Company of Canada, Ltd., Oliver and Winn [27] compared results of an abbreviated job evaluation plan for salaried personnel jobs with an eighteen-factor point plan. By applying the

[23] C. H. Lawshe, Jr., and R. F. Wilson, "Studies in Job Evaluation. 6. The Reliability of Two-Point Rating Systems," *Journal of Applied Psychology,* XXXI (1947), pp. 355–65. C. H. Lawshe, Jr., Edmund E. Dudek, and R. F. Wilson, "Studies of Job Evaluation. 7. A Factor Analysis of Two-Point Rating Methods of Job Evaluation," *Journal of Applied Psychology,* XXXII (1948), pp. 118–29. C. H. Lawshe and Patrick Farbro, "Studies in Job Evaluation. 8. The Reliability of an Abbreviated Job Evaluation System," *Journal of Applied Psychology,* XXXIII (1949), pp. 158–66.

[24] C. H. Rush, Jr. and Roger M. Bellows, "Job Evaluation for a Small Business," *Personnel Psychology,* II (1949), pp. 301–10.

[25] M. K. Davis and J. Tiffin, "Cross Validation of an Abbreviated Point Job Evaluation System," *Journal of Applied Psychology,* XXXIV (1950), pp. 225–28.

[26] Philip Ash, "A Statistical Analysis of the Navy's Method of Position Evaluation," *Public Personnel Review,* XI (1950), pp. 130–38.

[27] John A. Oliver and Alexander Winn, "An Abbreviated Job Evaluation Plan for Salaried Personnel," *Personnel,* American Management Association, XXVIII (1951), pp. 225–29.

Wherry-Doolittle multiple correlation technique[28] to the data, the authors were able to select six factors from the eighteen which, when properly weighted statistically, gave about the same ranking of the jobs as the more elaborate eighteen-factor point plan. By use of the abbreviated plan, 72 per cent of the jobs would remain in the same labor grade, and 28 per cent would be displaced by one grade.

The Occupational Characteristics Check List (OCCL) was used in a study as a means of simplified job evaluation.[29] The Occupational Characteristics Check List is a form which was developed in 1935 at the Baltimore Center of the Occupational Research Program. (See Figure 9.4 in "Job Analysis" chapter.) It is a form on which the job analyst can estimate what amount of 47 or more traits or abilities are needed by the worker for the job.

In using this part of the job analysis schedule for job evaluation, the amounts which were estimated were scored in much the same fashion as answers on a test are scored. If "A"—a very high degree of the characteristic—was judged by the job analyst to be required in some element of the job, the characteristic was scored as 3; if "B"—an above average degree of the characteristic—was required either in numerous elements of the job or in the major or most skilled element, the characteristic was given a score of 2; if "C"—a medium to very low degree of the characteristic—was required in some element or elements of the job, the characteristic was scored 1; if "O"—the characteristic was not required for satisfactory performance of the job—was indicated, the characteristic was not scored. The job analyst's ratings on the OCCL were summarized for each job, and the total number of points given was taken as a value of the job. Each job was then ranked in terms of the total number of points given to it by the OCCL score. In the study reported by Bellows and Estep on the simplified job evaluation system, a Pearson coefficient of correlation was found between the OCCL scores and total evaluated points obtained in a conventional job evaluation of .74. In a similar study reported by Rush and Bellows,[30] in an auto dealership, the Pearson coefficient of correlation

[28] This technique is described in William H. Stead, Carroll L. Shartle, and Associates, *Occupational Counseling Techniques* (New York: American Book Company, 1940), pp. 245–52.

[29] Roger M. Bellows and M. Frances Estep, "Job Evaluation Simplified: the Utility of the Occupational Characteristics Check List," *Journal of Applied Psychology*, XXXII (1948), pp. 354–59.

[30] C. H. Rush, Jr. and Roger M. Bellows, "Job Evaluation for a Small Business," *Personnel Psychology*, II (1949), pp. 301–10.

was found to be .50 between OCCL scores and total evaluated points. Lawshe and Wilson [31] said of simplified job evaluation that "final job rank seems to be determined by judgments on a limited number of factors, regardless of the particular type of procedure or the number of point scales through which the raters arrive at the final ratings of the job."

These studies are suggestive: job evaluation can in some instances be done almost immediately from the job analyses which were filled out by the job analyst of the company. Elaborate job evaluation programs, using many factors, are probably not necessary to accomplish a wage program.

Summary

Job evaluation is a means of adjusting the wage and salary rates within firms. This is done by establishing the worth of each job and setting up a frame of reference to assure that each new job can be placed on the wage scale in its proper place. It is a technique to help prevent labor grievances over wages by constructing wage plans objectively, with cooperation of the employees.

The job evaluation program consists of ten basic steps which may be listed in checklist form:

1. Write the plan
2. Select the job evaluation committee
3. Select the personnel
4. Prepare the job analyses
5. Convert the products of job analyses into usable form
6. Perform the evaluation
7. Make a community wage survey
8. Assign wage rates to each job
9. Maintain the job evaluation plan
10. Make evaluation of employees

The choice of a system is made by the job evaluation committee in terms of the plan that will be of most value in achieving the objective of the firm. Four basic methods may be cited, although there are many variations of them:

1. The ranking method
2. The classification method

[31] C. H. Lawshe, Jr. and R. F. Wilson, "Studies in Job Evaluation. 6. The Reliability of Two-Point Rating Systems." *Journal of Applied Psychology*, XXXI (1947), pp. 355–65.

3. The point methods
4. The factor-comparison method

Ranking is perhaps the simplest, and factor comparison is one of the more complicated systems. Certain limitations must be recognized for each plan. Surveys indicate that point systems and factor comparison systems are beginning to be used more widely than ranking and classification methods. The trend is toward simpler, abbreviated job evaluation systems; research results point to their practicality at least for some industrial and business situations.

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19 Wage Incentive Methods

SOME YEARS before the turn of the century (so the story goes), an observer was watching a day laborer lift and move pigs of iron in a steel plant at Pittsburgh. The observer became more and more interested in this man and his work as time went on. He noted the number of pigs the man moved a given distance in a day's time. He observed the worker not only during working hours but during the hours when he was away from his work. This worker was a Dutchman, stocky in build, strong and muscular. At the end of a twelve-hour day, the Dutchman left the work place, seemingly in a hurry. Our observer followed him. The worker did not walk, but trotted up the mountainside. Twelve miles away he was building a cabin for his family.

The Dutchman was in the habit of spending several hours each evening constructing his cabin by moonlight. Our observer began to do some thinking. His thoughts ran something like this: "The man seems to have a lot of energy left after his day's work; clearly he could produce a great deal more work while on the job if working conditions were arranged in an optimal way. Would it not then be profitable to the worker and to the management of the steel plant if the worker were paid significantly more for increased production?"

Then, too, the observer probably thought of the overhead cost. Any worker who produces more with the same overhead cost creates an increment much larger in terms of profit than would be created by simply adding another slow, soldiering worker to the job.

With these considerations in mind, the observer set about to (1) arrange the work situation so that it would lend itself to greater productivity, and (2) to motivate the worker. These arrangements enabled the Dutchman to increase the amount of pig iron moved from 12 to 48 tons, and increase his earnings from $1.15 to $1.85 per day. No comment is made as to whether this is "good" or "bad" for all concerned.

Background for Incentive Systems

It was from such observations as those related in the anecdote above that so-called scientific management and worker incentive plans developed. The observer was Frederick W. Taylor. His pioneering efforts at increasing productivity became known as "scientific management." Taylor was one of the first to try to standardize the work of a group of industrial workers. This kind of worker management had its beginnings in 1881.

By 1926 wage incentives in the form of piece rates were well established in industry in spite of the fact that the determination of standard times through time study and other techniques, on which the soundness of incentive rates in part depends, were still in an early developmental stage. This was the pre-depression era of wage incentive plans. Between 1919 and 1923, for example, it was shown by a United States Department of Labor investigation that only 52 out of 351 foundries and 81 out of 429 machine shops were using such plans. Whiting Williams [1] pointed out that there was at one time, in the automobile industry, widespread use of wage incentives. Another survey [2] of 893 companies showed that about 35 per cent of industrial workers were being paid wage incentives before the 1929 crash, with clothing industries and automotive industries using incentives most extensively. Lumber, oil, paper, printing and publishing, and shipbuilding industries were using incentives to a smaller degree.

During the depression years of the 1930's there were several influences operating to bring about discontinuance of wage incentive plans. In the first place, competition for the few jobs available tended to make wage incentives unnecessary. Second, among other economies, management cut office overhead and with it the com-

[1] Whiting Williams, "Survey of Wage Plans," *Iron Age,* CXVIII, No. 24 (1926), p. 1634.

[2] Williams, "Methods of Wage Payment in 893 Industrial Companies Affecting 502,273 Employees," *Iron Trade Review,* LXXXV, No. 22 (1929), p. 1427.

plicated payroll procedures and computations necessary for workable incentive plans. Between the years 1934 and 1937 organized labor, having received unprecedented recognition and encouragement under the Roosevelt administration, was in a position to negotiate labor contracts which were more favorable to the worker. Labor unions have fought continuously the so-called scientific management and speed-up practices of management. The automobile industry virtually dropped wage incentives during this period.[3]

R. P. Brecht [4] presented a bill of indictment against wage incentives. His specific criticisms were: incentives depend on human acquisitive instincts or selfishness; profits by management are excessive; quality of product suffers under incentives; time standards are arbitrary and unscientific; workers too often do not understand incentive pay plans; earnings under incentive pay plans are unstable and irregular; rate cutting is unfair; workers on nonincentive jobs do not have equal earning opportunity; and employee morale is destroyed.

The period between 1937 and 1942 was filled with wage experiments and attempts to conciliate unions by sugar-coating the bitter pill, incentives. Unions in general have resisted any form of incentives.

The effect of the World War II years seems to have been to give wage incentives a boost. The War Labor Board advocated industry-wide incentives. The unions, or at least some of them, temporarily altered their attitude toward incentives when they helped push them for the purpose of raising wages.

Scope and Nature of Pay Plans

The Bureau of Labor Statistics [5] in a survey of incentive plans found that about 30 per cent of plant workers in manufacturing industries were paid on an incentive basis. The survey was comprehensive. It covered 15,636 plants employing about 7,000,000 workers in 56 manufacturing industries and 8 nonmanufacturing industries. It was shown that there had been little change in the extent of incentives payment in recent years. Among the major

[3] Williams, "Motor Industry Shifts Pay Plan," *Business Week*, No. 291 (1935), pp. 21–22.

[4] R. P. Brecht, "Financial Incentives at the Crossroads," *Management Review*, American Management Association, XXVI, No. 2 (1937), pp. 60–61.

[5] Joseph M. Sherman, "Incentive Pay in American Industry, 1945–1946," *Monthly Labor Review*, LXV, No. 5 (1947), pp. 535–37.

industrial groups studied, incentive methods were most widespread in the clothing industry. The reason for this probably is that a relatively high proportion of the time of workers in this industry is spent in handling as contrasted with machine operations. Consequently, control over output is exercised more by the worker than by the machine. This fact, together with the comparatively small danger of spoilage in most operations, makes the use of incentive payments highly advantageous.

About two-thirds of the employees in the apparel manufacturing industry were paid on the incentive basis and 85 per cent of the apparel establishments were predominantly incentive (establishments paying at least one-fourth of their plant workers under a piece rate or bonus system were considered as predominantly incentive). In the textile group nearly two-fifths of the workers were on incentive systems, and it ranked next to the apparel industry in the extent of incentives paid..

The Bureau of Labor Statistics study showed that piece rate plans predominated. These provide for payment of incentive money to individual workers as contrasted to group bonus plans. The study showed that piece rates were in effect in five-sixths of the plants with incentive systems. In the apparel and textile industries, 19 out of 20 incentive plans provided for individual piece rates. In the chemical industry, on the other hand, nearly half of the comparatively small number of incentive plans provided group bonus payments for above standard production: frequently the output could not be ascribed to an individual worker.

The survey revealed that incentive workers received higher pay than did time workers in comparable jobs. The size of the pay differential between time workers and incentive pay workers varied considerably from one industry to another. The earnings increment of incentive workers ranged from less than 5 per cent to about 40 per cent in the industries canvassed.

Straight hourly rate. The most common type of pay plan in existence, and perhaps the oldest one, is a straight hourly rate. This appears as a simple plan to the worker. It does not involve a highly technical and complex time study procedure for establishing standards or an elaborate record system. It is, generally speaking, well understood and well received by workers and organized labor. The worker realizes he is being paid so much per hour or so much per day or week, as the case may be.

Although the hourly rate seems simple to the worker, in reality

it is not a simple pay plan. If a man is paid in accordance with the value of the job and the merit of his work, then this wage administration implies both job evaluation and merit rating systems. Job evaluation determines the pay rate range in which his job falls, and merit rating determines his earnings within that rate range. If merit rating worked reliably and dependably, it could be said itself to be a kind of incentive. Merit rating is best used only when the work does not lend itself to evaluation in terms of quantitative production units.

We saw in two previous chapters, 16 and 17, that it is difficult to develop measures of the job success of the worker. An incentive system based on piece rate makes necessary a rigid, objective criterion of success. It involves the use of individual production per unit of time. Production must be evaluated in terms of opportunity to produce, and for most jobs this is a difficult task. Not many jobs or many factory situations lend themselves to measured production which can be attributed to the individual worker. All the difficulties that have been reviewed in the study of criteria of success of the worker are inherent in this problem of pay rate.

Straight piece work. The most popular of the incentive pay plans is straight piece work. It is the simplest of incentive plans. The worker's earnings are directly related to the number of units which he produces an hour above 100 units. Before establishing a pay plan of the incentive type, the first step is to locate the point designated as the normal or standard production on the axis which is labeled "units produced per hour." This is the quantity per hour which the operator will have to exceed before he is paid more than his guaranteed hourly wage, which in this case would be 50 cents.

Time study yields a way of establishing a norm or standard.[6] For example, in walking, some people walk at a slow pace and others at a fast pace, but there is a "normal" or usual amount of speed that can be expected of a walker. We may say, for example, that a normal walking speed is 3 miles an hour. Let us assume that a person walking at 3 miles an hour is covering ground at a standard speed. We may designate that as 100 per cent. Now, a person walking 2 miles an hour would be performing two-thirds or 66⅔ per cent of standard. One who is walking 4 miles an hour would be walking at a rate equal to 133⅓ per cent of standard. This is a way of rating

[6] A suggested source for the technique of motion and time study is Marvin E. Mundel, *Motion and Time Study* (New York: Prentice-Hall, Inc., 1950), p. 457.

or interpreting performance. Subjective judgments play some part in every case of setting a standard.

Assume that for a particular job, such as lathe operator, 100 pieces have been established as standard per hour. If the operator produces 110 pieces in an hour, he is then 110 per cent of standard, and he would actually save the company a considerable amount, in spite of the fact that the company paid him an additional 10 cents straight piece rate for the 10 units produced above standard. Experience has shown the company that it costs $2.00 per hour to operate the lathe. Savings can be shown by comparing the cost of 110 pieces produced at the rate of 100 per hour to the cost of 110 pieces at the rate of 110 per hour.

Table 19.1 shows that for each hour worked, 10 cents has been saved the firm, and at the same time the worker makes an additional 10 cents an hour for himself. These increments to the firm and worker are doubled if the worker produces at the rate of 120 units per hour. If a worker were producing 120 pieces in an hour, not on an incentive pay basis, he would save the company 40 cents or, stated another way, every piece which he produces above stand-

TABLE 19.1

Comparison of Total Cost of 100 Pieces and 110 Pieces Per Hour

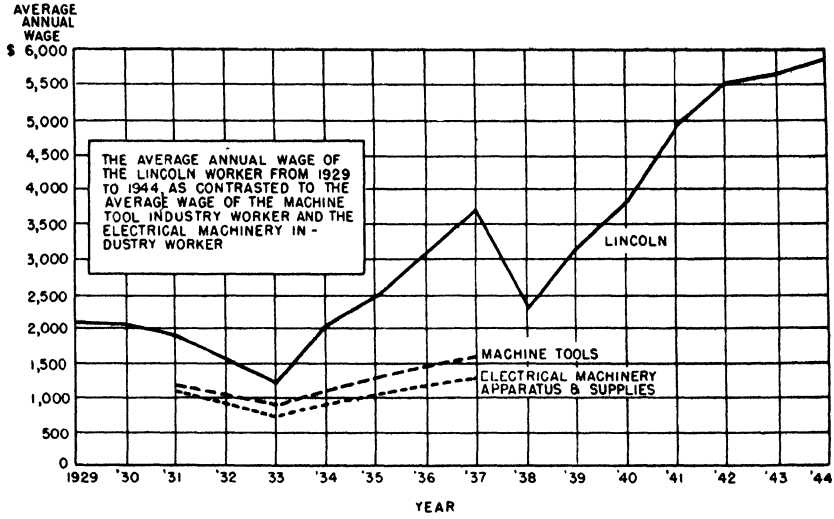
Production of 110 Pieces at 100 per Hour		Production of 110 Pieces at 110 per Hour	
Material	$11.00	Material	$11.00
Labor, for one hour	1.00	Labor, for one hour	1.10
Fixed Overhead	2.20	Fixed Overhead	2.00
Total Cost	$14.20	Total Cost	$14.10

ard in one hour would save the company 2 cents. In considering an incentive plan in this situation, the company might decide to share some of the fixed overhead savings with the worker in order to give him a stronger incentive to increase his output. If the company decided to give the worker half of the fixed overhead savings, as shown in the table, the result would be a piece work rate of 1 cent per piece for each unit over 100 which the lathe operator produced in one hour. It is readily seen that the incentives for workers to produce is a saving to the company because of the fixed overhead.

Straight piece rate with minimum base pay. Another form of incentive pay rate is a straight piece rate with a higher minimum or base pay. Regardless of how much he produces or whether he reaches standard, the worker is paid $1.30 an hour up to 125 units

per hour or 125 per cent of standard production. At that time, he enters the piece rate, so that above $1.30 per hour he gets an increment for increased production above 125 per cent of standard.

Step bonus. The fourth type of incentive pay plan is the step bonus. It is commonly used to increase the money inducement for workers to reach the standard production speed or some other specific speed of production. The worker is paid $1.30 base pay for any amount of production below 125 per cent of standard. If he achieves 125 per cent of standard (125 units per hour), he is at once paid $1.50 per hour. He receives this amount per hour for all work performed at a speed of acceptable units per hour from 125 to 150. When he achieves 150 units per hour, his earnings are then jumped to $1.70 per hour.



By permission from *Lincoln's Incentive System* by James F. Lincoln, p. 17. Copyrighted 1946, McGraw-Hill Book Co., Inc.

FIG. 19.1. The average annual wage of the Lincoln worker from 1929 to 1944, as contrasted to the average wage of the machine tool industry worker and the electrical machinery industry worker.

Regardless of which incentive pay plan is used there are six basic conditions which must be present if the pay plan is to be sound: (1) it must measure directly what the individual does himself; (2) it must be adjusted to a realistic basis; (3) it must provide for prompt notification to the worker of the results obtained; (4) it must be understandable by those who are working on it, including the worker, union, supervisors and foremen, and top management,

as well as production engineers; (5) it must provide enough money reward to the worker to make it a real incentive for production; and (6) it must be equitable and fair to both the owners and the worker.

A factory that has clearly profited from its incentive plan, which has been in operation since 1929, is the Lincoln Electric Company of Cleveland, Ohio. Figure 19.1 shows the annual earnings of the Lincoln worker from 1929 to 1942, as contrasted to the average wage of machine tool industry workers and electrical machinery industry workers. While in 1931 the machine tool and electric machinery workers were making annual wages of about $1,200, Lincoln's workers under the incentive plan were making approximately $2,000. By 1937, while the machine tool worker was making approximately $1,700 and the electrical machinery worker was making $1,300, Lincoln's workers were making on the average above $3,500. By 1942 the Lincoln worker was making $5,400 under the incentive plan!

It has been stressed that the setting of the standard or normal for a piece of work is of extreme importance. The time study on which the standard is based must be fair beyond the question of worker or union. This is the only basis for giving the plan confidence and acceptance. There are several rules of procedure that govern the time study:

1. Time study will be made only by an expert;
2. Each job will be studied first in terms of the total work situation and the unit of payment will be determined when the operation is broken down into its elements;
3. No less than 10 sample readings will be taken;
4. Readings will be made of the speed at which the employee was working during the times the ratings were taken by the time study man, and care will be taken in judging whether this speed was 100 per cent of normal [so-called "levelling" [7]];
5. Each element of the job will be weighted in terms of the whole task on an occurrence basis;
6. The fatigue allowance of not less than 5 per cent nor more than 15 per cent will be applied to all studies;
7. An additional allowance of 5 per cent for personal needs will be included in each standard;
8. An allowance of 3 per cent to cover minor variations will also be included in each standard;

[7] The "leveling" technique is described in H. B. Maynard, G. J. Stegemerten, and J. L. Schwab, *Methods-Time Measurement* (New York: McGraw-Hill Book Co., Inc., 1948), pp. 272–76.

9. The final standard will be developed in terms of standard hours allowed for 100 units;
10. Standard data will be developed to permit subsequent synthetic rate setting and to facilitate cost estimating;
11. Standards will be set on an individual employee basis rather than a group basis whenever this is feasible;
12. All time studies shall be approved by the plant manager and employee representatives before being officially placed in effect;
13. An official record will be completed by the industrial engineer showing the operation number, the operator's name and brief description of the operation, effective date, the standard hours allowed for 100 pieces produced, and the number of pieces per hour required for the operator to make 100 per cent.[8]

Year-end bonus. In addition to the foregoing wage plans, some companies pay a year-end gratuity to all or substantially all of the employees. These bonuses are similar to profit-sharing payments, although the profit-sharing payment is usually related to the employer's net income.

Christmas bonus plans vary considerably. In some cases the same flat amount is paid to everyone on the payroll. In other companies, the payments are a percentage of the employees' earnings. National Industrial Conference Board has surveyed the bonus plans used by 79 companies, setting forth in detail the minimum service requirement for eligibility to the plan, employee coverage, and the formulas used for computing each individual's share.[9]

Incentives for Foremen and Key Men

"Hey, boss! You want me to cash your check?" A foreman was asked this snide question by one of the men in his department while waiting in line. The man had just cashed his check. His take-home pay was more than that of his foreman. This often happens when the rank-and-file worker has been on overtime during the pay period. The boss loses face.

Managements are alert to this unfortunate condition. Some have found the answer in bonus pay for foremen; some have come to raise their straight time pay. The usual differential of 20 per cent has been found to be not quite great enough.

[8] These thirteen points were adapted from John J. Barranger, "A Standard Hour Wage Incentive Plan," *National Association of Accountant's Bulletin,* XXIX (1947), pp. 391–98.

[9] Herbert S. Briggs, "Christmas Bonuses—1950," *Management Record,* National Industrial Conference Board, Inc., XIII (1951), pp. 385–87, 411–12.

In a survey [10] of 2,700 companies, it was found that about 1 out of 5 of the larger ones provided for foremen's bonuses. Table 19.2 shows the results of this survey.

TABLE 19.2

Use of Foreman's Bonus in 2700 Companies *

Company Size Classification by Number of Employees	Number of Companies Using Bonus	Per Cent of Companies in Group Using Bonus
1–99	25	9.4
100–249	94	15.8
250–999	222	20.4
1,000–4,999	114	20.1
5,000–9,999	22	26.2
10,000 and over	12	14.3
Size not reported	4	25.0
	493	18.3

*Source: Adapted by special permission of the National Industrial Conference Board, Inc., "Foreman Compensation," *Studies in Personnel Policy No. 30*, p. 8. Copyrighted 1941.

To develop and maintain incentive methods, several groups work together. These groups comprise top management, specialists—including time study engineers—foremen, and employee representatives. Time study men act as staff men, establishing standard times of performance. They rarely enter into the line of authority. Their work may be best performed as technicians in an advisory capacity to management and foremen. Foremen train and indoctrinate workers in the use of new methods. Foremen occupy a unique position in the installation of wage incentive systems. They are key men in the program.

It is the job of management and foremen to explain the incentive basis to workers. Successful results in the use of wage incentives depend largely on foremen-worker cooperation. This cooperation is engendered by adequate communications.

Workers may fear several things at the start. They may fear that if they work faster, the work will run out, and they will lose their jobs; that their skill value will be de-emphasized by method changes; that if they do not meet the standards from day to day, they will be demoted or fired; that they will be required to work faster than they can stand; that their rates will be cut as production increases. Installation of any plan must take account of these

[10] National Industrial Conference Board, Inc., "Foreman Compensation," *Studies in Personnel Policy No. 30* (1941), p. 2; see also "Incentives for Management and Workers," *Production Series No. 161* (New York: American Management Association, 1945), p. 28.

latent or outspoken apprehensions of workers. Communication with foremen is perhaps the best single answer. This makes necessary careful attention to foreman motivation. How may foremen themselves be motivated?

There are several indices which may be thought of as objective or quantitative that pertain to the efficiency of departments, and foremen are to a large extent responsible for the efficiency of their departments. We may list these indices as follows: (1) a combined index of the efficiency of workers who are under the foremen; (2) an index of employee unrest in a department; (3) miscellaneous records of a quantitative sort; and (4) subjective judgments including attitude scales and rating devices used by higher management.

In an attempt to achieve an index of the efficiency of foremen, it would appear that the foreman is best whose workers are achieving high standards in work performance. That department is best where highest incentives are paid as a group, or where the average worker incentive pay is highest. These factors have to do with production of the department. Such indices are objective and quantitative inasmuch as pieces may be counted or cost may be computed. Rejects, scrap, or wasted materials may be (a) compared to the index for last month or last year to see whether the department was up to its previous record or (b) compared to a set standard established by an efficiency specialist. The latter procedure is perhaps more appropriate.

The second area of quantitative evaluation of the foreman's department may be unrest of workers comprising the department. Figures kept routinely, pertaining to the number and kind of grievances, the amount of absenteeism, time off, tardiness, and turnover are important in reflecting the profit derived from a department. If not properly handled by the foreman, each of these items is costly to the firm.

Several kinds of records of a miscellaneous nature are of significance in evaluating foremen. These comprise the third index. One set of records for pay incentive purposes is the accident record. Accidents are costly to the firm, not only from a standpoint of cost in employee accident insurance rates and necessary hospitalization and nursing costs, but also in the cost of loss of the injured worker's time. If a trained and proficient worker is off the job for 5 or 10 days because of an accident, the loss is often as much as his wages plus overhead. Another item consists of records pertaining to the

number of learners in the department. Certainly production as well as waste material must be adjusted on the basis of the number of inexperienced trainees supervised by the foreman. An index may be set up to determine whether a foreman is bringing his trainee workers up to normal production in a reasonable length of time. Such records are based on learning curves. That foreman is most efficient, other things being equal, who trains new men more quickly and effectively than others. This item can be weighted into his over-all efficiency index.

Other forms of miscellaneous records pointing to foreman efficiency include the number of improvements made in a department, improvements in work methods, and the number of approved suggestions made by the workers in the department. (See chapter 6, "Communication and Suggestion Systems.")

Records pertaining to "down time" or the time when the department is not operating at 100 per cent efficiency may be utilized in evaluating foremen and department output. Such down time results from breakdown of machinery, setup of additional tools or equipment, modification in layout of the department, and the unavailability of necessary materials. Adjustments may be worked out for these variables in order to ascribe accurately to the foreman his share of the departmental productivity. If they are not taken into account, he cannot be fairly rewarded for a job well done.

The fourth index that may reflect the value of the foreman on the job consists of subjective estimates, judgments and ratings by other people. First under this heading may be considered attitudes of workers. Morale and attitude surveys, when analyzed department by department, may reflect the potential behavior patterns of the workers. These may furnish an index of the success of the foreman in engendering employee relations of the appropriate kind. In addition to this type of indirect evidence of the goodness of the foreman, the merit rating of the foreman by his immediate supervisor at the next higher level is of importance. Such appraisals are discussed in chapter 17, dealing with merit rating. Ratings of assistants or subforemen and of the workers themselves have been found useful in some situations as an aid in appraisal of foremen.

It is clear that a multiplicity of factors may rightly be taken into account in evaluating foremen. Mere production of the department alone may not be sufficient.

The practice, utilized somewhat in the 1920's and 1930's, of setting aside a proportion of the incentive pay of the workers to re-

ward the foreman for his work in supervision has been largely abandoned. This practice in some plants enabled the foreman to increase greatly his earnings over and above his base pay. Sometimes as much as 5, 7, even 15 per cent of the amount of the bonus or incentive pay of each worker was placed in a pool. This amount was given over to the foreman as his reward.

Wemple lists the following characteristics of a reasonable plan for allocating incentive rewards to supervisors:

1. Recognize that the supervisor's responsibility is greater than that of the average worker.
2. Base the plan upon a sound measure of productive effort.
3. Incentives should be measured by a performance over which the supervisor has a reasonable degree of control.
4. Plan must be thoroughly understood by the foreman and accepted by him as fair and equitable. In particular he must agree that the standard is reasonable.
5. It should be related to the amount of money over which he has control, so that as his responsibility increases, opportunity to earn more bonus money increases also.
6. It must be based upon a fair standard which is determined from adequate experience. This standard should be guaranteed for a reasonable length of time and the foreman assured that it will not be lowered unduly if he is capable of lowering the actual performance cost.
7. It should be computed upon a basis of several months' performance to avoid monthly inequalities.
8. It should pay a bonus for performance better than previous experience.
9. It should be administered by men capable of thoroughly understanding the foreman's problems.[11]

The advantages of a foreman bonus system are evident. Disadvantages, in some situations, may, however, outweigh advantages. A National Industrial Conference Board Report lists seven disadvantages:

1. Foremen may tend to drive the workers harder than under a straight salary plan.
2. Foremen's duties having no direct relation to the factors governing calculation of bonus may be neglected.
3. Promotions which make necessary the breaking-in of new employ-

[11] W. J. Wemple, "What Is the Right Incentive for Supervision?" *Incentives for Management and Workers, Production Series No. 161* (New York: American Management Association, 1945), pp. 3–10.

ees may be neglected in order to maintain a smooth-running department.

4. Foremen may fail to give continuous cooperation if their maximum goal in increased earnings is set too low.
5. If the plan adopted is not correctly related to business volume, individual bonus earnings may be out of line with work accomplished and the plan discredited in the eyes of the foremen.
6. Unless great care is used in establishing performance standards, certain foremen may be paid large bonuses that are out of proportion to their contribution to the over-all result, while other foremen actually contributing more may receive smaller bonuses.
7. A bonus plan put into effect at a time when foremen feel that an increase in basic salary is overdue may fail to arouse real enthusiasm among them.[12]

It is not always simple to set up a direct incentive system. Difficulties may be encountered in establishing standards on jobs and also in arranging the work situation so that output ascribable to a worker can be accurately determined. It is probable that many plants have attempted to force the direct or individual incentive plan upon a situation which does not lend itself to direct incentive.

Indirect Incentives [13]

In this section attention turns to indirect incentives. Indirect incentives are of several kinds: first, the incentive to all the members of the department or to a gang or group of workers who are largely responsible for the amount of production of that group; and second, plant-wide bonus or incentive system. Let us look at the experiences of one company in the development, installation, and use of a plant-wide bonus system. This company is the Wolverine Tube Division of the Calumet and Hecla Consolidated Copper Corporation.

The Wolverine Tube Division is one of a considerable number of firms that have developed and discarded a direct incentive plan. The main difficulty experienced at Wolverine with the incentive system was that the union refused to permit the incentive plan to

[12] By special permission of the National Industrial Conference Board, Inc., "Foreman Compensation," *Studies in Personnel Policy No. 30,* p. 10. Copyrighted 1941.

[13] Material contained in this section has been drawn from conversations with H. Y. Bassett, Vice-President, Calumet and Hecla Consolidated Copper Corporation and Manager of the Wolverine Tube Division; with D. D. Decker, Director of Industrial and Public Relations, Wolverine Tube Division; and with Robert C. McCoy, Manager, Industrial Relations, Detroit Plant. During 1950 the plan as outlined was considerably revised to accommodate changing conditions resulting from organization of a new plant.

go into effect. The company had spent about $100,000 in the development of the direct or individual incentive plan.

The company, after study and careful negotiation of the union contract, agreed at one time to an increase of 18½ cents per hour. Production increased greatly after that. Then a group production bonus plan was evolved. The plan developed was simple. Workers received two checks—their regular base pay check and a separate bonus check. The base pay rate was established on the basis of production during preceding months. For production of the plant above this base, in terms of defined increments, a bonus of 1 cent per hour was agreed to be paid to the employee each hour he worked during the month. If he worked on a time-and-a-half day, he would get 1½ cents bonus for all hours worked and on double-time days, 2 cents for each hour of work. Part of the union contract of agreement between the firm and the union concerned with the production bonus plan is quoted (with some adaptations) below:

1. The company and the union agree to the establishment of a bonus plan as a means of rewarding all workers for increased production.
2. All hourly employees coming under the union contract shall be eligible to participate in the bonus, providing they are on the payroll on the last day of the monthly work period.
3. The method of computing this bonus shall be on a four- or five-week-month basis on the average pounds [of production] shipped per day in accordance with [a table].
4. Management reserves the right to continue to schedule orders, accept or reject orders, and to process material in any manner it sees fit.
5. Management reserves the right to withdraw from this plan. Management also reserves the right to propose changes in the schedule of pounds and the rates of pay for such poundage. Such proposals will be presented in writing to the union. No change will be made without the mutual consent of both parties.
6. The union reserves the right to withdraw from this plan. The union also reserves the right to request changes in the schedule of pounds and the rates of pay for such poundage. Such requests will be presented in writing to the management. No change will be made without the mutual consent of both parties.
7. The bonus basis in daily shipment shall be adjusted in accordance with the manpower available in obtaining such production.
8. The daily shipments base will be adjusted up or down in accordance with [a manpower table].
9. Payment of bonus: The bonus shall be payable to hourly workers on the first pay day following the fifteenth of the month succeeding the month in which the bonus is earned.

10. The bonus payment will be computed as follows: The individual's hourly rate is to be increased in accordance with [a schedule] dependent on the daily shipment average for the month and payment will be based on hours paid for.
11. Miscellaneous: Daily shipment average figures are to come from the accounting department records. Necessary deductions for returns will also be made.
12. Manpower figures shall be obtained from the Industrial Relations Department and shall represent the average available manpower for the period involved.
13. Average daily shipment figures from the production and planning departments will be posted daily in suitable locations, it being understood that these figures are subject to adjustment to conform with the accounting department's final monthly figures. These final figures are to be posted within five days after the end of the period.
14. A day shall be considered as a day worked when at least 90 per cent of the plant is scheduled to work. Should the plant working force be scheduled to be less than 90 per cent of the regular force on any one day, the shipment shall be excluded from monthly totals and the day shall be considered as a day not worked for the purpose of computing the bonus.
15. Equipment changes: Additions of equipment which will markedly change the production capacity of the mill without any increase in efficiency will result in an adjustment upward of the production base used in the bonus program. Additions of minor pieces of equipment will not constitute sufficient reason for a change in the base.
16. Formation of joint union-management committees to facilitate production operations shall be set up. The details and methods of operating such committees shall be worked out by the union and the management. It is understood that the administration of the proposed bonus plan is not a function of any committees so formed.

Not only hourly-rated production workers participated in the plan at Wolverine but also every person in the plant, from the manager to the sweeper. A schedule of bonus was set up for office workers and other salaried employees, although the schedule of bonus for these employees was not a part of the negotiations with the union. It is noteworthy that provision has been made in paragraph 15 of the contract for technological changes and improvements in equipment which might be needed as the plan is used.

How well does the production bonus plan work? Decker stated,[14]

[14] D. D. Decker, "The Plant-Wide Incentive," *Labor-Management Cooperation for Increased Production, Production Series No. 175* (New York: American Management Association, 1948), pp. 15–23.

"Formerly as much as 75 per cent or 80 per cent of the supervisor's time was spent in seeing that his employees were on the job at the start of the shift and stayed on the job until the end of the shift. Such efforts [now] never require but a small portion of that supervisor's time. To a great extent employees are policed by each other. Even union representatives of their own volition check employees who aren't doing a job." Decker further indicated that the cost of the simple bonus plan in effect at the Wolverine Tube Division was "practically nothing." He contrasts this cost with the cost that would have been necessary in establishing the individual incentive plan. The only records necessary for the operation of the plant-wide plan at that firm consisted of daily shipment figures which were

TABLE 19.3

Increased Production After Installing Plant-Wide Bonus *

	Average Number of Employees (*Per Cent*)	Production (lbs. per man hour) (*Per Cent*)	Net Lbs. Shipped per Day (*Per Cent*)	Bonus Payments (*Cents Per Hour*)
January	98.6	99.5	111.5	0
February	99.5	100.0	129.7	0
March	97.1	120.6	151.1	0
April	99.0	142.8	169.8	0
May	98.3	135.1	169.9	0
June	97.9	134.5	178.5	0
July	97.1	130.4	164.7	0
August**	97.4	135.6	180.1	9
September	97.7	114.9	143.7	0
October	98.2	149.5	196.4	13
November	98.5	143.8	190.8	11
December	97.7	146.3	180.2	9
January	99.8	157.7	210.0	16
February	99.3	156.2	205.4	15
March	99.3	151.0	193.2	12
April	99.4	160.8	216.7	18
May	98.6	161.9	193.5	12
June	99.3	151.0	184.3	10
July	99.4	148.5	188.4	16
August	99.8	149.5	188.0	16
September	99.4	162.6	221.9	24
October	99.8	156.3	207.8	21

Note: December, 1945—100 per cent.
** Bonus plan became effective.

*Source: D. D. Decker, "The Plant-Wide Incentive," *Labor-Management Cooperation for Increased Production, Production Series No. 175.* New York: American Management Association, 1948), p. 22.

routinely obtained for other purposes. Decker further stated, "Since the introduction of the bonus, morale in our plant among both hourly and salaried employees is extremely high—and that means production." Table 19.3 contains figures indicating production.

There are obvious advantages to a group or plant-wide plan. It is easily computed, inexpensive to administer, and incentive earnings may be paid soon after being earned. While the worker is working, he can know exactly how much he is working for because that amount is posted in the mill or factory. These features are characteristics of a good incentive plan. Bonus related to individual effort is not a part of this plan. This one earmark of a good plan is important; this is a weakness in the plant-wide plan. Its main disadvantage is, of course, that there are some laggards, parasites who work more slowly but profit by the industry of other workers.

Certain features of the operation of the plan, however, may offset this unfavorable aspect of the plant-wide plan. It is possible that the group plan may be more effective in the long run for not having the direct relation between individual effort and bonus, simply because of the group spirit and teamwork engendered among the workers themselves and between workers and various levels of supervision.

Summary

Incentive systems have had their ups and downs during the past half century. Whether they work depends, other conditions equal, on how adequately they are introduced to lower supervision and to the rank-and-file employees. Direct incentive plans require time standards for each job, estimates of allowances for miscellaneous factors such as the workers' personal needs and fatigue (generally highly subjective, arbitrary, and argumentative), records of production on individual workers, conditions of work which enable records to be made of the production of individual workers, and, generally, considerable cooperation between management and worker, and faith that management will not decrease incentive pay rate or unreasonably "speed-up" production. Foremen occupy a key position in the incentive system.

The complete cooperation of foremen in a worker-incentive plan is crucial. About one out of five of the larger manufacturing firms provides bonuses for foremen. Use of several indices of efficiency of a foreman is possible: a combined index of efficiency of workers in

his department, an index of employee unrest, various records of the department—production, accidents, waste or scrap, operating cost —and merit ratings of the foreman by higher supervision.

Direct worker incentives, such as the piece rate, are no panacea or cure-all for production ills. Some companies have come to group or company-wide incentives. These may engender teamwork and sometimes are strikingly effective.

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