THE RELATIONSHIP OF PSYCHOLOGY AND SOCIOLOGY TO INDUSTRIAL ENGINEERING

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PREFACE

Engineers, scientists, and inventors have produced a technological age which is truly marvelous, but one which has not always satisfied the hearts and minds of the people who operate its machines, or of the customers who benefit from its products. The magnificent industrial and technical development has produced its share of technological problems. Though these problems still exist, management is faced with the realization that they are secondary. The primary problem of industry is a problem of human relations.

Human relations in industry has, in too many cases, been handled like the weather - much has been said about it, but not much has been done about it. Thoughtful leaders in industry will agree that most of their planning and energy has been devoted to the problems of production. In the past, the greater part of their time has been spent in simplifying, specializing, and mistake-proofing manufacturing operations. Industry has been so absorbed with the mechanics of doing the job that it has too often neglected the humanics of getting the job done.

It is recognized that much of industry's planning and energy must be devoted to the problems of production. But what has too often been overlooked is the fact that behind all the mechanics of doing the job stands the human element - the men and women who are the employees.

The foundations of management are the laws of human behavior; the dynamics, the energies, and the satisfactions of the workers who comprise an organization. The personal desires of the individual must be correlated with the objective of the organization; neither can survive alone. The personal characteristics of the individual must be converged into a mutual zone of acceptance, compatible not only to the individual, but to the organization as well.

This can only be accomplished through human understanding and complete cognizance of the many psychological and sociological relationships that exist in an industrial organization. In the past, management was guilty of regarding these relationships as insignificant factors. Only lately have they realized how these same relationships completely dominate the organization personality; its effectiveness, efficiency, and ultimate survival.

In a sense, industry may be viewed as a vast arena for the interplay of human behavior. Since human behavior, in one form or another, is involved in all phases of industrial practice, it is the author's belief that a presentation of a brief non-technical, but systematic treatment of psychology and sociology and their bearing on industrial practice would be useful to the industrial engineer. Many texts on industrial psychology and sociology have primarily concerned themselves with the mechanics of management techniques. Little attempt has been made to correlate the various concepts of psychology and sociology with these techniques.

The industrial engineer, as a member of management, is definitely in a position to benefit by a study of psychology and sociology in relation to industry in terms of basic concepts and principles. While most of the principles and techniques of management have been derived from the sciences of engineering, there is a definite need to intergrate this knowledge with the social sciences of psychology and sociology.

Management, therefore, has a real responsibility to study the psychological and sociological environment of the shop, office, and indeed of the total industrial civilization, to make way for conditions which will bring about the ultimate goal of human understanding and ideally successful organizations. The study of people, inter-relationships of groups of people, and behavior and attitude patterns of people, with emphasis on their social

environments, present a challenge to the future members of industrial organizations. The industrial engineer, as the future leader of industry, can prepare himself to accept and meet this challenge by integrating his knowledge of engineering with that of the social sciences of psychology and sociology.

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CHAPTER 1

SCIENTIFIC MANAGEMENT AND INDUSTRIAL ENGINEERING

The nature of the relationship between employer and employee grew out of a situation in which a personal contact was present. Each knew the other intimately, and from experience each learned what he could expect from the other. This personal knowledge was a workable substitute for psychology. During the 19th century industrial development proceeded so rapidly that the line of cleavage between the employer and employee grew deeper. Moreover, as the number of employees under a single management grew greater, the employer was no longer aware of the conditions under which his employees lived, and he was often little concerned about the conditions under which they worked, so long as the profits of the factory remained good. Economy in the application of capital, replacement of worn out machinery, and conservation of natural resources received careful consideration, but the necessity of protecting and conserving the human element was scarcely recognized.[1] "Waste of human life, accumulation of fatigue, and destruction of health in industry received no such attention."[2] Hicks presents an interesting picture of these conditions.

> Competition among manufacturers was keen, and the need of keeping down labor costs led frequently, especially in the textile mills, to the employment of women and children. Long hours of labor were required in the early factories - 'from dawn to dark,' or from thirteen to fifteen hours a day, was not unusual. Since most of the original 'hands', or operators, had been recruited from the farms, where these long working hours had been the rule, the laborers at first saw no reason to protest. But some of them, at least, soon came to realize that the varied outdoor labor of the farm was one thing, and the monotonous indoor labor of the factory quite another. Many of the

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[1] Morris S. Viteles, Industrial Psychology, p. 21.

[2] G. S. Watkins, Labor Problems, p. 324.

> factories were badly lighted, poorly ventilated, and dangerous to life and limb. Children were given little if any opportunity for schooling, women were kept away from the duties of the home, heads of families were often unemployed because of the unfair competition of women and children.[3]

The rapid industrial development completely altered the nature of the relationships between employer and employee. The disappearance of the personal contact between these two classes made it impossible for one to know the other intimately. As a consequence, they no longer could deal with a firsthand knowledge of one another, and the personal contact was no longer a workable substitute for psychology. It became increasingly necessary to consider the human element in industry and in general to know about people. An ideally efficient manufacturing enterprise demanded a great deal of attention to the management of manpower.

The Work of Taylor.

Frederick W. Taylor, an American engineer, was perhaps the first to take any definite step in the rationalization of human methods to work.[4] Starting toward the end of the 19th century, Taylor gave to this factor in production the same careful attention which, from the beginning of the Industrial Revolution, had been devoted to the perfection of the machine. He became the pioneer of the movement which has spread throughout the entire world under the names of Taylorism and of Scientific Management.

In the development of his system Taylor starts with two assumptions. The first states that "what the workmen want from their employers beyond anything else is high wages, and what employers want from their workmen is a

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[3] John D. Hicks, The Federal Union, p. 479.

[4] Viteles, op. cit., p. 9.

low cost of manufacture."[5] The second reads:

> . . .no system or scheme of management should be considered which does not in the long run give satisfaction to both employer and employees; which does not make it apparent that their best interests are mutual and which does not bring about such thorough and hearty cooperation that they can pull together instead of apart.[6]

Concept of Unit Operations.

The work of Taylor and his disciples was almost entirely concerned with what has been referred to as "Unit Operation."[7] This implies the idea that a man, with tools or machine, applies certain skills to materials and produces something new. The thought is that by analysis it is possible to devise a better way of doing it. Inherent are a host of ideas, the appearance of materials when needed, the design of the tools or the machines to be most effective and the instruction of the worker so that he will attain maximum production with the least amount of effort. Such factors as how large a shovel to use, how deep a cut to take, how much weight a man can carry, how best can human effort be applied to a task, were carefully studied. The material, the tool, the human effort were studied, a set of directions was issued and the worker was trained. In effect this was a job of coordination of a signal task. A total task was to be broken down into a series of, perhaps, sequential tasks, and each was to be studied to devise a best way of doing it.

From this fundamental analysis developed the field of Time and Motion Study, of Work Simplification and the like. Quite naturally the related fields of Wage and Salary Determination, of Job Analysis and Specifica-

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[5] F. W. Taylor, Shop Management, p. 21.

[6] Ibid., p. 21.

[7] Reports in Industrial Engineering, (New York: Columbia University Press, 1949), p. 3.

tions were developed, which in turn helped to creat the field of Personnel. Although Taylor was concerned with the human methods of work, it is important to realize, however, that to Taylor and to Taylor's day the worker was an actuator, and not an individual with hopes, ideals, and aspirations. [9]

The work of Taylor in this specific field was undoubtedly important, but it was far more important as a starter. The increase of productivity due to the use of the existing techniques in these fields quite naturally suggested that the theories developed in connection with unit operation could well be expanded to the organization of similar or diverse, parallel, sequential and service unit operations which together formed an industrial unit.

Integration of Unit Operations

The integration of these unit operations developed the field of Production Control: routing, scheduling and dispatching, of planning, preparing and control. In reality, this represents the combination, in what is considered the most effective manner, of several semi-homogeneous operations to accomplish one over-all objective. The theory and practice of Production Control made possible the mass-production industries so characteristic of the American industrial life and became so widely recognized that the methods were translated in such widely diverse fields of Office Management and Business Administration on the one hand, and the military where it appears as Logistics and Operational Planning.[10]

From this integration, a myriad of formal techniques and procedures gradually evolved. The following list covers some of the more important of

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[9] Ibid., p. 3.

[10] Ibid., p. 4.

These techniques and procedures: organization charts; standard practice information; employee selection; employee training; employee evaluation; plant layout; inventory control; preventative maintenance; market research; sales management; standard costs; flexible budgets; financial budgets; statistical quality control; keymen incentives; executive incentives; executive training; personnel administration; formalized grievance procedure; health and safety programs; labor-management committees; suggestion systems; physical fitness programs; insurance and pension programs and plans, machine accounting; office methods and incentives; and other special reports and investigations.[11]

Management as a Profession.

With all these things to consider, it is no wonder that there has sprung up in the last quarter century a profession variously called industrial engineering, management engineering, or management consulting. Actually, industrial engineering's growth to maturity, recognition, and general acceptance is a phenomenon that followed World War II. However, it does not yet enjoy the status of a profession whose members have recognized functions and qualifications. No exact definition of the term "industrial engineering" exists, and consequently it is used loosely to describe the activities of a host of industrial specialists. There is scarcely a phase of manufacturing or distribution on which some industrial engineer somewhere is not qualified to offer expert advice.

The industrial engineer differs greatly from his brother engineer. He must be concerned with the multitude of factors that affect production, and

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[11]Paul Kellogg, "Management - Today and Tomorrow," Engineering Journal, XXXII (May, 1949), p. 290.

because of this, finds himself dealing more and more with human beings. The problems which most engineers have to deal with have one correct answer, but not so with the industrial engineer. Because he is dealing with the human factor, his problems usually do not have a single correct answer; rather they have several answers.

The rapidly changing organization of industrial society is greatly responsible for the elevated status of the industrial engineer. During the early part of the century the typical executive was a lawyer, a banker, or an accountant, or, in many cases, a "self-made man." Gradually the self-made man, the originator, passed out of the picture, and his place was taken by the salesman or the consolidator. As industry became more consolidated, as the costs of operation became increasingly important, and as new technologies developed, the industrial engineer rose to a position of greater importance. On the one hand he was an engineer-scientist; on the other hand an engineer-organizer. As the complexity and interdependence increased, the need for a coordinator and interpreter became more and more apparent. Thus management as a profession became recognized, and programs were developed to train men especially for management responsibilities. The management function is of major importance, and the training which an industrial engineer receives best fits him to qualify for this management function. In considering the relationship of psychology and sociology to the industrial engineer, the primary concern will be the industrial engineer in the role of management.

Management Research

Until recently, most research for management had to do with the physical aspects of production and drew heavily on the physical sciences, primarily engineering. Although Taylor himself envisioned a wider range, many who

succeeded him were not able to see the great implications in the mental revolution which he insisted was necessary if management was to be more than merely systematic—if it was to be truly scientific.

It is no wonder, therefore, that for a long time after Taylor's death many of those who exploited his scientific management contented themselves with certain popular, specific techniques such as production planning, scheduling and control, plant layout, arrangement of the unit work place, time studies, motion studies, the establishment of standards of cost and of units of work, and wage rates.[12] The keynote was efficiency while the philosophy and inclusiveness of the truly scientific approach were frequently obscured. Within the past twenty-five years management research, concerned with the industrial civilization and, more particularly, the problems of industry, revealed the true importance of the human factor in industrial organization. This revelation is best described by Viteles:

> Human reactions—of man to man, of man to machine and material—occupy a prominent place in the complex pattern of industrial enterprise. Underlying every industrial process, as mechanized as it may be, and often closely associated with it, are human ingenuity and control. As marvelously intricate as they may be, machines must be designed, operated, and cared for by men. They must be built with due respect for the physical and mental characteristics of the man who is to operate them. In determining their methods of operation, their speeds, their very construction, the limitations of human rates of speed, of qualities of co-ordination, of human judgment, of the capacity to learn must be taken into consideration. Moreover, the success of our industrial civilization, as well as of individual plants, depends not only upon the worker's skill in the operation of the machine, but also upon such strictly human attributes as his attitude toward them and upon the satisfaction which he obtains in their operation.[13]

The accomplishments of the industrial organization involve the human element, namely the industrial executive—by his judgment, by his ability to

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[12]Evelyn Buckley, "A Dynamic Approach to Management," Advanced Management, XXII (December, 1947), p. 165.

[13]Viteles, op. cit., pp. 3-4.

understand and direct the human forces in his plant to integrate the clash of motivation between management and workers.

The substitution of improved methods of work for the inadequate procedures adopted by the worker when left to his own devices, the assignment of a definite task, the assurance of a high return for increased production, and numerous other factors have not been sufficient to insure the continued efficiency of the worker. It has been found that the physically scientific approach must be supplemented by a more careful study of other sources of human proficiency, and by a more extended consideration of other roots of human satisfaction—of the causes of human adjustment and maladjustment in industry—if extended productivity is to be obtained. There evolved the need to integrate the scientific knowledge with the social sciences of psychology, sociology and social psychology.

In the face of growing dissatisfaction with his procedures, the industrial engineer, and especially the industrial executive, found it necessary to re-evaluate his techniques; to recognize the influence of such by-products of his work as selection; to capitalize on other related fields such as training. In such a revamping of his entire approach, the industrial engineer encountered technical problems involving the human element. In order to solve these problems, he has had to call on the psychologist and sociologist for increasing assistance.

In its every aspect, the stability of industrial enterprise depends no less upon the solidity of its economic and technical supports than upon the soundness of its psychological foundation. Industry must be viewed as an immense arena for the play and interplay of human behavior. The failure to study the character of this phenomenon, to analyze the conditions which influence the effectiveness of human behavior in industry can only result in serious

waste in the form of individual maladjustment and of industrial inefficiency.

Summary

To completely trace the background of industrial engineering would be beyond the scope of this thesis. An attempt has been made to summarize the more important aspects of this development in order to acquaint the reader with the diversified activities of the industrial engineer. Despite the myriad of techniques and procedures utilized by the industrial engineer and management the goal of an ideally efficient organization has not been realized. Increasing attention must be given to the study of human behavior if management is to realize its goal. Subsequent chapters will illustrate how the application of psychological and sociological concepts and principles have assisted management in revamping their techniques and procedures in an attempt to realize industrial efficiency and sound employee relationships.

CHAPTER II

INDUSTRIAL PSYCHOLOGY - ITS CONCEPTS AND APPLICATIONS

From its beginning as a branch of philosophy, psychology has established itself as an independent social science. Like that of all sciences, its aim is to reduce all phenomena to cause and effect.

Psychology started as a "rational" system. Its problem was one of applying reason in arriving at a knowledge of psychic life. One noted psychologist states that "rational psychology took the form of philosophical speculation with respect to the value of consciousness and the origin of the soul."[1] As interesting and as worthwhile as this speculation may have been, it contributed little to the development of a science of human behavior.

It was during the latter half of the nineteenth century that psychology began to "venture away from its armchair and enter the laboratory."[2] As this experimental approach became a more dominant influence in psychological thinking, the emphasis on the subject matter of psychology gradually shifted from mind to behavior.

The first experimental psychology laboratory was established in 1879 by Wilhelm Wundt at Leipzig. This was the first laboratory to be devoted exclusively to psychology and to offer facilities for training students in the methods of the then new science.

Psychology is the study of behavior; the study of human activities; what people do and what they think. As one writer expresses it, "the psychologist is interested (1) in describing behavior effectively (2) in predicting what people will do or think under specified conditions, and (3) in controlling

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[1] W. Weber, Die Praktische Psychologie im Wirtschaftsleben, p. 1.

[2] Anne Anastasi and John P. Foley, Jr., Differential Psychology, pp. 8-9.

conditions so that people will do and think as desired."[3] All three of these factors are of primary interest to the industrial engineer.

Enter Industrial Psychology.

The fact that psychology, conceived as a logical instead of experimental system, could make but meager contributions toward a valid analysis of human conduct is of vital importance. Approximately forty years ago, Hugo Munsterberg, a German psychologist, presented the first systematic formulation of the problems and scope of an industrial psychology. At that time he could present very little direct evidence to support his belief that efficiency and adjustment in industry could be improved through the application of psychological principles and techniques. This belief is best expressed by Viteles.

> Munsterberg pointed out the importance of psychology in promoting the adjustment and efficiency of the worker in the industrial situation. He indicated that in industry the psychologist can serve, first by finding the men whose mental qualities make them best fitted for the work which they have to do; secondly, by determining the psychological conditions under which the greatest and most satisfactory output can be obtained from every man; and, in the third place; by producing most completely the influence of human minds which are desired in the interest of business.[4]

Prior to the application of psychology in industry, further changes and modifications with respect to the scope and purposes of this new science were necessary. The changes and modifications which are of particular significance from the viewpoint of the industrial psychologists are:

1. The extension of its boundaries to include the study of individual differences.

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[3]Louis L. McQuitty, "Psychologists in Industry," Personnel Journal, XXVI (November, 1947), p. 80.

[4]Morris S. Viteles, Industrial Psychology, p. 42.

2. The enlargement of the scope of psychology to include its application in promoting individual adjustment.[5]

Even the work of Taylor and his disciples tremendously influenced the development of industrial psychology by guiding somewhat the type of investigations conducted by the industrial psychologist, and in establishing firmly the economic objective of industrial psychology. This economic objective is one of three distinct forces that have played a part in the growth and development of industrial psychology. The inter-action of the economic with the social and psychological forces not only accounted for the growth of the science, but differences in their interpretation have produced a variety of viewpoints with respect to the functions and responsibilities on industrial psychology.

> So, for example, in Germany, left in a state of severe privation by the war, economic objectives have been most powerful in determining the procedures and viewpoints of industrial psychology. In England, the active interest of a socially awakened laboring class has undoubtedly influenced the character and aims of investigations in this field. Similarly, in the United States, the development of the science has been tremendously colored by the long strides taken in the formulation of a psychology of the individual - in itself, perhaps, a reflection of the individualistic basis of the economic, and to a lesser extent of the social structure of the nation.[6]

As the name implies, industrial psychology is the application of psychological principles and techniques for studying human behavior in an industrial environment. In reality it is a conglomeration of many fields of psychology; experimental, applied, clinical, configurational, and social together with the science of psychiatry. In order that the reader might better understand these various schools of psychology and their relationship to industrial psychology, let us now turn to some of the basic concepts of psychology.

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[5] Ibid., p. 28.

[6] Ibid., p. 8.

Experimental Psychology.

The fundamental fact of applied or experimental psychology is that the individual is the unit of action; all advances in this science must rest upon a knowledge of the laws of individual behavior and the conditions which affect it. The assumption is then made by the psychologist that all behavior in question is caused. Causation implies that a given individual in a given situation must act or do as he does. This behavior may prove unpleasant to the individual, and the experience involved may modify him that he will not repeat the action. Blaming an individual may have its merits if this blame can prevent any repetition of an undesirable act, but more will be gained if it is understood that, in correcting an individual, it is a case of guarding against a repetition rather than punishing for the past behavior. The interactions underlying the principle of causation may be expressed as:

Stimulus ---- Organism ---- Behavior ---- Accomplishment

Accepting this principle of causation, it follows that in the antecedent events, not in accomplishments, lie the reasons for a given kind of behavior. Maier states that "antecedent events are forms of stimulation which, when applied to the person lead to behavior."[7] Since the organism contributes something in determining the nature of a stimulus, there is an interaction between the stimulus and the organism rather than a reaction of the organism to the stimulus. In psychology, the product of this interaction is known as perception. The importance of this interaction will be illustrated in a later chapter, "Supervisor-Employee Relationships."

In summary it may be said that the psychological approach to behavior is characterized by the fact that it accepts causation inbehavior as a fact.

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[7]Norman R. F. Maier, Psychology in Industry, p. 22.

It demands an analysis of the events that precede behavior which in turn leads to an analysis of the situation and to the study of the individual and his past experience. That this concept is of extreme importance, the author refers the reader to Maier.

> Whether the behavior is absenteeism, delinquency, hoodluism, sit-down strikes, or race riots, it must be understood in terms of antecedent events if it is to be corrected. To criticize or condemn the behavior, to describe it as bad or inhuman, or to say that the new generation has no moral values or honor, not only fails to recognize causation, but suggests no remedy for the behavior.[8]

Basic Needs of Individuals.

Psychology teaches that there are certain basic needs characteristic of the individual. The school of psychology known as dynamic or configurational psychology holds that there are two main classes of needs men strive to satisfy. The first of these needs is the primary or biological need dealing with the survival factors of food, clothing, and shelter. The second main kind of need represents a combination of social and psychological factors, namely: approbation by the individual's fellow men, approval by others, acceptance in formal and informal social groups in the home, plant and community, and innumerable others. Perhaps the most important need in this last group is that of approbation by the individual's fellow men, or more commonly expressed, recognition. There are many varying needs for recognition; the greatest of which involves "ego satisfaction." The patterns established to fulfill individual demands for ego satisfaction are "grooved or deflected during childhood and adolescence, until by adulthood they form a definite part of the mature personality."[9] While all individuals are motivated to express themselves as individual entities, some develop a more intensive

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[8] Ibid., p. 22.

[9] Jean L. Shepard, "Recognition on the Job", Personnel Journal, XVI (October, 1937), pp. 111-119.

drive than others. When these creative objective impulses for some reason are thwarted or remain undeveloped, an intensified drive results in an overly egocentric person. An opposite unbalance results in the irresponsible, ineffectual person who never finishes what he starts.

The proponents of this view of dynamic needs contend that all motivated workers are in a stress or tension relationship with their environment and their unsatisfied needs. These unsatisfied needs may be either biological, social, psychological, or usually, a combination of all three. Reference has been to the motivated workers. Closely related to the needs of men are the kinds of drives necessary to motivate these men. These may be classified as internal and biological on the one hand, and projective and ideational on the other. The internal drives have received the greatest attention from psychologists for the past 25 years. According to Moore, "they have been labelled and classified under all kinds of categories; hunger, sex, self-preservation, gregariousness, desire for mastery and many more. Concerning their significance there is no dispute."[10] The satisfaction of these various needs and the realization of the motivational drives are of great significance to the individual. When these needs and drives are unattainable or thwarted, the individual experiences various degrees of frustration.

The Concept of Frustration.

The concept of frustration and its implications represents a major factor in attempting to describe the behavior of individuals. The term frustration has been defined in many different ways, and for out purposes the definition by Cuber is sufficient.

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[10]H. Moore, "Basic Needs of Industrial Workers." Personnel Journal, XXVII (February, 1949), pp. 344-348.

> Frustration is the term used by behavior scientists to designate a condition in which a person's wish goal has been blocked, or more accurately when he realizes that it has been blocked or is unattainable in the form in which it has been held.[11]

Even persistent interferences which disrupt the smooth performance of our habits and interfere with the attainment of our goals may disrupt the healthy reaction and become sources of frustration. Whether this interference will produce symptoms of frustration depends upon "the individual's tolerance, his previous history of frustration, the pressure under which he is functioning, and his interpretation of the situation."[12] When frustration is present, the individual's behavior undergoes a marked change. Rather than healthy, unemotional activity, there is a definite degree of emotionality and unreasonableness. This frustration may only be temporary, but at times constitutes a severe and lasting modification of the personality.

There are many recurring readjustments to frustration such as rationalization, ambivalence, fantasy, compensation, identification and conversion, but the major characteristics of frustrated behavior are usually listed as aggression, regression, and fixation.[13]

Aggression.

Aggressive behavior manifests itself in the form of attack. This behavior is a result of resented interference rather than reacting to the frustrating force as a problem. When the individual is unable to direct this aggression against the frustrating agent, it may be directed at substitute objects. There are many symptoms of aggression that can be detected in the

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[11] John F. Cuber, Sociology, p. 209.

[12] Maier, op. cit., p. 57.

[13] Ibid., p. 59.

industrial employee, the most common forms of which are excessive criticism, inability to get along with others, damaging of equipment, constant complaining and voicing of grievances, absenteeism, turnover, and the joining of militant unions. This later sympton will be more clearly illustrated and described when we consider "Resistance to Change." Management, as well as labor, expresses its aggression but in different forms, the most common of which are the enforcing of stricter disciplinary measures, excessive firing, and attacking and opposing labor organizations. Whether the expressed aggression can be directly attributed to the frustration is insignificant. The point is that the individual seeks satisfaction and escape from the frustrating elements. As an illustration, "a man can readily prove to his own satisfaction that he is underpaid, but the cause of the dissatisfaction may be the frustration arising from unpaid hospital bills, an invalid wife, or losses in gambling."[14] In attempting to correct this situation, it is necessary to know whether the aggression is directed toward the source of frustration or toward scapegoats. The scapegoat may be either management or labor depending on the source of this frustration.

Regression.

Regression represents a breakdown of constructive and rational behavior and manifests itself in the form of childish behavior. In its extreme form, the adult regresses so greatly that his speech and habits of cleanliness are those of infants. In industrial employees, the signs of regression are a loss of emotional control, lack of responsibility, indecisiveness, responsiveness to rumors, and childish antics, to name a few. Management, on the other hand, refuses to delegate responsibility, becomes very sensitive and self-centered, and fails to make obvious distinctions. This inability to make obvious

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[14] Ibid., pp. 62-63.

distinctions is a sign of low intelligence and represents a very regressive attitude on the part of management. This is a strong and pervasive tendency to make or change generalizations on the basis of one or only a few experiences. Thus, the manager may pass unfavorable judgment on a man because of his race or creed, while the employee may pass unfair judgment on a supervisor because he generalizes that all supervisors are slave-drivers.

Fixation.

The term fixation designates a compulsion on the part of the individual to continue a kind of activity which had no adaptive value at all. This is often referred to by psychologists as "perseveration"; a deep-seated tendency in the nervous organization. It is a trait which seems not to be under voluntary control, but rather is the persistence in clinging to a given thought channel and an inability to shift to any other for a time. Fixated individuals are blindly stubborn and unreasonable, although they rationalize their actions by saying they are merely being persistent or cautious. This attitude cannot be defended as being logical, since logic in this case follows decisions rather than preceding them. It is the aim of management to have individuals who are willing to accept change and seek new ideas rather than resisting them by their fixated behavior.

Applied Clinical Psychology.

The reader will realize that any attempt to examine all the underlying principles and concepts of psychology would be beyond the scope of this thesis. Only those principles and concepts, which will aid in describing human behavior in an industrial environment have been examined. Clinical psychology, one of the components of industrial psychology, is the psychology interested in applying or using the information, principles and concepts 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.[15]

The clinical psychologist is interested in helping individuals to live more effective, useful and happy lives. He realizes that by achieving better personal, social, home and work adjustments for the individual, he is at the same time eliminating the frustrations of management and the stockholders. Nor is clinical psychology limited to the laboring class or an organization alone, but rather is placing more emphasis on attacking the problem from the highest point—that of management. The psychiatric investigation, although similar to that of clinical psychology, is a more comprehensive approach, and assesses the constitution and make-up of the entire personality. As Dr. Anderson describes it:

> It is a clinical and dynamic approach that gives due consideration to the main trends in the mental life of the individual, the so-called patterns he has established, his habits and ways of doing things, his attitude toward himself, towards others, and towards life situations in general; his interests; his hopes; his mistakes; his defeats; his fears; the conflicts and complexes and the driving forces, emotional and instinctive in his nature.[16]

Industrial Social Psychology.

This concern for human welfare is again substantiated by industrial social psychology, the study of human relations in business and industry. This is of primary importance to management because "it aids managers in attaining maximum use of personnel for the common good,"[17] and "it is

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[15]"The Definition of Clinical Psychology and Standards for Training Clinical Psychologists, "Psychological Clinic, XXIII (1935), pp. 2-8.

[16]V.V. Anderson, "The Problem Employee - His Study and Treatment," Personnel Journal, VII (October, 1928), pp. 203-225.

[17]Roger M. Bellows, Psychology of Personnel in Business and Industry, p. 287.

closely related to the causes of industrial unrest manifested by such symptoms as absenteeism, excessive labor turnover, slowdowns, grievances, lockouts, strikes, and picketing."[18]

Social psychology has experienced a very rapid growth as a result of the pressures created by World War II for the solution of hundreds of social problems. Following are some of the subjects of research studied by the social psychologist during the period 1939-1945: basic concepts of frustration, aggression and leadership; techniques of research; building civilian morale; combatting demoralization; enemy morale and psychological warfare; military administration; international relations; domestic attitudes, needs, and information; and the psychological problems of a wartime economy.[19] It was only with the acceptance of experimental techniques and statistical procedures that the social psychologist realized that social groups could be dealt with experimentally in the laboratory, observed objectively, and to some extent measured. Previous to 1930, social psychology viewed perception, learning, and motivation as the only rigorously scientific branches of psychology.

Psychologists in Industry.

During the recent past, psychologists approached the basic problems of human relationships in industry, despite the fact they had relatively few adequate tools with which to work. Their approach was supplemented by a wealth of clinical experience, and many well-formulated theories such as those previously explained. The appearance of the psychologist in industry represented a tacit admission on the part of management that the machine, considered the sole need of an industrial era, was insufficient in itself to meet the complex

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[18] Ibid.

[19] Forwin Cartwright, "Social Psychology in the U. S. during the Second World War," Human Relations, I (August, 1948), p. 333.

demands of an industrial civilization. As perfect as machines may be, they can only be used to advantage by properly selected and trained men, conversant with methods for most effectively employing the energy at their disposal and the willingness to do so. With this growth of machines and large scale production, each individual was faced with pretty much the same conditions of work, and it became increasingly important that "materials and methods of work and general working conditions should be designed specifically in view of what the greatest possible number of normal people can do with the least strain, fatigue, and threat of ill-health."[20]

Industry largely accepted psychology as a tool because of what it could contribute toward the cheaper production and merchandizing of goods. In this respect, industrial executives were supported by a group of psychologists to whom an increase of efficiency and a decrease in production and distribution costs was the only motive for studying human behavior in industry. According to other psychologists, such a psychologist is a traitor to his training in the present state of our economic system. To the true psychologist, increased production, like happiness, must be a by-product of the proper adjustment of the individual to his work, home and play. Although recognizing the fundamental soundness of a plan designed to increase human efficiency, psychologists have, at all times, been very critical of the great emphasis on efficiency and the relative disregard of human welfare in the proposals and practices for putting the plan into operation adopted by industrial engineers. The main concept of the psychologists is that human beings are of primary value in industry. The recognition of this concept is best illustrated by Viteles.

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[20]Sir Frederick Bartlett, "Psychological Research in Industry," Journal of the Textile Institute, XL (May, 1949), p. 420.

> Psychologists were in a position to observe the repercussions of industrial maladjustment in the form of dissociated personality, in the form of conflict in the home, in early superannuation, and in other ways. They were familiar with the human failures produced by a social structure which placed machines above men, production above human value, laissez-faire above an intelligent social concern for individual members of the community. For these reasons, the majority of industrial psychologists welcomed an opportunity to apply their methods in preventing such failures. In doing so they have condemned procedures and outlooks formulated solely upon an economic basis and have insisted upon social justification in the form of improved individual well-being for the work which they are doing. They have definitely accepted the viewpoint that industrial practices are to be judged not only by the criterion of economic return, but in terms of their effects on human beings.[21]

Management was slow in recognizing that the technological problems that confronted them were secondary. Their primary problem was one of human relations, and the gist of the matter was in the behavior of man. A noted psychologist expanded this theory further.

> What are the psychological foundations of management? They must be the laws of human behavior. They are found, in the dynamics, the energies and the satisfactions of the workers who comprise an organization, and the satisfaction of the public served by that organization.[22]

Management tried to define human nature by intuition, by edict, by opinion, but mostly by introspection. Because they felt they knew and understood themselves, they knew all there was to be known about all other men. Only when industrial unrest and strife had set in did management realize that the individual is a complex structure whose behavior cannot be described and determined strictly from a subjective aspect.

The industrial psychologist, however, is trained in all the scientific methods of psychology and is familiar with the processes and conditions in an industrial environment. He knows man's inner thoughts and desires and knows how these thoughts and desires respond to the requirements and conditions of

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[21] Viteles, op. cit., p. 25.

[22] Wallace H. Wulfeck, "Psychology and Management," Personnel Journal, XIX (June , 1940), pp. 49-54.

industry. The aim of industrial psychology is not primarily to obtain greater output but to give the worker greater ease at his work. This ease includes not merely physical ease but mental ease as well. The industrial psychologist is primarily interested in human happiness and only secondarily in human efficiency although he recognizes the importance of the latter. This viewpoint is contrary to the old view of the "efficiency conscious" industrial engineer whose primary concern is maximum efficiency with scant regard for the human element involved. The industrial psychologist also seeks to make industry more efficient, but he believes it can only be done by "considering the maximum well-being of the human element in industry and never by the sacrifice of this human element to production."[23] This viewpoint represents the fundamental basis of a sound psychological concern for individual welfare in the industrial environment.

One of the first essays on the application of the principles of psychology in inducing employees to increase the quantity and to improve the quality of their work was a volume by Scott, published in 1911. "The greatest business problems of our day," wrote Scott, "have to do with the personnel of industry, and the arts of guiding and influencing men in the achievement of business aims."[24] He adds that "it (psychology) is the only science that can give us any sound information about human nature."[25] This book represents the first studied analysis of worker's motives and drives by one trained in the theories and procedures of psychology. Other investigations of the psychologists, however, come closer to the customary work of industrial engineers,

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[23]Viteles, op. cit., p. 25.

[24]W. D. Scott, Influencing Men in Business, p. 186.

[25]Ibid.

and it is with these investigations that industrial psychology is concerned. Through application of basic psychological concepts and principles, the industrial engineer has already been aided in these typical problems:

1. Establishment of standards of competence, personality, and emotional stability.

2. Testing, selection and placement of personnel through application of those standards.

3. Training methods based upon educational psychology to train employees faster, more economically, and more effectively.

4. Motion and time studies pointing out the "best" way of performing assembly operations and establishing performance rating scales.

5. Studies of accident-proneness, separating accident-inviting individuals from hazardous jobs and giving engineering safety devices a chance to succeed.

6. Understanding of the incentives that motivate people and their reactions to orders enables management and supervisors to do a better job.

7. Institution of merit rating systems to evaluate eligibility for salary increases and promotions.

8. Detailed studies of fatigue including such factors as illumination, temperature and ventilation, noise, nourishment, hours of work, rest pauses, attitude and morale.

9. Exhaustive studies of vision, particularly of the sharpness of observation, giving a basis for selection of superior inspectors.

10. Understanding the psychological concepts of color permits its use in marking off passageways, locating fire-fighting equipment, accentuating hazardous structures, and providing a comforting background to employees.

11. Employee counseling in which employees have the opportunity to unburden their troubles to a sympathetic listener without fear of reprisals to the employee or obligation to expensive corrections for the employer and without unwanted precipitation of baseless complaints into the grievance procedure.

12. Detailed studies of financial and non-financial incentives, and the problems of unemployment and labor turnover.

All these functions seek to improve the character, competence, and contentment of workers in their work environment. Many industrial engineers and

managers are totally unaware of the amount or value of excellent psychological-based work carried on around them. These are some of the previously cited techniques of management with which industrial psychology is concerned. The ensuing chapters will be an attempt to give a background of these techniques and to show how the industrial psychologist has abetted management in their effective operation.

Summary.

The author has attempted to present some of the more basic concepts and techniques of the various schools of psychology. It has been shown that these various schools are closely related both in theory and application, and each makes up an integral part of the science of industrial psychology. In a sense, industry has been turned into a vast laboratory for the investigation of every aspect of human behavior involved in the adjustment to industrial situations. The methods and techniques of these various schools of psychology have been utilized in these studies. New techniques, new concepts and viewpoints have greatly enriched our knowledge of human behavior in an industrial environment and the psychologist himself has become interested in these general principles, regardless of the field of investigation he may be engaged in. The scope of industrial psychology is as extensive as that of psychology itself, the main difference lying in the application to a specific situation. As Tiffin points out: "The growth of interest in psychological methods during the past decade within such organizations as The American Management Association shows that psychology as a technology has been accepted as a tool of industrial management." [26]

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[26]Joseph Tiffin, Industrial Psychology, p. vii.

CHAPTER III

SELCTION AND INTERVIEWING TECHNIQUES

During the past twenty years, a shortcoming of industrial managers in the organization of their plants was a tendency to focus too much attention on the physical aspects, at the same time paying little attention to the human side—the workers, supervisors, and managerial staff. It is just as important to select, place and train personnel as it is to select and arrange machinery, equipment and buildings. When an equilibruim between the physical and human organization can be created, the result is a smoothworking production machine. In order to create this equilibruim, it is essential to have at hand factual information concerning individuals and jobs before employment can proceed. The first step in the realization of this goal was the introduction of the interviewing technique in industry. Realizing that the interview could be a technique of great value when properly conducted, a number of researchers during recent years attempted to improve the existing selection procedures. In the course of this research, they were faced with many difficulties.

One of the most important of these difficulties was the fact that there was as much difference between individual interviewers as there was between interviewees. Even when the psudeo-sciences of phrenology, graphology and physiognomy were the sole basis for evaluation of an individual, these individual differences among interviewers were quite apparent. Besides the misconceptions formed from the psuedo-sciences, many interviewers believed that there was a correlation between muscular skills and mental skills, and the dexterity of an applicant could be judged by examining his hands and fingers . Psychologists have long debased these psuedo-sciences, and numerous

investigations have shown that the correlation between muscular and mental skills is very close to zero. The practice of judging an applicant's dexterity by examining his hands and fingers has no significant relationship at all.[1] A definite need for factual information and objective methods for determining the suitability of prospective employees was apparent. To the application blanks, personal and social history information were added job specification and analysis sheets. Even with these improvements, there still existed many serious pitfalls. Management, for example, often makes the grave mistake of hiring only those individuals with a certain amount of formal education. It is often found that higher standards for employment are required than are actually necessary. This is substantiated by the fact "that 58 per cent of the jobs in the United States require no education for successful fulfillment of duties."[2] Education in this sense refers to formal education. In effect, the employment manager is usually hiring only individuals who are above a certain level of mental ability—a mental ability that is not essential for the successful performance of a job.

Likewise, job specifications as ordinarily developed in industry, suffer from a number of serious defects. Many of them are limited almost exclusively to a description of the duties and working conditions. In many instances the statement of personnel requirements is restricted to a general description of such factors as age, sex, health—no attempt being made to designate the emotional and social capacities and other traits essential for success on the job. In other cases, when an attempt is made to describe these various traits,

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[1]C. H. Griffitts, "The Relations Between Anthropometric Measures and Manual Dexterity," Journal of Applied Psychology, XX (April, 1936), pp.227-235.

[2]Roger M. Bellows, Psychology of Personnel in Business and Industry, p. 72.

they are stated in vague, abstract terms which only confuse the problem of personnel qualifications. Great emphasis on the number of years of experience as a qualification for a job has been another mistake of management. This is best explained by reference to Maier.

> Since each person has an inborn capacity for learning to do certain kinds of work better than others, attempts should be made to train him on jobs that best suit his natural talents. Experience can develop the potentialities, but how much it will develop them is dependent upon the original endowment. In comparing human performances, it is well to match experience in order to being out the original differences in ability because these differences give an indication of future performance. For instance, suppose one individual can do exactly as much as another, but does so with a lesser degree of experience. In such a case, we can expect the former to surpass the latter when both have added the same amount of experience. It is therefore wiser to employ the man with less rather than the one with more experience. For many industrial purposes, individual differences in ability are far more important than varying degrees of experience.[3]

Detailed experiments have been conducted regarding the effects of practice and experience on individual performance and substantiate the conclusions drawn by Maier.[4]

Although the recent years have witnessed a considerable improvement in the interviewing and selection techniques, much remains to be done. As Bellows points out:

> 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.[5]

In perfecting these techniques, management has sought the assistance of the psychologist. Psychologists realize that, according to our advancement so far, the only possible way to predict an individual's future behavior is to

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[3]Norman R. F. Maier, Psychology in Industry, p. 116.

[4]Anne Anastasi and John P. Foley, Jr., Differential Psychology, pp. 193-215.

[5]Bellows, op. cit., p. 71.

study and understand his past performance in every possible type of situation. Their approach is a clinical one, and uses sample aspects of an individual's everyday life such as work history, educational background, family background, social adjustment, economic adjustment, and health adjustment. From these six sources of information they are usually able to appraise the individual's total personality in terms of his motivation, his stability and his emotional maturity. Emotional maturity is perhaps the most significant of these appraisals. Since educational and work experience are more readily measured, the tendency is to evaluate and appraise occupational fitness in these terms alone. The factor of emotional fitness is completely ignored. Psychologists have been giving more attention to the relationship of job satisfaction and the entire emotional life of the individual worker. Recent research work has indicated that we take our pasts with us to our jobs and react accordingly.[6] We attempt to achieve on our jobs the identical satisfactions withheld from us in our early lives, and we tend to feel toward the boss as we did toward our parents.

A much better job in selection can be done if more attention is given to the personal needs which the worker feels and to the emotional satisfactions and frustration that the job involves. Industry should revamp its recruiting campaigns so they appeal to the individual because of his ability to identify himself with some given situation. The employee identifies himself with the work situation in terms of the degree to which employment with a certain organization will satisfy and fulfill his various needs. These may be security for his family, education for his children, prestige in the community

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[6] R. Happock and H. A. Robinson, "Job Satisfaction Researches of 1948," Occupations, XXVIII (December, 1949), pp. 153-161.

or a number of significant needs and drives mentioned in the previous chapter. Industrial programs of a personal nature would be much more effective than those which feature and appeal to the impersonal aspects of wages and working conditions.

Perhaps the most significant contribution of the psychologists has been the psychological testing programs. It must always be remembered, though, that tests offer only a partial aid to the solution of the problem of selection. They should only be used in conjunction with a thorough clinical interview which alone can attempt to assess what the individual will do. Psychological tests, on the other hand, attempt to assess what the individual can do. It is therefore apparent that a carefully planned, developed, and coordinated techniques of testing and interviewing is essential for the most efficient and effective selection of workers. Coordination of these elements has been accomplished with the psychologist's assistance in the following manner:

1. The preparation of suitable job specifications including all factors essential for successful performance of a given job. These specifications are prepared in cooperation with the department supervisors and are based on a thorough analysis of the requirements of each job.

2. The training of the present employment manager or other suitable employees in the techniques of testing, interviewing and appraising personality. This consists of a series of lectures and group discussions, together with observed, controlled and practice interviews.

3. The setting up of a testing program in conjunction with the clinical interview. This includes the use of standard test materials and the construction and validation of any special tests that may be required for particular jobs.

4. As assessment of present employment methods, and, where advisable, the introduction of improved techniques in the following fields: recruitment of workers, application forms, checking of references, personnel records, induction of new workers, and follow-up procedures.

The results of this work are beginning to bear fruit. In one company where such a program was adopted two years ago, turnover has dropped 58 per cent. A follow-up of the situation in this company indicated that while

general economic trends undoubtedly contributed to the excellent record, the company's management credits much of the improvement to the new, precise method of selecting employees. This means that far greater attention to selection and interviewing techniques is justified than many managements now grudgingly give to these important elements of human relations in work.

CHAPTER IV

BACKGROUND AND CURRENT TRENDS IN PSYCHOLOGICAL TESTING

Psychologists have for a long time recognized the existence of individual differences, but they were by no means the first to be interested in this field. One of the earliest instances of the explicit recognition of individual differences is to be found in the Republic of Plato. In this book he describes his fundamental aim of an ideal state, one in which each individual would be assigned to the special tasks for which he was suited. Plato's protege, the versatile Aristotle, also recognized this individual variation. He discusses at length group differences, including species, racial, social, and sex differences in mental and moral traits. Strangely enough, the first systematic measurements of individual differences were undertaken in the science of astronomy and not in psychology. The now famous "Kinnebrook incident"[1] gave rise to the systematic measurement of individual differences; a measurement that was later taken up by the psychologists.

With the spread of Darwinism in the late nineteenth centuy, psychology became increasingly biological in its approach. It was Sir Francis Galton, one of Darwin's most ardent followers, who first attemped to apply the evolutionary principles of variation, selection, and adaption to the study of human individuals.[2] Perhaps the most significant contribution of Galton was his development of statistical methods for the analysis of the data of individual differences. The major causes for the existence of individual differences have been divided into the two general categories of heredity and

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[1]Anne Anastasi and John P. Foley, Jr., Differential Psychology, pp. 7-8.

[2]Ibid., p. 9.

environment. These concepts have been the cause of much controversy, but their recognition is significant enough for our purposes. Regardless of the controversy regarding the relative importance of heredity and environment, there is general agreement that the nature and extent of the influence of each type of factor depends upon the contribution of the other, viz., an interaction relationship.

This general agreement on the origin of individual differences had tremendous significance for the application of psychology in industry, especially with reference to selection. This agreement has justified, as Viteles points out:

> . . .the use of highly refined procedures in the selection of workers to determine the inherent strength and weakness of the applicant for employment. There can be no expectation of a fundamental change in the capacities of a mature or nearly mature individual selected for a job. His happiness, his success or failure on the job depend primarily upon a combination or pattern of native abilities, present at the time of employment which are little, if at all, subject to change. These facts also make necessary a supplementary analysis of individual capacity in every instance of transfer or promotion to a job involving a change in duties and of qualifications. The determination of individual capacity is basic to individual adjustment in industry.[3]

Personnel testing is a scientific procedure based on psychological and statistical principles. While the development of a sound testing program requires personnel conversant with these principles, its effectiveness and acceptance in industry depends largely upon the degree to which the program is practical, "well-engineered," and productive of measurable results. The psychologist, working hand-in-hand with the personnel manager, has brought to his attention those aspects of the theory and application of modern psychology that have been found helpful in realizing an effective and acceptable testing program.

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[3]Morris S. Viteles, Industrial Psychology, p. 109.

It is the primary object of psychological tests to approximate, in advance, the type of judgment which would otherwise require a virtually prohibitive trial period. However, psychologists are in agreement that, contrary to certain popular notions, mental tests have no special powers for penetrating beyond observable behavior into a dark realm of hidden potentialities and latent aptitudes.

One of the basic principles of psychological testing is that usually no single test is sufficient for prediction of job success. Tiffin has stated that "just as most jobs call for a combination of aptitudes, so adequate placement calls for a combination of psychological tests.[4]

Perhaps the greatest difficulty encountered thus far in this technique has been the inability to maintain uniform conditions when administering and evaluating the tests. The psychologists themselves are guilty of overlooking the importance of these uniform conditions, being too absorbed in the statistical phases.[5] The individual adminstering the tests should be understanding, sympathetic, courteous and should at all times give the applicant a feeling of importance. The majority of individuals are not cognizant of the fact that such factors as the rate at which the directions are read to the subjects, the vocal inflections, pauses, and facial expressions which accompany them, and the exact placement of demonstration materials will affect the subject's performance. Also, such factors as undue fatigue or discomfort of the subject and distractions and noise should be avoided. Altering any of these conditions will materially increase or decrease the difficulty of various test items for the particular person being tested. The impression that the tester

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[4]Joseph Tiffin, Industrial Psychology, p. 77.

[5]Ibid., pp. 47-48.

makes upon the applicants or employees not only affects the performance of the subjects but can create in the mind of the subject a total impression of the organization itself. This is especially true with those applicants who have been rejected for employment, and it is essential that the tester make every effort to eliminate unfavorable impressions with these individuals. This can be accomplished by explaining to the individual that, although he may not be qualified or adapted for the jobs now available, he may be quite qualified for later jobs, or for present jobs with another concern. The primary motivating force in individuals, the ego, should be appealed to in a positive sense.

Most of the work in psychological testing has centered in the intelligence and aptitude tests because they were the most readily measured traits. However, it is not at all uncommon for an individual who is planning to enter a certain vocation or take a certain job, to possess the requisite abilities, intelligence, and aptitudes, and yet be unfit for the type of work because of his personality pattern. Bills cites the case of an individual considering a career which requires him to sit in an office and offers no opportunity for energetic physical activity or change of scene.

> . . .he may have an ingrained distaste for sedentary life, he may prefer to be moving about actively. In psychological language, he is hyperkinetic. Such a person might be miserable in the very job for which he is well fitted by capacity, simply because of tempermental factors. Conversely, an individual who shuns physical effort and loves his home would make a great mistake in entering a career as a traveling salesman or construction engineer.[6]

The importance of this personality pattern is verified by a study over a period of years conducted by Purdue University. A follow-up of graduates five years after leaving college indicated that the difference between the

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[6] A. G. Bills, The Psychology of Efficiency, p. 276.

extremely bright students and those who had only enough intelligence to get through college made a difference in earning power of about $150 a year. Those with pleasing personalties, however, were earning nearly a $1000 a year more. Industry is apparently willing to pay for desirable personality traits and patterns.

This has given rise to the increasing demand on the part of employment managers and industrial psychologists for a reasonably satisfactory and accurate method of determining certain personality traits of an individual when he applied for employment. Again the importance of this fact is emphasized by a study in 1937 of 4000 discharged office workers showing that 90 per cent of the reasons for discharge concerned personality factors.[7] Industrial psychologists recognized the fact that the tests for aptitude and skills could only partially predict a man's ability to succeed, since in their research they discovered that perhaps eight out of ten job failures were caused by lack of interest of weaknesses in the personality pattern.

The personality test is a product of the twentieth century. The psychologists are relying more and more on the personality and interest tests, and with these instruments they have started to diagnose individuals whose successes and failures often appear to bear almost no relation to aptitudes and skills. The first of these tests intended primarily for industrial use was the Humm-Wadsworth Temperament Scale, and it has been used more extensively in industry than any other personality test. By differentially scoring this test, separate scores for several aspects of temperament are obtained. These aspects are: the normal component including the combinations of "normal-

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[7]I. A. Berg, "Personality Factors in Future Employee Selection," Iron Age, CLXII (November 11, 1948), pp. 106-109.

schizoid", hysteroid component, manic cycloid component, depressive cycloid component, autistic schizoid compohent, paranoid schizoid component, and the epileptoid component. The validity of this test is best expressed by reference to a follow-up study conducted at the Lockheed Aircraft Corporation in Burbank, California. The policy of the company was to reject applicants for employment whose scales revealed "weak normal"; hysteroid or paranoid scores higher than "normal"; either extremely high or higher than "normal"; and high epileptoid scores accompanied by psychological evidence of epilepsy. Out of 185 engineering employees considered for employment, 184 met the company standards and one was accepted as doubtful. Out of these employees, only the doubtful case and one other employee were discharged later for reasons arising out of temperamental maladjustment. The other 183 employees were found to be entirely satisfactory from a personality standpoint. Of 1500 other employees engaged for work in skilled and semi-skilled jobs, only 18 had been discharged for reasons arising out of temperamental maladjustments. This means that approximately 99 per cent of these employees selected by this method were found to be satisfactory from the temperamental standpoint.

With the exception of this experiment, not a great deal has been done thus far in examining the role of personality and job success. In Chicago, Burleigh Gardner has established a successful selection program for executives which scrutinizes certain personality variables. The Life Insurance Agency Management Association has devised a combined personal-history rating chart and personality questionnaire called the Aptitude Index. Since 1938, this test has been administered to more than half a million potential salesmen by 174 different life-insurance companies. This is probably the most widely

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[8]For a more detailed explanation of this test, see Tiffin, op. cit., pp. 113-115.

used and thoroughly verified test in United States business; yet very few of the companies using it have been able to come up with fifty successful salesmen out of every hundred inexperienced men hired. Perhaps much of this could be corrected if the psychologists could develop tests to measure initiative. Regardless of a man's intelligence, aptitude, and personality qualifications, unless he possesses that all-important element of initiative, it is doubtful if he will ever become a successful salesman. Standard Oil of New Jersey is also looking for a set of tests that will predict the possibility of a man's "cracking up" or slowing down in a foreign environment. But as far as actual factory jobs are concerned, relatively little has been accomplished in specially relating personality traits to job success.

Most of the errors thus far in industrial psychology have been committed by "test-happy" managements that have not taken the time or trouble to check up on the tests they have used. Some have merely adopted tests that other companies have used, forgetting to realize that for their particular purposes these tests may be useless. Many companies have also much abused the purpose of tests. An article in Fortune illustrates this point.

> The Vick Chemical Company, for example, is continually after 'creative' young men, and annually hires about thirty of the brightest, most imaginative college graduates that tests and interviews can screen out of some 1,200 candidates. Less than half will be hired permanently after a fifteen-month training period, and most of these will leave within a few years, since Vick has very few jobs that interest them.[9]

Regardless of such abuses, psychological tests may yet do more than they originally promised. Johnson and Johnson Company of New Brunswick, New Jersey, found that tests were an important factor in raising productivity by more than one-third. Tests can also cut turnover and save training costs, which may

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[9]"The Tests of Management," Fortune, XLII (July, 1950), p. 107.

run from $200 for an office worker to $2,000 for an insurance salesman. It should not be assumed, however, that psychological tests are yet able to fulfill all the large hopes they have raised in management ever since World War I. For years psychologists have been checking results on all sorts of tests, and have developed an intricate science of reliability, validity, correlation coefficients, percentiles, norms, and other statistical data and values. They have not, however, "shown that any test, or series of tests, is a scientifically accurate predictor of personnel efficiency."[10] This is especially true of the "projective" techniques for probing the personality such as the Rorschach (ink blot) test, the Thematic Apperception Test, and various "situation" tests, none of which can be better than the clinical skill of the psychologists who interpret them.

Regardless of these obstacles, psychologists believe that, within any one company, they can measure the abilities and personality traits that make for success or failure on a job. This will require, however, much diligent research on the part of the psychologists and management to bring out the prime facts in order to analyze each job, secure unbiased ratings of the performance of those doing the job, and determine exactly what are the criteria of success for that job. Without such research, the adoption of psychological tests in industry will remain largely a case of guesswork. The uncertainties in testing are further enhanced by the fact that of the 7,200 members of the American Psychological Association, fewer than 250 have specialized or might be considered as industrial psychologists.[11] Among the 250 there are differences of opinion regarding the verification of tests by

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[10] Ibid., p. 92.

[11] Personal letter from Dael Wolfle, Executive Secretary, American Psychological Association, Inc., August 8, 1950.

statistical methods and the verification by clinical interpretive skill.

Personnel testing is one of the most rapidly developing technical fields. While it is now highly desirable to select employees who will fit in and remain with the company, social and legal legislation is making it imperative that management select these employees in the future. The industrial psychologist can contribute much in perfecting this technique, and it is the author's opinion that the most important emphasis in the future should be on personality and interest.

CHAPTER V

ALLOCATING THE WORKER

Once the best possible candidates for positions have been identified and selected by the interviewing and testing techniques, fitting the worker to the job represents the most important step in promoting individual efficiency and adjustment in industry. The effect of misplacement in work cannot be over-emphasized. Excessive fatigue, excessive irritation, and a complete loss of emotional balance may result from an attempt on the part of the worker to continue on a job for which he is not suited. The effects of misplacement can be enlarged on by reference to Munsterberg.

> These effects are displayed not only in the factory—in production, in contacts with his fellow-workers and supervisors—but they may be carried into the home. When carried into the home, they may result in conflict between husband and wife, and in misunderstanding between father and children. The worker on the wrong job suffers not only from difficulties in social adjustment; he suffers from reduced earnings; he suffers from the probability of increased accidents and from many other similarly direct handicaps leading to the creation of a vicious circle of 'misfortunes' from which he cannot extricate himself. The individual loses his job; he is crushed by the wheels of social life. Discouraged and embittered, he becomes a burden and a danger to the social body which, in the long run, pays a heavy penalty for the failure to settle systematically the fundamental problem of vocational placement.[1]

It is a fundamental principle in industry that, other things being equal, an individual performs better, advances farther and becomes more useful in a job for which he is well suited than a job for which he is not well suited. The performance of an individual on the job is, therefore, a measure of suitability and effectiveness of placement. The effects of misplacement manifest themselves most readily in the mental states of monotony, boredom, and frustration which are definitely associated with fluctuations in the rate of working and with a fall in production. In one of the most exhaustive

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[1] Hugo Munsterberg, Psychology and Industrial Efficiency, pp. 113-114.

studies, cited by Maier, this association is demonstrated by showing (1) that production is low and variable during periods when boredom is experienced, and (2) that the production of individuals who felt bored was lower and more variable than that of individuals who did not feel bored.[2] It was also found that the more intelligent workers were more subject to work depressions than were less intelligent workers, who, in turn, were more steady in their work pace and more satisfied with the work. One of the most significant findings of this study is the fact, that despite their dislike for the work and their variation in work rate, the production of the more intelligent workers exceeded that of the less intelligent ones. A worker whose capacities are not equal to the requirements of the job fails; one whose capacities are placed under strain by the job becomes maladjusted; and one whose capacities exceed the demands of the job, in the long run, deteriorates in his work or leaves the job. As Cleeton asserts: "Frustration in work may actually result in the development of subconscious desires for self-destruction, the destruction of property, or the destruction of other persons."[3]

As critical as this problem is, a survey conducted by Fortune in 1947 uncovered the fact that half of the nation's factory workers seem frustrated because their work gives them no opportunity for personal initiative.[4] Forty-one per cent think that even a job well done is a blind alley. They are hopeless of advancement and resigned to staying where they are. They have little belief in the security of their old age. Improvements in their working conditions have not persuaded them that theirs is a good life; over

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[2]Norman, R. F. Maier, Psychology in Industry, p. 311.

[3]Glen U. Cleeton, Making Work Human, p. 229.

[4]"Fortune Survey." Fortune, XXXV (May, 1947), p. 5.

half would choose a different occupation if they had it to do over again. The results of this survey indicate that far greater attention to placement is justified than management now grudgingly gives to this important element of human relations in work.

Opportunity for work means more than merely having a job and being employed. It means having an opportunity to engage in work which is individually challenging and satisfying to the individual. Work is challenging and satisfying when it utilizes the capacities of the individual, appeals to his desires and needs, stimulates his basic interests, and creates a feeling of doing something that is productively important. Concerning the appeal to needs and drives, psychologists have shown that individual adjustment varies more widely in respect to sex drives than with any other element in human personality, and is often the basis of strikingly abnormal behavior which seemingly has no relation to observable circumstances. This is probably one of the most difficult of all human relations problems to solve. This sexual maladjustment often interferes not only with work efficiency, but also frequently affects markedly the individual's general health and happiness as well. In this instance, an irritating work situation only augments the maladjustment, and it is particularly important that the employer take this into account when dealing with individual workers. A satisfying work situation, on the other hand, greatly reduces the tensions arising from both normal and abnormal sex drives, and, sometimes, work provides an escape from an otherwise unbearable family situation. It is not the author's contention that job placement should serve primarily as therapy for neurotic and sexually maladjusted personalities, but it is to be assumed that no employer would deliberately encourage neuroticism or sexual maladjustment by job misplacement.

The educational level during the past quarter of a century has been continually advancing, and it is probably true that millions of young workers deserve much better jobs than are now available. Regardless of the reticency on the part of many representatives of management we as a nation, should have a social responsibility to make better jobs for these people. Not only is the responsibility there, but the opportunity to accomplish this situation is also present. "Making jobs attractive to able, well-educated young people," states Cleeton, "will pay dividends, because capable, well-adjusted man power today is the greatest asset that any employer can have."[5] With the assistance of the psychologists, management can do much to improve many of the existing jobs in industry - not by elaborating on such impersonal factors as working conditions and vague company policies, but by an honest and sincere appeal to the intelligence, ingenuity, drives and needs of the individual.

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[5]Cleeton, op. cit., p. 229.

CHAPTER VI

INDUSTRIAL TRAINING

Industry is beginning to devote more and more time to the systematic training of both new and old employees. The need for this training grew out of the continuous and rapid technological changes that occurred in industry. "No matter how well qualified an employee may be today, technological changes in methods or processes may require that he be completely retrained tomorrow."[1]

Although the value of training has been recognized and the attempt made to organize it, much of its beneficial value has been lost by the failure to apply psychological principles of learning in the development of skill through training. Teaching or training men for jobs is another purely psychological problem, one which especially calls for a knowledge of the subjects of learning. By improving a man's adaption to his work, we are also increasing his efficiency and satisfaction with his job. The will to work is largely a psychological problem and although the economic incentive of wages is a stimulus to cooperation, it is not sufficient because the will of man cannot be bought so cheaply.

The concept of negative transfer, interference, or inhibition, as developed by the psychologists, is of prime importance in the training of men. This concept has been verified by experimental studies showing that when opposing associations are alternately practiced, they have an interference effect upon each other, particularly during the early practice period. Thus, when trainees have previously been taught one method of doing a task, they have more difficulty in learning a new method than do those trainees who have had no previous experience on the job at all.

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[1]Joseph Tiffin, Industrial Psychology, p. 109.

The conclusion drawn from these experimental studies is that the time to teach or train new employees the correct way of doing a job is when they are placed on the job and not two or three weeks after they have had experience in learning incorrect methods.

The technique of training has been aided by the findings of the educational psychologists. The industrial psychologist's approach to the problem of training by utilizing the findings of educational psychology is two-fold. First, the job is analyzed and broken down into significant teaching elements, at the same time discovering why every movement is made and ensuring that the method to be taught is the most effective way of performing that operation. Secondly, the instructors are trained in the fundamentals of teaching and it is attempted to give them answers to the following vital questions which must be understood by anyone who attempts to instruct effectively:

1. What is the learning equipment of people?
2. How does learning accumulate?
3. How is learning affected by interest?
4. What are the factors that retard learning?
5. How can teaching best meet some common problems of learning?
6. How can the results of teaching be measured?

Commensurate with these questions are a few general rules for economy in training that are of importance. They are:

1. Plan in terms of individual differences among trainees.
2. Plan regular training intervals.
3. Overtrain.
4. Train the trainers.

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[2]What is Industrial Engineering? (Toronto: J.D. Woods and Gordon Limited, 1945), p. 69.

5. Motivate the trainee.[3]

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 practice period tends to obliterate the material that has been learned.

A few companies have had notable success in effective training methods devised with the help of the industrial psychologist and it is quite probable that this will be a fruitful field in the years to come. The laws of learning are well known to psychologists and, if heeded, will enable employers to improve their training programs.

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[3]Roger M. Bellows, Psychology of Personnel in Business and Industry, p. 170.

CHAPTER VII

MOTION AND TIME STUDY

Motion and time study techniques have, indeed, had a most unfortunate past. This is especially true of time study and ever since its introduction by Taylor at the Midvale Steel Company in 1881, it has been met with continuous opposition. This opposition reached a high point in 1914 when a bill was introduced into Congress "to make it unlawful to use a stop-watch or other time-measuring device to study a man's work habits."[1] Recent attitude surveys of employees indicate that this dissatisfaction with time study, and especially the work of the industrial engineer, is still prevalent in industry and labor unions. One of these surveys, a poll of Pittsburg workers conducted by Fortune in 1942, indicated that among the greatest dislikes of these workers were the industrial engineers.[2] Aggression against the industrial engineers is in conflict with production goals. Few people can possibly find fault with the objectives of time and motion study—lower costs, higher wages and profits, more goods at lower prices for the consumer. Why then is this opposition still prevalent?

Unfortunately anyone can buy a stop-watch and call himself a time-study engineer. The profession has suffered from its share of incompetents, charlatans and racketeers. In the early days these techniques were practiced by "efficiency experts" who sold their plans to industry solely on the basis of promising them greater profits. Very little attention was given to labor's reactions and interests, with the result that although the promise of greater

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[1]Richard Uhrbrock, A Psychologist Looks at Wage-Incentive Methods, p. 22.

[2]"What's Itching Labor," Fortune, XXVI (November, 1942), p. 230.

profits was fulfilled, labor unrest was greatly augmented.

The second source of criticism has been the failure on the part of some managements to recognize that the employees as well as the company must participate in the benefits accruing from motion and time study. Many of these managements used time study primarily to set impossible production standards and to hold earnings down to the lowest possible levels. This practice bred nothing but resistance and trouble.

The third source of criticism lies in the failure of management to appreciate that time study is not a cut-and-dried system which functions automatically, but rather only a tool. Like any other tool, it must be understood and properly used.

Labor found that the increased efficiency and production as a result of motion and time study made for insecurity in the worker's positions. Often this increase in production by the new methods did not result in a proportional increase in the demand for further production. As a consequence, men were often dismissed and, frequently, never again obtained permanent employment.[3]

Motion analyists, striving for job simplification, have contributed generally to the ease of job adjustment through elimination of useless, unnecessary and nonfunctional movements. They have strived to break thejob down into the most direct and necessary motions required to accomplish the task-goal. The emphasis on job simplification, however, has been carried to extremes, and the work so subdivided that the job actually becomes an insult to human intelligence. In many instances the job merely consists of a few simple components or therbligs such as grasp, place and release, and the worker is actually no more than a machine. If this job simplification,

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[3]Norman R. F. Maier, Psychology in Industry, p. 311.

carried to extremes, is vital and necessary, the motion analysts should carry this simplification one step further and construct a machine or attachment to eliminate those extremely simple remaining movements. Industry, and especially the "efficiency engineers", have learned considerably through experience, but they still have much to learn. The greatest advancement they could possibly make would be to realize that they cannot treat men as machines; men must be treated as individuals and human beings.

Thus, we conclude that the best way of doing a job from a time and motion study point of view is not always humanly the best. More consideration for the effect of monotony, the incidence and cumulative magnitude of fatigue, elements of interest, and effective utilization of human capacities is necessary if maximum work satisfaction is to result.[4] The effective utilization of human capacities is of paramount importance. It is rather obvious that nature meant for man to live in a complex environment and has provided him with the capacities to do so. The terrific amount of specialization and job simplification seems to run contrary to that intention. When only a small fraction of total human capacity is utilized, the job becomes dull, monotonous, and frustrating because of the highly repetitive nature of the job.

What, then, of the future of motion and time study in view of the opposition that still is, and will continue to be, prevalent? If management continues to frustrate labor by applying these techniques, this frustration will manifest itself in the form of aggression against management, and the militant labor unions will be strengthened by these aggressive individuals. It is the author's belief that motion and time study should be used primarily as training techniques to determine the training possibilities of a job.

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[4]Glen U. Cleeton, Making Work Human, p. 150.

Having determined the training possibilities, management can utilize the concepts of the psychologists to see to it that training and subsequent supervision of production emphasizes the human elements of job performance. In this way, emphasis will be on the proficiency of the individual gained through performance; a proficiency which will bring personal satisfaction to the individual, rather than an abstract and mandatory objective of mechanical efficiency.

CHAPTER VIII

ACCIDENTS AND ACCIDENT PREVENTION

Accidents and accident prevention have for a long time posed a problem to management. The direct and indirect costs of industrial accidents and their social effects gave impetus to corrective measures for eliminating these accidents. "This impetus," as Viteles points out, "has come from two direction."[1] One has been the recognition of the social responsibility for the welfare of those injured in industry; a recognition that has been expressed also in the passage of accident compensation laws. The other has been the selfish urge on the part of industrial executives to keep "at the lowest possible figure the costs imposed by such social legislation."[2] A third impetus might be added embracing the growing interest and demand for the elimination of all forms of inefficiency and waste in industry. Keeping in line with the theme of this thesis, the recognition of the social responsibility for the welfare of those injured in industry is of prime importance and cannot be over-emphasized. "For a family at the borderline economic level," writes Viteles, "an accident may mean a descent from independence to economic dependence."[3] This economic dependence may consist of accepting financial aid from a charitable agency which in turn may affect all the social relationships of the family. "The ramifications in the way of modifications in social standards, of conflicts arising from this situation or from the attempt to meet the situation unaided, are beyong description."[4] Not only

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[1] Morris S. Viteles, Industrial Psychology, p. 327.

[2] Ibid., p. 327.

[3] Ibid., p. 326.

[4] Ibid.

are the social relationships of the family affected, but the individual may undergo a personality change as a result of the accident. Stephenson points out, for example, that as a result of an accident:

> . . .certain types may be apprehensive of further accidents; others may experience a dull resentment; while others may actively engage in revengeful efforts. Whatever the reaction may be, the mental attitude of the victim to his environment is altered, and the change is not for the better—in the immediate future at any rate—though ultimately the result may be all to the good . . . on the principle that the burnt child dreads the fire.[5]

Numerous studies have been conducted in an attempt to determine the factors that affect accident liability. Studies by Osborne and Vernon,[6] Hambly, and Bedford[7] have shown that accident liability is affected, among other factors, by atmospheric conditions. A more recent and extensive study by Kerr at the RCA Camden Works reveals that accidents tend to occur with greatest frequency in those factory departments with lowest intra-company transfer mobility rates, smallest per cent of employees who are female and on salary, least promotion probability for typical employee, and highest mean noise level.[8]

Regardless of these cited studies and extensive work of the safety engineers and industrial training personnel working with individuals and equipment, many of the factory departments remained in the "accident prone"

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[5]A. Stephenson, "Accident in Industry," Journal of National Institute of Industrial Psychology, III (1926), pp. 198-199.

[6]E.E. Osborn & H. M. Vernon, "The Influence of Temperature and other Conditions on the Frequency of Industrial Accidents," Industrial Fatigue Research Board Report No. 19, (1922), p. 17.

[7]W.D. Hambly and T. Bedford, "Preliminary Notes on Atmospheric Conditions in Boot and Shoe Factories," Industrial Fatigue Research Board Report No. 11. (1921), p. 69.

[8]Willard A. Kerr, "Accident Proneness of Factory Department," Journal of Applied Psychology, XXXIV (June, 1950), pp. 167-170.

column. This gave rise to the conclusion that group, as well as individual, psychological factors may be operating. The safety engineer may remove the hazard from the work by changing the operation of dangerous machinery, designing and installing safety devices, and inspecting the safety of the building and the machinery with a view to structural or functional changes. This approach, however, does not solve the accident problem because some people will have accidents despite all the mechanical precautions that are taken. Safety habits and training are psychological tools for accident prevention.

This psychological approach has definitely altered the underlying philosophy of management regarding accident prevention. Here the psychologists have applied their principle of causation rather than the earlier philosophy of fault, and "the replacement of a fatalistic doctrine of 'chance' by a dynamic policy of individual hygiene in accident prevention."[9] The psychological approach involves the correction of the human factors in accidents. There are many psychological factors related to accident proneness, chief among which are: vision, age and plant service; mental ability; ratio between perceptual and muscular speed; fatigue; attitudes of cooperation and emotional factors. The emotional factors include the general emotional state at the time of the accident. An analysis of the causes of accident susceptibility among fifty motormen of the Cleveland Railway Company, published by the Metropolitan Life Insurance Company, shows that four single items; namely, faulty attitude, impulsiveness, nervousness and fear, and worry and depression, account together for 32 per cent of the accidents among the group studied. Other studies have shown that the production of industrial workers

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[9] Viteles, op. cit., p. 368.

is higher during periods when the men are elated, happy, hopeful, and co-operative than when they are suspicious, peevish, angry, disgusted, pessimistic, apprehensive, or worried. We thus see that not only is a favorable emotional condition favorable from the standpoint of safety, but also from the standpoint of plant productivity.

The aim of the clinical approach is to examine the whole individual, and from an examination of the whole to arrive at a knowledge of the significance of the various aspects of personality - the relative importance of each sector of his personality in a given situation. It utilizes the principles of causation and clinical psychology, discussed in the chapter on "Industrial Psychology - Its Concepts and Applications." All the physical, mental, social economic, and other extraneous factors which may have played a part in the accident are thoroughly examined. This clinical analysis makes it possible to assemble data on the causes of the accident, and to provide for the adjustment of the individual in taking him out of the accident prone category. A much broader perspective of approach to accidents by management is necessary, and with the aid of the psychologists, management will be able to arrive at sound principles for the prevention of accidents in industry.

CHAPTER IX

THE PROBLEM OF INDUSTRIAL FATIGUE

In the previous section, certain studies were cited showing the relationship of such factors as atmospheric conditions and noise to accident liability. These, and other factors, are more usually associated with the problem of fatigue; a problem that is of vital concern to management and the industrial engineer. The modern approach to employee fatigue is not the paternalistic approach of the benevolent employer, but a realistic approach based on enlightened self-interest. It has long been apparent to management that what helps the employee helps the plant as a whole, but there is also a growing cognizance of the far-reaching personal and social implication of industrial fatigue.

The elimination of unnecessary fatigue has been attacked from three distinct viewpoints; the industrial engineers; the physiologists, and the psychologists. The work of the industrial engineers, especially the motion analysts, is well-known to industrialists and for our purposes needs no further discussion here. The work of the physiologists is concerned with the metabolic changes involved in fatigue and is closely related to the work of the motion analysts. The psychologist's contributions in eliminating unnecessary fatigue are of greatest significance.

The industrial psychologist attacks the problem of eliminating fatigue and increasing human efficiency by decreasing the physiological and psychological cost of work. He is concerned with the problem of putting workers into a state of mind so that they can perform their duties without the handicap of being emotionally upset. "It must be realized," writes von Pechmann, "that the physical work performed by an employee often has little or nothing

to do with the way he feels after the job has been completed."[1] Most experiments in the past were an attempt to show the relationship between such factors as illumination and vision, temperatures and ventilation, hours of work, noise, and nutrition to fatigue. Later experiments proved beyond a doubt that fatigue is as much a psychological problem as it is a physical one. The problem of industrial fatigue cannot be approached with just a ruler, stop watch, and scale - a knowledge of human behavior is essential. Such factors as attitude, morale, and personality traits have as much influence on fatigue as the more physical factors previously mentioned. Often there are certain factors causing fatigue that apparently make no sense. Pechmann cites the case of one of his employees who became extremely fatigued when he had to work at his desk after it had been straightened out.[2] Of course all the idiosyncrasies of individual's relating to fatigue cannot be taken into consideration by management, but it is significant for management to realize that some workers have peculiarities that should not be overlooked.

It would be impossible to consider all the physical factors related to industrial fatigue; thus only those will be discussed that seem most signigicant from the industrial psychologist's viewpoint. The psychological factors of attitude and morale will be discussed in a later section.

Illumination and Vision.

The problem of industrial vision has received considerable attention from many sources, and the method attack in each case varies. The industrial engineer, for example, is primarily interested in illumination and its effect

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[1]Walter von Pechmann, "Plant Management," Chemical and Metallurgical Engineering, LV (February, 1948), p. 94.

[2]Ibid., p. 94.

on production efficiency when combatting vision problems; whereas the industrial psychologist is interested in placing employees according to their visual aptitude. The industrial psychologist also recognizes that it is not sufficient to consider that a certain amount of illumination is required for various jobs, because, as was mentioned previously, there are psychological factors operating which often contradict the experimental work of the industrial engineers. This is best illustrated by considering one phase of the Hawthorne experiment concerned with reducing fatigue caused by poor lighting. The intensity of the light in the test room was gradually reduced and compared with output figures. To the complete surprise of those conducting the experiment, it was found that the output was not affected, and in many cases actually increased with diminishing light intensity. It is also interesting to note that a number of workers claimed that they could work better because the light intensity was increased; the fact, however, was that they were working with less light. Here was definitely a case of experimenters dealing with a "human situation in nonhuman terms."[3] As was the case in experiments with other management techniques, an attempt was made to describe how individuals should behave rather than how they did behave. This is contrary to the view of psychologists who contend that the behavior and accomplishment are the result of antecedent events; namely stimulus. The stimulus or motivation in this case was the personal meaning of this experiment to the individuals—a recognition as individuals and an interest in their welfare. The results of this and similar experiments substantiated the psychological factors that were operating, and threw new light on the social factors involved. These social factors, although somewhat removed from a consideration of

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[3]F. J. Roethlisberger, Management and Morale, p. 11.

vision as such, are of extreme importance and will be discussed in a later chapter.

Until recent years, the problem of industrial vision requirements did not receive the attention demanded of it. Effective placement of employees cannot be accomplished without a thorough knowledge of the visual requirements of the different jobs. The characteristic visual requirements listed on job analysis sheets, and the subjective opinion of those familiar with the job, are not sufficient for specific determination of these requirements. As Tiffin points out:

> Few employment managers, supervisors, industrial engineers, or psychologists, for example, suspected that proficiency in very close work, such as is involved in looping hosiery, would be inversely related to scores on a distance acuity test.[4]

Improved worker vision, of course, is not a substitute for training, aptitude or intelligence on the part of the employee. But is is a fact that the vast majority of workers who suffer from faults in vision improve their job efficiency when these faults are corrected; both adequate and superior employees are thus enabled to increase the quantity and quality of their work.

In addition to improved production, better health and psychological benefits result, which are no less real—even if not equally apparent. When effort in seeing is required, strain results which causes mental and physical fatigue, headaches, irritability and sometimes digestive disorders and melancholia. Not only does the affected worker's efficiency suffer, but feeling "under par", he is less likely to work harmoniously with fellow workers and supervisors. We thus conclude that the problem of vision has far-reaching aspects—all of which must be considered by the industrial engineer and

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[4]Joseph Tiffin, Industrial Psychology, p. 154.

and industrial psychologist when combatting this problem.

A program of visual care and improvement goes considerably farther than the mere correction of defective vision. It adapts vision to the occupation and provides help which enables the older, skilled worker in whom management has a considerable investment, to continue in his work. At the same time, it conserves, improves, strengthens and implements the visual skills of all the workers. The psychologists have aided in this program by contributing methods of job visual analysis, methods for checking visual capability reliably and quickly, and methods for determining the relative visual demands imposed by wide varieties of industrial jobs. In their work, the psychologists have received much valuable guidance from interested members of the eye care professions, as well as the illuminating engineers and those psycholgists specializing in color application. The work in this field thus far has produced wonderful results. Over-all production costs are reduced, worker morale is increased, turnover and training costs are reduced, and a general saving in compensation payments is realized. The Hughes Tool Company, for example, estimates a saving of approximately $15,000 over a three year period through the use of an effective visual program.[5] Since one out of three employees in industry today needs eye care, the potentialities of such a program become apparent. The American Optical Company asserts that better than 90 percent of industry's vision problems can be solved with the help of the professional eye specialist and the industrial psychologist.[6]

Noise and Distractors.

When noise and distracters were first studied, experimenters were greatly surprised to discover that the persons who were subjected to the distracting

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[5] Improved Industrial Vision (Southbridge: American Optical Company, 1949) p. 16.

[6] Ibid., p. 13.

agents often did better than when they worked without such a handicap. Although this seemed like an extremely absurd contradiction, later experiments in this field supplied the answer to this perplexing problem. It was found that whenever a resistance is imposed on an individual, an extra effort is automatically put forth to overcome it, with the result that more work is actually accomplished. However, when work is accomplished under distracting influences, regardless of the increased output, there is a greatly increased expenditure of energy, and thus there may be a net loss in the long run in terms of employee health.

The effect of the noise and the increased expenditure of energy place the employee in a state of nervous tension, and he becomes completely tired out, even when performing a simple operation. This nervous tension cannot be ignored as it may well lead to more serious complications in the future. It is not necessary that this nervous tension be caused by audible noises because "vibrations caused by high-frequency waves, although not audible, have caused nervous breakdowns."[7] Although it would be impossible to eliminate all noise from industry, many of the existing noises and distracting influences can either be reduced or eliminated entirely. The industrial psychologist has clearly demonstrated the effects of noise not only on production, but on the general physical and emotional health of the employees. Realizing the significance of this factor, management and the industrial engineer can progress a step further in the realization of the most effective and efficient organization so often spoken of and yet so seldom realized.

Music.

Perhaps one of the most publicized approaches to the problem of industial

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[7]von Pechmann, op. cit., p. 93.

fatigue has been the introduction of music to industry. Besides the multitude of physical and psychological factors related to fatigue, there is the ever-present problem of boredom and monotony discussed in the chapter on "Allocating The Worker." The feeling of being tired has been shown by psychologists to increase in direct proportion with the monotony of the work. A survey of all factory workers by Fortune clearly demonstrates this point. "Only 22 per cent of those who find their jobs consistently interesting feel too tired at the end of the shift, while 57 per cent of those who find their jobs monotonous complain of fatigue."[8] Monotony and boredom not only build up emotional strains in the individuals, but give rise to moods as well. Emotions are specific reactions to specific stimuli while moods are general humors or states of mind that persist for some time and color all our feelings and attitudes. Moods not only increase the emotional strain, but cause an individual to indulge in pessimistic reverie while he works, which in turn acts as a depressant to cut down on his productivity.

The industrial psychologists seized upon these principles and introduced the playing of music during working hours to replace the gloomy reverie with more congenial thoughts. From a psychological standpoint, the chief functions of music consists first of all in serving as an objective stimulus for re-arousing former emotional states. As a consequence of these re-aroused emotional states, the individual usually feels more excited and energetic. As Crane points out: "The simultaneous release of adrenaline with its accompanying increase in blood sugar places the human organism on a war basis physiologically."[9] The playing of music tends to occupy the unused attention

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[8]"Fortune Survey," Fortune, XXXV (May, 1947), p. 61.

[9]George W. Crane, Psychology Applied, p. 347.

of workers and thereby reduces their feeling of boredom. Not only does the playing of music reduce monotony and the feeling of boredom and consequently fatigue, but it also serves to improve morale. Music, however, does not present the same stimulus to all individuals, and consequently may prove annoying and irritating to a small minority. On the whole, the results of the application of music have been beneficial, but more concern should be given to the minority to whom music may be irritating. A more detailed study of music by the psychologists may eliminate this irritation or at lease reduce it. Music is not, however, a cut-and-dried method for eliminating fatigue, but rather a tool of management and the psychologist which has been presented because of its psychological foundations.

Color Application.

A more recent approach to the elimination of industrial fatigue has been the application of color in industry. In the June, 1947, issue of the Reader's Digest an article called attention to the reduction of fatigue by the scientific use of color selection. The most interesting facts revealed are that colors not only reduce fatigue by making the various parts of machinery more visible but also have a psychological effect on workers. For example, it was stated that employees who complained of feeling cold in rooms which were painted blue-green felt comfortably warm after the walls had been re-painted with a warm coral color. Tests have shown that the red end of the spectrun contains the exciting colors which tend to combat fatigue. This power of color has been used successfully in the treatment of psychiatric cases in which depressive persons are cured of suicidal leaning by being placed in bright red rooms. Another illustration of this psychological factor was the case of workers who claimed that they strained their backs when lifting black metal boxes, and yet were perfectly satisfied to lift them after they had been painted a pale green.

The application of color in industry is unlimited and beyond the scope of this thesis. It has been presented to illustrate its relationship to fatigue, but it is by no means restricted to this category alone. Numerous experiments have illustrated its use in accident prevention, increasing employee morale and numerous other factors. The psycho-physical factors of visibility, effect of contrast, associative identification, glare, and organic fatigue will prove to be most profitable fields of study in the application of color in industry.

Summary.

A few of the physical factors related to industrial fatigue have been discussed in an attempt to acquaint the reader with the complex pattern of psychological and social factors involved in this problem. Selection of these factors is not intended to be indicative of their relative importance, but merely to illustrate the work of the industrial psychologists in attempting to solve the problem of industrial fatigue. Recognition of the psychological principles involved in these factors has greatly aided management in understanding them more thoroughly and has provided a precise method of attack in their solution. Continued assistance from the psychologists will reduce restrictive factors to negligible significance.

CHAPTER X

WORKER SOCIOLOGY AND SOCIOMETRY

In the previous discussion regarding the psychological approach to some of the techniques and problems of management, it became increasingly apparent that many social factors influenced this approach. Although the problems were mostly psychological in nature and the social factors were often obscured, their significance is important. Since the following chapters will more clearly illustrate the relationship of the psychological and social factors, an understanding of industrial sociology at this point will prove helpful.

Industrial psychology and sociology are so inter-related that it would be impossible to consider one without the other. Many of the concepts and principles of psychology such as frustration, drives, attitudes, personality, heredity and environment discussed in the chapter, "Industrial Psychology - Its Concepts and Application," are identical with those of the sociologists. A more comprehensive approach to the subsequent techniques and problems of management can be realized by applying the concepts and principles of these two sciences.

Sociology is a body of scientific knowledge concerned with human relationships. Since psychology is concerned with the study of human behavior, and since individuals are "social beings," this definition alone illustrates the inter-relationship of these two sciences. Just as the psychologist is interested in describing human behavior, so the sociologist is interested in building up "the most accurate body of knowledge about human relationships that is possible."[1] The prime concern of sociology is to discover what is true

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[1]John F. Cuber, Sociology, p. 8.

about individuals and their relations to one another which is analogous to the causation concept of the psychologist. In considering many of the concepts of psychologists, it was noted that although there were differences of opinion, there was much common agreement on the more important concepts and their application. The field of sociology is not free, either, from these differences of opinion, but among the professional sociologists there also exists a clear consensus and agreement regarding the field. The agreements, as pointed out by Cuber, are:

> . . . (1) that modern sociology is a field of knowledge, not a reform movement, and not a therapy; (2) that the subject matter of sociology should consist only of the knowledges which are based on careful and repeated observations and by the use of well-trained persons employing tested methods of observation; (3) that sociology should be concerned with the study of what is, not with speculation about what ought to be; (4) that modern sociology is largely amoral, that is, concerned with the discovery of what is true, regardless of what older moral sentiments such knowledge may call into question; (5) that sociology is only one of a group of social sciences which study human behavior, each of which has its own subject matter, point of view, and personnel, none having a corner on the whole truth; and (6) sociology, like all fields of knowledge, contains differences in professional viewpoint, but we cherish these differences because out of them usually comes progress in human knowledge.[2]

The behavior and attitudes of individuals, as studied by psychologists, are affected by many broad social influences, and it is with these social influences that the sociologist is concerned. A few of these social influences will be considered, and their recognition by industrialists will be shown.

The Worker and the Community.

Society may be regarded as a system with various components and processes which are interrelated and interdependent. Cuber defines society as "the

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[2] Ibid., p. 15.

organized group of people who exact a culture." [3] The interrelatedness of our social system has been boldly demonstrated by experiences of recent years. Crippling strikes in various key industries brought this fact home to many people who, at one time, were unaware of how closely bound their individual welfare was with the functioning of the total social system. For example, a twenty-seven-day power strike by 3,200 workers of a privately owned utility in Allegheny County, Pennsylvania, which occurred in the fall of 1946, demonstrated that a small group of workers can, if not restrained, cause economic loss and inconvenience to the entire population of a community.[4] This stike by 3,200 workers disrupted the lives of 1,500,000 persons, resulted in $300,000,000 loss to the community, and brought temporary unemployment, which caused the filing of 56,000 compensation claims. Within this social system, there appear to be processes at work which continually make for growth and change. The existing social institutions tend to resist change and maintain the existing equilibrium. From the interplay of these processes, new social forms develop, new institutions evolve and modifications occur in the old order. An industrial plant may be regarded as one of the many institutions which comprise this social system, and as such it both affects and is affected by the total society.

There can be little doubt that the growth of modern industrial organization has contributed to the changes occurring in our society. This has come about in many ways which are readily understood and easily recognized. The large scale production of commodities has contributed to a rising standard of living on the part of the whole populace. Improved communication and transportation have brought people closer together and broken down in some

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[3] Ibid., p. 60.

[4] Glen U. Cleeton, Making Work Human, p. 243.

degree the provincialism that once existed. The development of large industrial plants has contributed to the growth of the city and has stimulated the geographical and social mobility of people. Such influences as these are easily recognized. What is not so clear, however, is the manner in which changes in the social system have had a reciprocal effect on industrial organization itself and have affected its general function. Professor Elton Mayo has pointed out that within a relatively short span of time we have evolved from a society characterized by well established cultural forms and traditions toward what he calls an adaptive society which is characterized by increasing complexity, increasing interdependence, and less well defined social codes.[5] In the established community the individual, while growing up, assimilated the values, customs and traditions of the group to which he belonged. These served him as a kind of social direction in terms of which his life considerations could be simply made.

In our times, particularly in larger metropolitan areas, the composition of the neighborhood is constantly shifting. Under these conditions such institutions as the family, the church, and the school have great difficulty providing the same function for members of the community as under more established conditions. Consequently, the stabilizing influence they provide for the individual has changed.

This change appears to have had at least two consequences. First, it gave the individual an increased amount of freedom to do as he chose. Secondly, it had the effect of placing on him an increasing burden to make countless decisions with little in the form of an orderly frame of reference. The individual is thrown back more and more upon his own personal resources

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[5]Elton Mayo, The Social Problems of an Industrial Civilization, pp. 75-76.

in his need to adapt to an increasingly complex society.

The Changing Function of the Work Place.

An additional consequence of this general social change is that the function of the work place to the worker has also been undergoing a change. There is definitely a reciprocal effect of social change upon the industrial organization. In the more stable community the work place was one of many institutions which together served to define the function and significance of the individual. In the modern metropolitan area, however, it appears that the work place is now being asked to provide for the individual a place to which he can look for some of the satisfactions which other institutions previously provided. The individual is relying on industry to take greater responsibility in spelling out his position within his own social group. Basically, he needs and is asking for a new designation of his personal significance. Where a breakdown of one source occurs, man's attention shifts elsewhere for this. In this light we might regard the increasing number and insistent manner of employees' demands as being an expression of this effort. This does not mean that the worker is consciously imposing these demands on the work place. Rather they are in the nature of a groping for satisfaction of which the individual himself may not be explicitly aware. This is exemplified by the pension plans, sickness benefit plans, and the like that have been employed in industry.

On every hand we have striking evidence of the enlarged function of the work place for the individual. One of the immediate manifestations of this is in the multiplicity of social activities which tend to spring up around the work place. One finds that often times an individual's friends and circle of acquaintances and a larger part of his outside social participation is with people who work at the same company.

The Social Function of Industrial Organization.

Some of the influences affecting the function of industry to the worker have been noted. It can be readily seen that this function cannot be described narrowly in terms of wages and salaries paid. This may have sufficied at a time when the individual's work was but an extension of his position in the community or when the particular work he did was readily understood by everyone. Under such conditions a job was but one of many forms of social participation which together made life meaningful.

Under present day conditions the individual's work life to him has become relatively more important than ever before, yet his particular job assignment has less and less meaning in the community. Others in the community often can have no comprehension of what a person does, the skills required, or the importance of the work. The only people to whom his work means much are those who are associated with him in the factory. They are the people who readily understand all the special skills and abilities and other attributes required of the individual.

Thus, the full significance of the actual work a person does in a large industrial plant is articulated primarily within the internal organization of the plant. It is understandable to his co-workers and to management. Externally, that is to say in the outside community, it can usually be articulated only in terms of the wages he receives or in terms of the reputation of the company the individual works for. Actually, the relative significance of the company a person works for has in many instances come to be more meaningful in the community than his specific job assignment. Thus, we see that the worker obtains his work satisfaction predominantly in terms of the social organization within the factory.

It has not been an easy matter for industry to accommodate itself readily to these new demands because traditionally its function has been

construed to be strictly economic. The concepts of good business practice, in terms of which a plant has traditionally operated to provide goods and services, do not explicitly recognize or readily adapt themselves to these social forces.

It is guessed that those companies, that have recognized these social forces and found ways of accommodating their structure to them without sacrifice of efficiency, are those maintaining harmonious employee relations. In these terms one might also understand the development of union organizations. Union organizations appear to have arisen in response to these needs, and a more detailed discussion of this will be found in a later chapter.

Much of the labor unrest in recent years may be regarded as a manifestation of social change. The old equilibrium has been disrupted, and we have moved toward a highly complex, dynamic type of society which requires a high order of adaptability on the part of its individual members. In the process of restoring a new equilibrium, the function of a work place is gradually changing with the result that modern industrial organizations are emerging as a dominant social institution of our time.

Adaptive Requirements of the Work Place.

Enough has been said to indicate the possible nature of the broad social influences affecting the demands made by the worker on his work situation. In a social world affected by rapid change and in which the individual often leads an impoverished social life, he is looking to the work place for security, stability and social participation. This was mentioned in the chapter on "Selection and Interviewing Techniques" when it was stated that we attempt to achieve on our jobs the identical satisfactions withheld from us in our early lives. Let us examine the work place from the point of view of the kind of demands it imposes on the worker.

Every company in order to survive must perform an economic function. To do this it must be responsive to the economic forces which affect it as, for example, changes in costs of production or demand for its products. The internal organization of a plant must be readily adaptable to these external influences. It requires a capacity to expand or contract as needed without upsetting its internal equilibrium. The organization existing within a plant is in part determined by these considerations of cost and efficiency.

The essential characteristics of factory organization are well known to the industrial engineer. It embodies various concepts such as division of labor, allocation of function and flow of work, and the whole is ordered and arranged so as to result in a maximum of economy and efficiency. Every aspect of factory organization must contribute directly or indirectly to the functioning of the plant as an economic entity, and improvements and changes are made in these terms. In order for this system to function, people are brought into it to perform the necessary routines and operations which go with his particular assignment. Thus, it can be said that one set of conditions to which the individual must adjust are those imposed by the job requirements and changes in job requirements.

In addition the worker is required to adapt himself to other employees with whom his job relations bring him in contact. His work brings him into interaction with other people who stand in varying relations to his. These relationships are usually classified as:

1. Individual worker to groups of workers.
2. Group of workers to other groups of workers.
3. Individual worker to a member of management.

4. Individual worker to management.

5. Groups of workers to management.[6]

Thus, in a given instance, the individual should respond to the people with whom his work bring him in contact in terms of their specific job function. A second set of conditions to which the individual must adjust, therefore, is the requirements for teamwork arising from his job relations.

There is a third set of conditions to which the worker must also adjust. These arise from the informal organization among the workers and give rise to the factors of social distance, belongingness, group barriers, and group solidarity, so often discussed by sociologists. When individuals associate with one another over an extended period of time at work, they tend to develop common values, sentiments and social codes in terms of which the conduct of the individual members is in some degree regulated. Every person in the work group is under a pressure to conform to the group's standards. Oftentimes this results in a conflict of loyalties and confusion regarding what course of action best serves the individual's own interests. In some instances these informal groups function to implement and further the requirements for teamwork growing out of job relations. In other instances they function to impede or hinder the kind of collaboration required for efficiency. That these informal groups directly affect the successfulness of an organization has been clearly demonstrated by such noted authors as Barnard[7] and Simon.[8]

Applied Worker Sociology.

The importance of worker sociology was most lucidly revealed by Western

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[6]Roger M. Bellows, Psychology of Personnel in Business and Industry, p. 288.

[7]Chester I. Barnard, The Functions of the Executive, Cambridge: Harvard University Press., 1948.

[8]H. A. Simon, Administrative Behavior, New York: The Macmillan Company, 1947.

Electric's Hawthorne experiment in which 20,000 workers, management representatives, and personnel technicians cooperated. Along with the study of illumination previously cited, other studies yielded amazing results. The various factors such as working conditions, and hours of work were not as significant in determining worker productivity as was the influence of group interrelationships. This experiment clearly demonstrated that sociological techniques could be carried into the factory because the factory is definitely a social atmosphere.

More recent experiments have been concerned with the family unit, and it has only been in recent years that industry has focused its attention on this phase. At one time, sociologists were the only ones studying the family and its influence upon the individual, but recently, two other groups have contributed to this study. The clinical psychologists considered the ability of the individual to adjust to life in relation to his family condition while the economists studied problems of the family in relation to its financial structure. Marriage and dependents are major motivating forces in the lives of men. Investigations at the Lockheed Aircraft Corporation revealed that:

> Under the stimulus of family responsibility, the average male works steadier, sticks to his job longer, gets further in his vocation and generally exhibits higher morale than does his unmarried counterpart.[9]

The importance of this family unit is further illustrated by considering the case of the Ellwood City steel millworkers. Very few people would think of looking for happiness in a steel mill, and when the Ellwood City workers were offered more lucrative jobs in Gary, they refused to leave their positions. The announced reluctance or downright refusal of many workers to

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[9]Lee Stockford & Karl R. Kunze, "How Family Status Affects Vocational Adjustment," American Machinist, XCII (October 7, 1948), p. 85.

[10]"The Case of the Contented Steelworkers." Fortune, XLI (May, 1950), pp. 76-77.

take the new jobs promised them in Gary or elsewhere was partly a reluctance to leave home; they were bound to Ellwood City by ties of family, friendship, and home ownership, but mainly by the widespread satisfaction and pride in both individual and group accomplishment at the plant. These are but a few examples of the many experiments in which the importance of worker sociology was noted. The social and psychological satisfaction that the workers demand are hindered in an autocratic environment but can be satiated to a considerable degree in a democratic environment. Management is beginning to recognize the fact that a factory environment can be democratic as well as autocratic and still accomplish the same results but with less conflict. One of the most significant steps in this direction has been the application of the phase of sociology known as sociometry to the industrial scene, and it is with this phase that we will now concern ourselves.

Industrial Sociometry.

When men work together in relatively small groups or gangs, it is desirable that they be matched as well as possible in ability. When a man is inclined to feel inferior because of his lesser ability or because of criticism, he is apt to feel that he is in the way. He attempts to rationalize his behavior by covering up his attitude of inferiority; an attitude that may well result in absenteeism and dissatisfaction. Even the admission of inferiority is conducive to lower morale because it indicates a loss of self-respect in the individual. Workers should not only be matched according to their ability, but it is desirable that those who are congenial be placed side by side. Congeniality, group spirit, and friendships should be encouraged. A common assumption is that people interested in the same things are likely to be interested in each other and will work better when in their own group, with friends, working cooperatively. The sociologists seized

upon this assumption and concluded that there was much to be gained by managing conditions so that workers would be permitted to work with or near others for whom they show a preference.

Sociometry is the science of matching people on the basis of their preferences for co-workers. It has been used in child study, in armed forces training and combat assignments, community planning, and industrial work situations, the latter being the most significant for this chapter. 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. Bellows lists three conditions under which sociometry works.[11]

1. 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.

2. The use of the technique presupposes a democratic, as opposed to authoritarian, approach to personnel management and government of workers.

3. The workability of the procedure presupposes that workers may be shifted in location without changes in job duties.

Although sociometry is a relatively simple method easily applied in industry, few industries have utilized this technique and many are unaware of its existence. The method of sociometry can also be extended from preference votes to votes of dislike. In preference votes, certain individuals identify themselves as the leaders, while others are shown to be isolates. The difficulty in the preference vote is that it fails to distinguish between isolates who are neglected or unnoticed and those who are actively disliked. By expressing votes of dislikes, these two types of isolates can be distinguished from one another and those who are neglected can more readily be brought into

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[11]Bellows, op. cit., p. 298.

the group than can those who are actively disliked. The neglected isolates, and especially the actively disliked isolates, are thus singled out, and the psychologist is able to give them special attention and help them to make better adjustments to the group. The leaders or stars, as they are referred to by sociologists, usually take care of themselves and since, as Whitehead states:

> A leader is in some sense chosen by the rest of the group as one who is both able and willing to assist them in doing that which they already wish to do. This act of choosing is not neccessarily deliberate or even recognized by the group.[12]

In this case, however, the leader is recognized by the group because of their stated preferences, and this principle has great significance to management. A knowledge of their existence would serve as a basis for foremanship training. They are the individuals who very probably possess the best personality traits for leadership since there is good assurance that they will not antagonize people, but care must be taken not to place too much emphasis and reliance on this fact alone.

After the preference and dislike votes have been compiled, a sociogram can be constructed which identifies the stars and isolates. These sociograms can serve many purposes. For example, the sociograms of productive and unproductive groups can be examined in order to obtain a definite guide as to the type of group structure that should be developed. Maier cites the use of sociograms constructed at specified intervals to learn the effects of certain company policies on the group behavior.[13]

A sociogram may also serve a therapeutic function. When individuals are told of their status in a group, they may become responsive to their social

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[12]T. N. Whitehead, Leadership in a Free Society, p. 68.

[13]Norman R. F. Maier, Psychology in Industry, p. 103.

obligations and sensitive to human reactions. It would be very revealing and instructive to most people if they could know how they were accepted by others and if they could be informed of their position in the group by means of this objective sociogram.

Psychometric studies have also been made on the influence of sex in group organization, but these have been limited mostly to study of school children.[14] In these studies it was shown that children in the fourth and fifth grades of public schools do not choose across sex lines. By the seventh and eighth grades, however, the sex barrier ceases to be marked. This has significance for the problem of women in industry, but whether this problem will constitute a source of friction cannot be predicted. If the number of women in industry increases, especially when they are working side by side with men, there is great probability that a sex line will be drawn. When this occurs, any disagreeable experience or friction will be interpreted as a sex rather than a personality characteristic. In this case, sociometric studies would certainly reveal the development of a sex line before it reached unpleasant proportions which would hinder the industrial development and efficiency.

Sociometry, actually, is still in its infancy, and companies which are on the alert for the utilization of new principles and concepts can do pioneer work in this field. The methods of sociometry allow the individual to state his needs and interests, as well as permit him to participate in the development of the social structure which is formed within the organization. Since the measurements obtained reflect the attitudes and values prevailing in the group, the human relationships found are realistic rather than artifically

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[14] Ibid., pp. 104-105.

imposed from above. The utilization of such data makes it possible to capitalize on trends which are normally present in the various groups and more readily permits the extension of democracy to the organization.

Summary.

Like psychology, sociology has many useful concepts and principles which will be of tremendous assistance to management when properly applied. Industrial sociology has experienced a much slower acceptance than its counterpart industrial psychology. It has only been in the last twenty years that management has recognized the existence of the many social forces at play in an industrial organization and the complex social forces of a community that have exerted a new demand on industry. Even though these forces have been recognized, management has been reluctant to consider the over-whelming significance that these factors have in determining the ultimate success or failure of an organization. Management must first realize that the social sentiments and activities of groups are not obstacles to surmount, but an integral part of the objective for which it is working. Whitehead has stated that human satisfaction depends on "activities pursued in common and directed towards some future achievement or purpose."[15] The various social groups, then, will only be sound and cooperative when the human satisfactions and contacts are adequate. Management must thus consider not only the economic purposes and objectives, but the social interactions and satisfactions as well. Sociometry, as a technique of sociology, will contribute much towards this consideration and realization of a two-fold objective. Failure to accomplish this purpose can only result in a further manifestation of industrial unrest and dissatisfaction so apparent in industry today.

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[15] Whitehead, op. cit., p. 86.

CHAPTER XI

ATTITUDES AND MORALE

Although the background presentation of sociology and sociometry is far from being complete, it is hoped that the presentation given will be sufficient enough to make the reader more aware of the complex social interactions that influence the behavior of individuals in an industrial environment. The introduction of this material at this point is justified by the fact that the factors we will be concerned with now more clearly demonstrate the inter-relationship of psychology and sociology than those previously considered. This does not mean, however, that these social interactions were completely divorced from the previously discussed topics, because their existence and influence have been mentioned. The point is that they were so obscured by the more obvious psychological factors that it was not deemed advisable to consider the concepts of psychology and sociology simultaneously. Now that we are fortified with the concepts and principles of these two sciences, a further consideration of the problems and techniques of management will clearly demonstrate their inter-relatedness.

Attitudes.

It has often been said that social psychology is the study of attitudes, and the experimental work of the social psychologists during the past ten years seems to verify that fact. It was also pointed out that attitudes are one of the major fields of study in sociology, once again demonstrating the industrial psychology and sociology are in many respects synonymous.

Recent psychological studies of business problems have given marked emphasis to the importance of attitudes of individuals. To illustrate this point, when a National Research Council committee undertook an experiment on the effects of changes in factory illumination, it was found that factors

of attitude, morale, and supervisory relationships were more potent than those of illumination, ventilation, rest periods, nutrition, wage incentives, or individual skills.[1] Cuber has defined an attitude as "an orientation or a 'tendency to act' in some way toward some person or situation or object or idea."[2] Attitudes are abstract tendencies and are often confused with the overt behavior of an individual because this overt behavior is more readily measured and observed. Attitudes will definitely mold the overt behavior of an individual, but the difficulty lies in the fact that the overt behavior is seldom indicative of the true, existing attitude. Then too, several attitudes may be operating at the same time and may even be the antithesis of one another, yet both play a part in determining the behavior of the individual.

Attitudes are not inherited but, rather, are learned through social participation. The usual effect of this social participation is to standardize the attitudes of individuals. This concept is usually referred to as belongingness in an industrial sense; a condition which influences the attitudes and behavior patterns of the workers toward the group to which they belong. This belongingness is further enhanced by the group barriers that are set up in order that one group may differentiate itself from other groups and from unaffiliated individuals. The total configuration emphasizes the importance and existence of group solidarity. This is not to say that there is never a variance of attitudes within a group. The point is that, when these attitudes are at variance, they are not radical because of the group belongingness, barriers, and solidarity that are exerted and exercised.

When we consider that attitudes are learned through social participation

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[1]Harry W. Hepner, Psychology Applied to Life and Work, p. 18.

[2]John F. Cuber, Sociology, p. 189.

and experience, we cannot overlook the profound importance of stereotypes. We are all familiar with the many stereotypes relating to the various races, colors, and creeds, and are able to realize the influence they have in determining many of our attitudes. This is especially true of the stereotypes that have come into existence regarding the many phases of management and the industrial environment in general. If attitudes were formed only through experience, then it would be impossible to conceive why many people have attitudes so contrary to this actual experience. Although these stereotypes are for the most part fallacious, we cannot ignore them when considering the attitudes and subsequent behavior of individuals. A concrete example of attitude may help at this point, so let us take the case of a stevedore. An experienced stevedore can toss freight all day without any appreciable fatigue and yet can be worn out by several hours of simple effort while on a shopping trip with his wife. How then, do we determine the attitudes of the individuals in an organization?

The Measurement of Attitudes.

Every worthwhile executive, manager, superintendent, or foreman wants to know how he can improve human relationships within his particular company, division, plant, or department. The only way he can determine the attitudes of individuals is by following the old maxim - "if you don't know, ask." This gave rise to the attitude survey, the modern version of this maxim. Many companies have had notable success in the use of attitude surveys, and there are great potentialities of this technique. The problem of Negroes in industry, for example, represents a very pertinent topic to management. More and more the Negro is being "emancipated," and this problem will no doubt become an issue which must be faced realistically. Management is definitely fearful of the reaction this problem will have on its white employees. In this case, an attitude survey will furnish an indication of the trend in attitudes toward

Negroes, thus giving a definite basis by which the rate of absorption can be determined.

The chief difficulty with the attitude survey is the fact previously mentioned, that overt behavior is often confused with real attitudes. At one time, people were afraid and unwilling to indicate their attitudes, because these attitudes might be at variance with those expected of them. This problem was overcome by having anonymous surveys in which the individual could express his real sentiments and attitudes without fear of censure, but the confusion still remained. The fact is, that although people may be willing to indicate their true attitudes, most people do not actually know what these attitudes are, and even if they do, they are unable to properly express these attitudes in words. Expressing these attitudes for the individual is not sufficient either, because they are unable to cover a wide enough range to include all possible attitudes that might exist. Even if the persons are able to properly express their attitudes, there is always the subjective error of misinterpreting the true meaning as expressed by the individuals.

It must be remembered that attitude surveys are not management cure-alls. The problem of attitudes is very complex, and as yet no definite procedure has been validated. Psychologists have been working on the further development of attitude surveys, and if they are able to harness the tremendous potentialities of this field, a greater understanding of the psychological and social factors may be had. With this understanding, management will be able to mold its organization structure more efficiently and effectively by considering and satisfying the many drives, motives, and needs of the individuals who compromise the organization.

Morale.

Morale is perhaps one of the most significant manifestations of attitude and, for that reason, is being considered at this point. Most managers

sincerely believe that their organizations are lacking in none of the requisities for good morale. They feel that their employees are wholly satisfied with their pay, working conditions, supervision, general relationships to their employers, and a multitude of other factors. This, however, is not the case, and believing this represents only wishful thinking on the part of the managers. Attitudes are responsible for morale, and most managers do not know their employee's attitudes.

The term morale is a somewhat vague and illusive concept and therefore quite difficult to comprehend unless it can be objectively defined. When considering morale, we must take into account both individual and group morale. Individual morale is a different thing than group morale, yet a body of workers whose individual morale is high are likely to have a high collective morale. A group of psychologists have formulated the following definition of individual and group morale which make the distinction between the two apparent:

> Individual morale is a condition of physical and emotion well-being in the individual that makes it possible for him to work and live hopefully and effectively, feeling that he shares the basic purposes of the groups of which he is a member, and that makes it possible for him to perform his tasks with energy, enthusiasms, and self-discipline, sustained by a conviction that, in spite of obstacles and conflict, his personal and social ideals are worth pursuing.
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> Group morale is the condition of a group where there are clear and fixed group goals (purposes) that are felt to be important and integrated with individual goals; where there is confidence in the attainment of these goals, and subordinately, confidence in the means of attainment, in the leaders and associates, and finally in oneself; where group actions are integrated and cooperative; and where aggression and hostility are expressed against the forces frustrating the group rather than toward other individuals within the group.[3]

It is quite apparent that people with the same experience may have different degrees of morale. This may be due to a multitude of factors, all of

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[3]A. G. Bills, The Psychology of Efficiency, pp. 172-173.

which imply the theory of causation and the effect of the stimulus on the subsequent behavior and accomplishment of the individual. Personality differences bring about differences in energy determination, emotional stability, and influence stamina. As was pointed out when discussing sociometry, people work more efficiently when working with those people with similar interests. Likewise, people work more efficiently and happily with those who have pleasant dispositions—cooperative attitudes and a toleration and respect for others. If the vast majority of workers did not have these qualities, organization morale would be an impossibility. Unfortunately, however, some persons have in their makeup attributes of conceit, jealousy, selfishness, and hypocrisy. When persons who demonstrate these characteristics to any marked degree are tolerated in positions of responsibility and authority over others, they can only destroy morale. The importance of this concept will be more clearly illustrated in a later chapter when we discuss the present-day psychological approach to management's problems.

Bodily condition is also important since good health, proper food, and adequate rest will have a direct influence on stamina. Work conditions will influence morale since some work conditions are more conducive to morale than others. Such factors as the company attitude toward the employees and society in general, the type of supervisors, the sanitary facilities, the lighting, ventilation, and attractiveness of the shop, and many other conditions all give the factory an atmosphere which influences the morale of the worker.[4] Financial and non-financial incentives will also influence morale, and these factors are considered significant enough to warrant more detailed attention later. Finally, past experiences, such as discouragements at home and at

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[4]Norman R. F. Maier, Psychology in Industry, p. 81.

work, opportunities to remedy sources of annoyance and frustration, former insecurities, and status in society, constitute the components of morale and determine the degree of morale that will be portrayed.

That morale is a vital and essential element of any successful organization is demonstrated by the War Manpower Commission studies showing that plants with exceptional worker morale displayed phenomenal production and cost records.[5] One of the cases cited was that of two plants making the same gadget for the Army but showing a wide difference in cost. One plant couldn't get its cost below $80 while the other could turn out the product for $37.50. Studies showed that the concerns were approximately equal in everything but morale, the low-cost firm having developed this to an exceptionally high degree while the other paid little attention to it.

We may confidently expect that future developments in applied industrial psychology and sociology will make the problem of employee morale easier to cope with than it is today. Sufficient evidence already exists, as was pointed out previously, that the judicious use of attitude scales and other techniques now available, such as the morale survey, will aid in the solution of many industrial relations problems. Again, only by recognition of the numerous psychological and sociological factors at play in an organization will management be able to combat this problem with assurance and confidence.

Financial and Non-financial Incentives.

A discussion of attitudes and morale would not be complete without consideration of financial and non-financial incentives. The subject of incentives, especially financial incentives, has been dragged and tossed around for so long that the more important aspect of non-financial incentives

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[5] "Washington Trends," Newsweek, XXII (November 1, 1943), p. 18.

has often been obscured. It is true that financial incentives cannot be completely neglected, but as Barnard has stated:

> Notwithstanding the great emphasis upon material incentives in modern times and especially in current affairs, there is no doubt in my mind that, unaided by other motives, they constitute weak incentives beyond the level of the bare physiological necessities.[6]

This overwhelming emphasis upon financial incentives has been one of the primary factors in the debasement of labor throughout all periods of history.[7] It has given rise to a philosophy of work which contends that the primary function of work is the satisfaction of physical needs. This is, however, merely a philosophy of necessity, an inhuman philosophy of utter despair, but one that is still prevalent in industry today. This is evidenced by the attitude of many present-day leaders of industry who feel they are giving their employees a "square deal" by paying wages which are standard or better, arranging for decent conditions within their factories, and doing their best to assure even-handed supervision on the part of the junior executive.[8] Of course this illustration cites more than just financial incentives, but the point is that all these factors are material in nature. Under these circumstances it would seem illogical for men not to recognize the substantial justice of their treatment and not to respond by working whole-heartedly for their own advantage. Yet this is precisely what employees are so apt not to do.

Management is slowly beginning to realize that no amount of financial or material incentive can insure complete job satisfaction, satisfactory job performance, or sound worker morale. Men want, and will work for, many other

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[6] Chester I. Barnard, The Functions of the Executive, p. 143.

[7] Glen U. Cleeton, Making Work Human, p. 22.

[8] T. N. Whitehead, Leadership in a Free Society, pp. 57-58.

things besides wages and other material benefits; a fact that has been borne out by the Hawthorne and similar studies previously cited. What, then, are the inducements that these men want?

These men want inducements of a personal, non-materialistic character, such as opportunities for distinction, prestige, and personal power, to name a few. Hundreds of studies have been undertaken in this field, and all conclude that the most important wants and needs of the majority of workers are non-material in nature. An average of all these studies indicates that wages usually rank a poor sixth, preceded by five non-financial or personal incentives.

Even though management has recognized the importance of these non-financial incentives, the idea is still persistent in the minds of many of our industrial leaders that wages are of prime importance in determining the ultimate behavior, attitudes, and morale of individuals. A recent study by National Industrial Conference Board, in which 71 factors were rated by employees, union officials, and management in relation to their importance to employee morale, illustrates this point.[9] Both union officials and management rated compensation first and placed great emphasis on the material factors in their other ratings. No indication was given of the number of people included in this study, but it is significant to note that both management and union officials, in this instance, were over-emphasizing the relative importance of material inducements contrary to the expressed opinions of the employees. It is not sufficient, though, for management to just recognize the importance of these non-financial incentives. Because of the complex social environment of the plant and community, workers are more and more seeking and

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[9]Cleeton, op. cit., p. 135.

demanding an opportunity for self-realization through work which contributes to unification of personality. This means that the opportunity for the exercise of fundamental capacities and the satisfaction of basic wants and desires must be found in work.

Work carried on for the sole purpose of securing wages and satisfying physical needs, without producing any other satisfactions at all, is completely debasing and degrading to the personality and emotional stability of individuals. No doubt there is a question in everyone's mind as to why men strike for higher wages and shorter hours when these are not the items of greatest importance. The only plausible answer that can be proffered is that if work is going to be unpleasant, men will demand extra financial incentives to offset the frustrations incurred by failure to satisfy their basic personal wants and desires. Shorter hours will be demanded so that they can escape the sources of frustration and the unpleasantness of work for as long a time as possible. Consideration must also be given to man's desire for fairness, a desire that is, in part, an unwillingness to be exploited.

The configurations of this problem may not seem important to management at present because the impact of a maladjusted society has not as yet been felt. The future implications of this problem threaten the very existence of industry itself, and unless management takes corrective measures now, the security of industrial organizations will slowly vanish. The psychologists and sociologists have discovered, defined, and experimented with the many motives, and needs that determine the behavior of individuals in an industrial milieu. They have even dichotomized these factors according to the social strata with which the individuals are associated. Why then, should management overlook the tremendous contribution that these sciences have to offer to the ultimate survival of industry itself? The answer, in part, seems to

lie in the fact that these sciences have been unable to convert their experimental findings into a dollar-and-cents value; a value that would be most readily accepted by management. It seems quite illogical that management should wait for a complete demoralization before taking cognizance of the facts, and yet it seems as if management is prone to do exactly that. The psychologists' and sociologists' problem then, is one of selling in order that they might imbue management with the tremendous implications of this problem.

CHAPTER XII

SUPERVISOR-EMPLOYEE RELATIONSHIPS

The problems of supervision and management constitute one of the most perplexing problems confronting industry today. We have been constantly considering human behavior and adjustment in industry; an adjustment that consistently emphasizes the significance of the quality of supervision, management, and administration in the industrial organization. As Smith so aptly phrases this problem:

> The antagonisms of capital and labor; the acrimonious character of labor disputes; 'slacking' or 'soldiering' on the job, and other expressions of conflict between workers and management represents oftimes not the faults of common 'human nature' but the reflection of unintelligent leadership in industry. The executive directs and moulds his working force, and the long and powerful influence of his example and his policies determine in large measure the direction in which the 'human nature' of his employees will find outlet.[1]

The management of manpower is the most undeveloped aspect of industrial progress. Industry has developed at such a rapid rate that the problem of human relations has been completely obscured; mainly because all emphasis in this development has been on production methods. Technically trained men are invariably put in charge of machines, but often untrained supervisors are considered qualified to be placed in charge of men. "The nature of man," writes Maier, "is far more complex than that of the most elaborate machine, yet men are sometimes supervised by experts in machinery rather by men with training in the fundamentals of human behavior."[2]

This understanding of human behavior seemed unnecessary in those days

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[1] E. D. Smith, Psychology for Executives, pp. 14-15.

[2] Norman R. F. Maier, Psychology in Industry, p. 3.

when the foreman ruled with fear, and the worker trembled when the boss as much as looked at him. In recent years, however, the employee has been treated with more consideration primarily because of a realization of his importance in the general scheme of our industrial life. The solution of this problem will not be realized unless full attention is given to the psychological factors underlying human behavior and relations. A satisfactory psychological environment in a place of work depends to a marked degree on the attitudes and actions of those who direct the work of others. Supervision of the work of others calls for qualities beyond those needed for mere performance of the work itself. Supervisors must realize that it is their task to make workers want to work and not merely making workers work.

Conduct of Supervisors.

Although the conduct of the supervisor will influence the way men react to him, individual differences must be recognized since the same supervisor, even though he treats people alike, will not be the same stimulus to them. Individual reaction to the same supervisor will depend upon the temperature (supplementary stimulation), the state of fatigue (a change in the organism), previous contacts with the supervisor and other supervisors (past experience), and the employee's personality (the basic nature of the organism).[3] Behavior, then, is determined by the interaction between the stimulus and the organism discussed in an earlier chapter.

The attitudes of employees toward supervisors are important in determining their behavior. For example, employees may show resentment when they see two supervisors talking to each other. The reason for this

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[3] Ibid., p. 20.

resentment becomes apparent when we recognize that there is an attitude of suspicion among the employees which permits them to believe that they are being discussed or criticized. Many other aspects of a work situation have quite different meanings for the employees than those intended by management. The important point is that it is the employee's interpretation of the stimulus—a subjective interpretation which may conflict with objective meaning—that determines his attitudes and behavior. Whether the worker sees the supervisor as a helper or a disciplinarian is important in determining whether the supervisor's actions are interpreted with an attitude of generosity or suspicion.

Supervisors will also be interested in the results of a recent research in which all the subjects interviewed expressed the belief that having a good boss, feeling they are appreciated, and knowing emotional security seem to mean more to them than the opportunity to use their skills or aptitudes to the fullest, more even than their rate of pay.[4] Another significant study revealed that workers do not accept foremen and supervisors as a channel of communication, and yet it is upon foremen and supervisors that management is placing great reliance to get information to and from workers.[5] Under these circumstances, realistic information concerning the working groups will never reach management, and it has been pointed out previously that a realistic account of the attitudes, sentiments and customs of the working groups would probably be about the most valuable information any management could possibly obtain.

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[4] R. Happock and H. A. Robinson, "Job Satisfaction Researches of 1948," Occupations, XXVIII (December, 1949), p. 155.

[5] "What the Worker Really Thinks About His Company, his Foreman, and his Union," Factory Management and Maintenance, CVI (December, 1948), pp. 82-88.

Few foremen have ever studied the subject of psychology, yet it is vitally important for them to know that the desires and wishes of their men must be both understood and considered. Without such an understanding they cannot hope to be satisfactory supervisors. It must also be realized that, in dealing with human beings, an incorrect or mediocre type of appeal may produce results of a sort; but intelligent motivation demands a conscious effort to shift the best stimuli from the neutral and negative, realizing always that what is best at one moment may not be best at a later time, even with the same subjects. Suggestion is perhaps the best illustration of a reaction to stimuli.

Ideomotor Effect of Suggestion.

Suggestion is described as a form of ideomotor action in which a thought planted in the mind leads to belief and appropriate overt action because no contrary ideas arise to oppose it.[6] This accounts for the way in which our performance is beneficially or detrimentally affected by the suggestions which we receive from those around us, and by the auto-suggestions which we give ourselves either intentionally or unconsciously. There are various factors which determine the effectiveness of suggestion, such as prestige value of the source, absence of opposing ideas, and appeal to emotional attitudes and prejudices. Supervisors would do well to recognize the significance of this theory in appealing to the wishes and desires of their subordinates.

Supervisory Training Programs.

The role of the supervisor in industry cannot be over-emphasized. Management has realized that sound supervisor-employee relationships are the key to an organization's effectiveness and efficiency. Numerous

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[6] A. G. Bills, The Psychology of Efficiency, pp. 201-210.

companies have undertaken studies in an effort to improve the quality of supervision. One of these studies, conducted at the Radio Corporation of America Lancaster plant, reveals many significant tendencies.[7] An analysis of the results obtained from a study of the test, "How Supervise?" which was administered to 224 supervisors and engineers, revealed that supervisors below the general foreman level were in need of further training in the management of people. Following are some of the more significant results of this test which pertain to this thesis:

1. Those who thought it was desirable to impress upon each worker that his job depended on how much work he turned out numbered 42%.

2. Those who thought it desirable to tell inefficient workers to "get busy" or "get out" numbered 20%.

3. Those who thought it undesirable to explain the duties and responsibilities of their job to the workers under them numbered 24%.

4. Those who thought it undesirable to ask workers to comment about the way the company treats them numbered 23%.

5. Those who believed that sympathizing with worker's difficulties only encouraged unfounded protests against working conditions numbered 21%.

6. Those who believed what the worker did during his "off hours" should be of no concern to his employer numbered 52%.

7. Those who did not believe that the way an individual was treated by his fellow workers would probably determine whether he likes his job or not numbered 33%.

8. Those who believed that, if a man is capable of doing a job, he will become interested in it without stimulation from his supervisor numbered 25%.

9. Those who believed that no honest worker would go on strike against a company which provided its workers with a decent wage numbered 31%.

10. Those who did not believe that knowing a great deal about an individual's home life was a great help in selecting the right person for a responsible job numbered 26%.

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[7] Report on Testing of Supervisory Staff, (Camden: RCA, 1950), pp. 1-12.

11. Those who believed that gripes about things other workers do are more likely to be true than gripes about working conditions numbered 43%.

Knowing the weak links in the potential development of the supervisory staff, management is then able to develop a training program to meet the needs based on objective evidence. A typical training program is one used by General Foods.[8] Production supervisors in groups of 15 attended weekly sessions dealing with their part in promoting good human relations. The program is based on the idea that any supervisor who is responsible for the work of others should understand what makes people "tick" before he undertakes to hire them, instruct them, or discipline them. The conferences were concerned with the basic questions of just what it takes to understand oneself and thereby understand others. It was pointed out that demanding cooperation from people only means that they will "fight, give in, or run away." (Aggression, fixation, and regression respectively).

Extensive training in the psychological aspects of handling people is offered by many companies. Included are such subjects as individual differences among workers, practical psychology on the job, types of people who have to be handled with special care, and rules for good mental health. One of the more advanced psychological techniques used is "socio-drama" or "role-playing," a therapeutic practic also used in mental hospitals. In role-playing, employees act out difficult situations encountered in the plant. Thus they often recognize where their disciplinary methods are at fault, and, incidentally, work off their own resentments.[9] So far this practice has been limited to foremen, but future development of this technique will

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[8]"Training for a Better Job," General Foods News Letter, IX (November, 1948), p. 71

[9]"Pajamas and the Ego," Fortune, XXXIV (August, 1946), p. 140.

probably include all of management as well.

When we consider supervisors, we must realize that excluding top executive positions, the industrial engineer is often found in a supervisory capacity. What the supervisors and industrial engineers especially need is, not a more thorough indoctrination in the harsh principles of the commodity theory of labor and efficiency, but a greater understanding of the motives, needs, interests, capacities, and the personal problems of workers as individuals.

CHAPTER XIII

LABOR TURNOVER AND UNEMPLOYMENT

One of the most aggravating problems of industry today is that of labor turnover. Some personnel people believe that one of the leading causes is a condition of general unrest and instability in the working population. Others believe that industry itself is chiefly to blame by neglecting to manage its manpower problems properly. The author is in full agreement with the latter opinion since numerous investigations and studies have definitely concluded that much of the unrest and instability in the working population can be attributed directly to the general chaotic conditions existing in the industrial environment.

The problem of labor turnover is considered important and appropriate at this point because it represents a manifestation of the many problems of management previously discussed. The following are some of the reasons given for the existence of this problem: failure to upgrade employees wherever possible; neglect to train foremen to have a better appreciation of human values; failure to make use of modern scientific methods of psychological evaluation of applicants and employees; inability to eliminate maladjusted executives and supervisors; and general failure to do a good job in utilizing its human assets. All of these factors have been previously considered with the exception of the elimination of maladjusted executives and supervisors which will be considered more fully in a later chapter on "Psychology as Applied in Industry Today."

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[1]Edward N. Hay, "Psychological Evaluation of Executives," Personnel Journal, XXXVI (January, 1948), pp. 267-269.

Financial Aspects of Labor Turnover

Excessive turnover can be extremely costly to management and the extent of its cost is not generally realized. Usually this turnover cost is considered in three parts: loss in production volume, increased operating expenses, and administrative costs.[2]

The most significant of these factors, from an industrial engineer's viewpoint, would be the loss in production volume. This loss is due not only to the shortage in personnel caused by the turnover, but also to the slackening in production that usually precedes the separation stage. The actual monetary value of this production loss cannot be definitely determined, but approximate estimates of this figure are worthy of consideration. The operating expenses and administrative costs, however, are more readily and exactly computed. The predominant factor in operating expenses is the increase in compensation premiums resulting from excessive turnover. Bellows asserts that in most states, by controlling the rate of separations, employers are able to keep their contribution rate as low as .7 per cent of the payroll.[3] If the rate of separation becomes excessive causing large unemployment benefits to be paid to separated workers, this contribution rate may reach the maximum of approximately 3.5 per cent of the payroll. There is a variation, then, of 2.8 per cent, which, when converted into a monetary value, would represent a large potential savings for the employer if he were able to control his turnover.

> For example, in a plant with 300 employees working 50 weeks per year for an average of $40 per week, the total annual payroll would be 300 x 50 x $40, or $600,000. If he neglected his turnover, he might

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[2] Roger M. Bellows, Psychology of Personnel in Business and Industry, pp. 273-274.

[3] Ibid., p. 275.

have to pay the maximum contribution rate of 3.5 per cent of $600,000, or $21,000. With turnover control, the employer could reduce his rate 2.8 per cent; this would be equivalent to paying .7 per cent of his payroll or $4,200. It is clear that this employer could save $16,800 per year by controlling his separations.[4]

Also considered in operating expenses are the accident insurance rates. Investigations and studies by Cobb,[5] Hewes,[6] and Gates[7] have shown that accident frequency and severity rates increase as turnover increases. This increase in accident frequency and severity rates would cause a corresponding increase in the accident insurance rates paid by the employer. Here is another financial factor whose significance cannot be overlooked.

Most administrative costs, such as recruitment expense, medical examinations and training costs are more apparent than the actual cost caused by the separation of employees. Estimates of this cost have ranged from $200 to $1000 for certain of the skilled trades, but the cost of executive personnel turnover is more difficult to ascertain. One company president, when confronted with the replacement of three junior executives, charged $30,000 up to poor selection and placement.[8] As a result of this and similar experiences, he will not allow any person whose salary is to be more than $2400 per year to be hired without clinical examination by a psychologist.

A more scientific procedure for selecting employees, such as that

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[4] Ibid., p. 275.

[5] P. W. Cobb, "The Limit of Usefulness of Accident Rate as a Measure of Accident Proneness," Journal of Applied Psychology, XXIV (April, 1940), pp. 154-159.

[6] A. Hewes, "Study of Accident Records in a Textile Mill," Journal of Industrial Hygiene, III (1921), p. 6.

[7] D. A. Gates, "A Statistical Study of Accidents in Cotton Mills, Print Works and Worsted Mills of a Textile Company," Journal of Industrial Hygiene, XI (1920), p. 8.

[8] J. W. Wilson, "A Psychologist Looks at Management Problems," Iron Age, CLIX (April 17, 1947), pp. 47-49.

outlined in the chapter on "Selection and Interviewing Techniques," can help to eliminate this problem to a great degree. It is becoming more essential that greater attention be given to the pre-employment procedures, not only because of the financial losses involved, but because of the increasing pressure that is being exerted by laws and public opinion. The result of this pressure is the tendency on the part of individuals to become anchored to their jobs and to demand increasing security against unemployment. The employer is thus faced with the choice of losing money by letting an unsatisfactory employee go or losing money by keeping him, and in many instances, the first choice is impossible.

Security Against Unemployment.

"A history of insecurity in work," writes Maier, "is the background for many of the differences between management and labor."[9] Because of this, labor unions have demanded seniority rights and have opposed methods designed to increase efficiency in production. This latter factor is in direct conflict with one of the goals of the industrial engineers; that of increased efficiency in production. Management has resented these practices and branded labor unions as being opposed to progress, and here lies their shortcoming. The truth of the matter is that management has failed to understand the viewpoint of labor by attempting to introduce improved methods that were a menace to the security of the working groups.

The current trend of promoting job security has been apparent in labor organizations for some years past, and such labor group activity will undoubtedly increase. This is evidenced by a recent meeting in New York at which the labor giants asserted that their highest goal was to plan security

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[9]Norman R. F. Maier, Psychology in Industry, p. 31.

for workers.[10] Additional pressure is also gathering from unexpected areas.[11] One of these areas is the retail merchants. They are becoming aggressively conscious of the fact that the steadily employed worker incurs fewer bad debts and is more willing and able to purchase deferred payment goods. Existing state unemployment compensation laws which favor the company with smaller labor turnover will also be strengthened and extended in the future.

Security against unemployment is one of the major responsibilities of industry. The tendency, however, has been to focus too much attention on the economic aspects of unemployment while neglecting to consider the damage it does to human beings. A more thorough analysis of this aspect is necessary in order that the reader will be aware of the tremendous significance of this problem.

Psychological Effects of Unemployment.

Numerous psychological studies have been concerned with the effects of unemployment on individuals. The general conclusion of practically all workers in the field is that unemployment tends to make people more emotionally unstable than they were previous to unemployment.[12] Other effects of unemployment are the following concepts suggested by psychologists; unemployment represents a personal threat to an individual's economic security; people lose their sense of values; they develop feelings of inferiority and lose self-confidence; fear plays a large role; their prestige is lost in their own eyes and, as they imagine, in the eyes of their fellow men; morale is lowered; and habits of loafing and killing time are acquired. Some studies

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[10] Oklahoma City Times, July 12, 1950.

[11] "Personality Factors in Future Employee Selection," Iron Age, CLXII (November 11, 1948), p. 106.

[12] Philip Eisenberg and Paul L. Lazarsfled, "Psychological Effects of Unemployment," Psychological Bulletin, XXXV (June, 1938), p. 359.

have carried these concepts even further to show the effect of unemployment on the individual's health and sex habits. Some clinicians have claimed that unemployment makes people immoral, radical, and atheistic. In general, the spirit of individuals is broken, and there is great evidence of an attitude of resignation or giving up. When people lose faith in themselves and their ability to cope with life's problems, the results are liable to be drastic. For example, they may turn to an untried system of government or leadership or attempt to escape from this intolerable situation by resorting to alcohol or drugs. Then too, this complete resignation and frustration may lead to certain mental ailments. It would be interesting to know what percentage of the 750,000 alcoholic, 500,000 drug addict, and 653,000 mental cases could be directly attributed to these psychological effects of unemployment and other frustrating influences in an industrial milieu. If these percentages were capable of being computed, they would more than emphasize the gross inefficiency of management and society in general. As Maier points out:

> It is an inefficient society which fails not only to use manpower for productive purposes, but actually creates a situation which destroys the effects of years of training skills and years of experience in which emotional adjustments and democratic values have been built up.[13]

Management can very readily and directly assist in the solution of this problem by making a concentrated and sincere effort to even out or standardize production.

Standardizing Production.

The problem of standardizing production seems an almost insurmountable one to most business and industrial leaders because they contend that fluctuations in production, wages, prices, and employment are inevitable in our highly competitive private enterprise system. Such a view assumes that we

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[13]Maier, op. cit., pp. 30-31.

are at the complete mercy of a mechanistic economic system which operates without inhibition. The fact is that our economic organization is man-made, and its operation is determined by human behavior. The behavior in this case is that of the industrial and business leaders who greatly influence the structure of this economic organization. It is highly preposterous, then, to contend that the workers must accept the weaknesses of this economic system, and be made to suffer serious consequences because of management's avaricious desire for wealth and power.

Management can accomplish this goal of standardized production by budgeting production and regulating the intensity of marketing activities accordingly. In this way, management is controlling the economic forces of sales and marketing. The fluctuation would then be shifted to sales activities in order to maintain the equilibrium of production and the resulting equilibrium of the organization itself.

Finally, the problem of turnover can be greatly reduced if management will more readily utilize the concepts of psychology and sociology to promote better human relations. This will involve a more vivid recognition on the part of management that they are dealing with human beings. Any conditions which are conducive to better human relations and which improve attitudes and morale will invariably reduce turnover as well as other forms of the employees' expressions of disapproval of their employer. The total effect will be an over-all increase in efficiency in the organization both from a production standpoint and that of increased emotional adjustment and satisfaction.

CHAPTER XIV

RESISTANCE TO CHANGE

In spite of the many elaborate techniques that management has set up for stimulating the worker to increased production, the objective of maximum output has not been realized. There remains a large potential of production that is not being utilized because of the voluntary limitation or restriction of output by the workers. This voluntary limitation is being practiced on an enormous scale by factory and office workers at diverse occupational levels in practically every industry. Unions, as well, have established a frank policy of controlling output primarily to increase their power, to stretch out available work, to avoid reduction in piece rates, and to protect the worker from an undue expenditure of energy.[1] Workers have utilized this restrictive practice in an attempt to steady employment and postpone lay-offs, to stabilize their earnings, and, most important of all, to maintain the existing equilibrium of their groups. Restrictive practices are most apparent when management attempts to disrupt this group equilibrium with the result that there is an overall resistance to change. A more thorough analysis of the underlying principles of this resistance to change will give the reader a more concise explanation for the restrictive practices of workers.

Group Equilibrium.

Work situations are dynamic and ever-changing. Changes may occur in technical processes, in standards of efficiency, in job methods, and in the composition of a work group or the supervisory organization to which it reports.[2]

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[1]Morris S. Viteles, Industrial Psychology, p. 562.

[2]W. J. Dickson, An Approach to the Human Factor in Work Relations. Presented at Cornell University as the Fourth in a series of five Edward L. Bernay Lectures on "The New Industrial Relations, a Challenge to America" on March 4, 1948. Cornell University Press, 1948.

These changes are introduced by management, however, with scant regard for the social routines, sentiments, and relationships that are disturbed in the process. The groups thus become fearful of their own survival. When the existing equilibrium is disturbed, people attempt to restore it through resistance to the disturbing influence. This resistance may be expressed in many ways—through finding fault with the innovation, through lowering of efficiency, and through complaints and grievances.[3] In turn, there is a general lack of cooperation in the economic purposes of the organization. Many experiments and studies have been conducted in an attempt to uncover the explicit reasons for this resistance to change. The most recent of these experiments was one conducted by Coch and French at the Harwood Manufacturing Company in Marion, Virginia. Reference is made to this experiment because it best illustrates the many psychological and sociological factors that determine the behavior and attitudes characteristic of individuals exhibiting this resistance to change.

The Harwood Experiment.

This experiment was primarily concerned with the effect that transfer to a new job had on the employees.[4] Interviews with operators who had been transferred to a new job revealed a common pattern of feelings and attitudes which were distinctly different from those of successful non-transfers. In addition to resentment against the management for transferring them, the employees typically showed feelings of frustration, loss of hope of ever regaining their former level of production and status in the factory,

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[3] Ibid., p. 23.

[4] Lester Coch and John R. P. French, Jr., "Overcoming Resistance to Change," Human Relations, I (August, 1948), pp. 512-532.

feelings of failure, and a very low level of aspiration. In light of this, the following conclusions were reached:

1. There is a force acting on the operator in the direction of achieving a production level of 60 units per hour or more. It was assumed that the strength of this driving force (acting on an operator below standard) increased as he got nearer the goal—a typical goal gradient.

2. The strength of the restraining forces hindering higher production increases with increasing level of production. It was again assumed that the conflict of these two opposing forces—the driving force corresponding to the goal of reaching 60 and the restraining force of the difficulty of the job—produced frustration.

3. The strength of frustration is a function of the weaker of these two opposing forces, provided that the weaker force is stronger than a certain minimum necessary to produce frustration.

An analysis of the effect of such frustration in the factory showed that it resulted, among other things, in high turnover and absenteeism. The rate of turnover for successful operators with efficiency ratings above standard was much lower than for unsuccessful operators. Likewise, operators on the more difficult jobs quit more frequently than those on the easier jobs. An analysis of turnover revealed that among operators who had not been transferred recently the average turnover per month was about $4\frac{1}{2}$ per cent, while among recent transfers the monthly turnover was nearly 12 per cent. In considering turnover as a form of escape from the field, (region of negative valence), it is not enough to look only at the psychological present; one must also consider the psychological future. The employee's decision to quit the job is rarely made exclusively on the basis of a momentary frustration or an undesirable present situation, but usually when it is seen that the future is equally hopeless. If the individual's work can be fitted into his long-range goals (in the sense that there is hope for greater achievement in work), then a better adjustment is made by the worker. The financial and especially the social aspects of turnover have been previously shown to be of vital concern to management.

The experiment revealed that there are certain forces in production which act to maintain an equilibrium. These forces act in both a downward and upward direction. There are three main component forces influencing production in a downward direction: (1) the difficulty of the job; (2) a force corresponding to avoidance of strain; (3) a force corresponding to a group standard to restrict production to a given level. The resultant force upward in the direction of greater production is composed of three additional component forces: (1) the force corresponding to the goal of standard production; (2) a force corresponding to pressures induced by the management through supervision; (3) a force corresponding to a group standard of competition. The force corresponding to the goal of standard production is important for many reasons. For an operator producing below standard, this goal is attractive because it means success, high status in the eyes of his fellow employees, better pay and job security. The force corresponding to pressures induced by management is an attempt to induce a psychological force on another person and may either be accepted, rejected or neutrally received. The reception of this inducement by individuals depends to a great extent on the group solidarity. Often the motivational forces induced in the individual by a strong sub-group will be more powerful than those induced by management. For example, one worker was classified as a scapegoat because he exceeded the 50 units per hour of the group. The group exerted pressure on this worker with the result that he decreased his production toward the level of the group, and even went below it. This group was subsequently broken up and only the scapegoat remained. Four days after the group had been dissolved, this worker's production rose from 45 to 96 units. This effect of group solidarity and group pressures has other far-reaching influences.

Observations indicated that a strong psychological sub-group with

negative attitudes toward management displayed the strongest resistance to change. On the other hand, changed groups with high we-feeling and positive cooperative attitudes were the best relearners. Collections of individuals with little or no we-feeling displayed some resistance to change but not as strongly as the groups with the high we-feeling and negative attitudes toward management. This phenomenon of the relationship between we-feeling and resistance to change was so overt that for years the general policy of the management of the plant was never to change a group as a group but rather to scatter the individuals in different areas throughout the factory. This practice was in definite contradiction with the principles of sociometry previously outlined.

Acts of aggression were far more numerous among operators with high we-feeling than among operators with little we-feeling. Since both types of operators experienced the same frustration as individuals but reacted to it differently, it was assumed that the effect of the in-group feeling was to set up a restraining force against leaving the group and perhaps even to set up driving forces toward staying in the group. Under these circumstances, it would seem that there would be some alternative reaction to frustration other than escape from the field. This alternative is aggression. Strong we-feeling provides strength so that members dare to express aggression which would otherwise be suppressed.

This procedure has the effect for the members of setting up management as a hostile power field, and group standards to restrict production develop within the group in opposition to management. In this conflict between the power field of management and the power field of the group, the control group attempts to reduce the strength of the hostile power field relative to the strength of their own power field. This change is accomplished in

three ways: (1) the group increases its own power by developing a more cohesive and well-disciplined group; (2) they secure "allies" by getting the backing of the union in filing a formal grievance about the new piece rate; (3) they attack the hostile power field directly in the form of aggression against the supervisor, the time study engineer, and the higher management. Thus the aggression is derived not only from individual frustration but also from the conflict between two groups. Furthermore, the situation of group conflict both helps to define management as the frustrating agent and gives the members strength to express any aggressive impulse produced by frustration.

The importance of securing the backing of the union is best emphasized by a survey made by the Division of Labor Studies at the Yale Institute of Human Relations.[5] The general hypothesis drawn was that workers react favorably to union membership in proportion to the strength of their belief that this step will reduce their frustrations and anxieties and will further their opportunities relevant to the achievement of their standards of successful living. They react unfavorably in proportion to the strength of their belief that this step will increase their frustrations and anxieties and will reduce their opportunities relevant to the achievement of such standards. When a person cannot gain adequate recognition as an individual, he seeks it through joint action in a group with common interests. Workers are thus relying on unions in an attempt to escape their frustrations and a desire to achieve recognition. "The contribution of unionism at its best," writes Bakke, "is its provision of a pattern of life which offers chances of successful adjustment and goal realization, not for the few who get out of the working class but for the great majority who must stay there."[6] It provides them

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[5] E. W. Bakke, "Why Workers Join Unions" Personnel, XXII (July, 1945), pp. 37-46.

[6] Ibid., p. 46.

with a realistic medium through which their common interests may be expressed and their common need met. Management's attempt to frustrate the activities of these unions only makes them more militant. When unions don't have to struggle for recognition, they actually cooperate with management. Unreasonable people are usually frustrated people, and frustrating them further merely increases their destructive potentialities. Mangement's attempt to force the workers and unions into submission in the hope that they will eventually become resigned and give up is psychologically unsound and dangerous. If the trend toward greater reliance on unions continues, management's position will be in great jeopardy. The greatest shortcoming of management has been in its understanding of human needs, of the human engineering problems of the worker and the people who have to supervise that worker. By heeding the many psychological and sociological concepts, management will be able to greatly reduce the industrial frustrations of individuals, and will be able to provide the recognition that workers are longing for. Regardless of individual reasons for joining unions, management must accept the facts or be faced with future crippling strikes.

While the strike was originated in order that the workers might have a device to use against employers who chose to be stubborn, unfair, and unreasonable, it has become a much-abused practice. It has, in some instances, been used as a means of obtaining special advantages for a few workers at the expense of others in the distribution of reward for work; it has been used as a means of strengthening the political power of certain labor groups; it has been used as a means to create individual advantage for certain labor leaders; and it has been used to foster social revolution.[7] None of these

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[7]Glen U. Cleeton, Making Work Human, p. 236.

uses serves the purposes originally intended. It has been pointed out previously that a strike can no longer be considered a matter concerning only management and workers; it is a matter of public concern. The strike should be avoided by both management and labor, and unless it is, it will ultimately destroy the productive capacity of the nation.

Conclusion.

In conclusion then, it is possible for management to greatly modify or to remove completely group resistance to change. The important change is that management must give more concern to the social and psychological forces that so greatly influence the behavior and attitudes of individuals. This change can be accomplished by the use of group meetings in which management effectively communicates the need for change and stimulates group participation in planning the changes. For example, supposing a new machine were to be installed in a plant. At the group meeting, the machine would be described, the reasons for introducing it would be explained, and the group would then be asked to consider and discuss what are the likely disadvantages to the installation of this machine. Part of the function of a good group leader is to see to it that all of the facts are uncovered, that sufficient questions are asked—that the group has a chance to really see not just the immediate personal interest, but the broader social interest which that problem provides.[8] Unless you are able to obtain a willingness on the part of the group, you may be better off without introducing that new machine until you do get this willingness. Psychologists have proven that you can't change attitudes by providing facts to change them. However, if the individual shares in the discovery of the facts, he will change his attitudes. It is even better for a group to uncover these facts itself, possibly with some

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[8]Alfred J. Marrow, "Group Meetings Pay Off," Business Week, (May 20, 1950), p. 84.

guidance, since you are then getting the group to change its attitude rather than a single individual.

Experience has also indicated that counseling is often helpful to individuals who must make various adjustments to these changes. The initial emotional response to the change is lessened through expression of the individual's feelings. Also the new orientation required of the individual develops more rapidly so that the new equilibrium is achieved more quickly. This technique of counseling is a very helpful one to management. It not only assists the individuals to make adjustments to the various changes that are introduced, but also gives the individuals a chance to give vent to their feelings. A more thorough discussion of this technique in the following chapter will better illustrate these points.

CHAPTER XV

PERSONAL COUNSELING

Up to the 1920's little or no recognition was given by managements to employee counseling as a formal procedure. To be sure, it has been used, but in an undefined way. This is exemplified by the practice of one company as cited by Slocombe.[1] This company selected a worker from the bench, a highly intelligent, well-balanced, and shrewdly sympathetic individual. His job was to go around among 350 men and listen to their tales of pleasure and woe. He walked on to the floor of the shop, picked out a worker or one came up to him, and they went off to some other part of the shop where they could be by themselves and talk. This individual then reported to a company employee who had been sent to college to learn industrial psychology. Otherwise no reports of what the worker heard were made to the personnel or operating departments. This individual's sole job was to let workers talk to him.

Perhaps one of the earliest formalized employee counseling programs was one established by Henry Ford shortly after January, 1914.[2] This program was conceived by establishing an educational department, later named the department of sociology. This department advised workers on personnel 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. This plan did not work because employees felt it was paternalistic. They did not like being checked on during their leisure hours and being told "how to live." Present-day employee counseling programs have been improved over the authoritarian program established by Ford.

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[1]Charles S. Slocombe, "Workers as Individuals," Personnel Journal, XV (November, 1936), p. 168.

[2]Roger M. Bellows, Psychology of Personnel in Business and Industry, pp. 306-307.

Counseling Approaches.

It has been pointed out that the individual's situation is less stable than it once was, and as a consequence he is subject to a great many pressures, tensions, and conflicts which directly affect his mental outlook and his personal happiness. It has also been suggested that the individual needs to develop his adaptive capacities in order to adjust himself successfully to the complexities of his work and social environment. Counseling relates directly to these problems.[3] One of its greatest benefits has been previously mentioned; that of allowing the individual to give vent to his feelings, or more commonly expressed, "blowing his top." This procedure is accomplished without upsetting others or injuring an individual's relations with others. After expressing his feelings freely, the employee can often approach his problem in a more dispassionate way.

Another approach is to assist the individual in making the adjustments required of him in the manner most satisfactory to himself. In a given instance this may involve a modification in the employee's expectations or goals or a reorientation to the world about him. This is an internal or psychological process, and it is with this aspect of the problem that personnel counseling is concerned.

Difficulties also occur, however, in those instances where the individual's attitude is such that he in unable to accept criticism or judgments made by those in authority over him. In these instances his orientation toward the company is highly personalized and an adjustment can be brought

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[3] Based on the employee counseling program of the Western Electric Company as outlined by W. J. Dickson, An Approach to the Human Factor in Work Relations. Presented at Cornell University as the Fourth, in a series of five Edward L. Bernay Lectures on "The New Industrial Relations, a Challenge to America" on March 4, 1948. Cornell University Press, 1948.

about only through a modification of the point of view of the individual employee. Counseling contributes materially to this process of readjustment.

The Counselor and the Interview.

The counselor recognizes that each individual in his own thinking is separate and distinct from everyone else. He has his own aims and desires, his own likes and dislikes, his own values and standards, and his own ideas of self-importance. This is all a part of the individual's inner self and may be only partly revealed by him to others. The counselor recognizes that each individual responds to other people and events in terms of his own particular attitudes and sentiments. These are deeply imbedded in the personality, and they are difficult to recognize and even more difficult to change. Changes must be made willingly by the individual himself. Any attempt by another person to change them directly usually meets with resistance as was pointed out in the previous chapter.

It has been shown that the attitudes of the worker in part reflect the pressures which are affecting him as a person, and it has further been shown that attitudes are directly reflected in the efficiency of an organization. The value of counseling can also be stated in terms of this frame of reference. First, it will be seen that often the individual's demands on the work situation tend to be highly personalized. As these personalized demands become more objective through elaboration and critical examination, such as takes place in the interview, the pressure on the work situation is reduced and the demands are restated in such a form that more satisfactory action can be taken both from the viewpoint of the individual and the organization. Secondly, it has been pointed out that the worker is a member of a cooperative group and the efficiency of the organization depends upon this system of interpersonal relations. There is considerable evidence that the operation

of the counseling program contributes materially to the stability of these relationships. This comes about through relieving friction and modifying non-cooperative attitudes which, if uncorrected, necessarily decreased the efficiency of the group.

Although counseling is very beneficial to individuals under considerable emotional stress, it is not intended for them alone. Oftentimes people derive considerable benefit from talking over positive experiences such as promotions or engagements and generally thinking out loud about matters that are particularly important to them. Also, if the counselor were to center his attention on problem cases, others in the group might avoid him for fear of being labeled as a problem themselves. Those employees with difficulties might avoid him for the same reason.

Summary.

The author firmly believes that if companies would set up a personnel counseling program whereby the individual employees are given an opportunity to tell their troubles, and some attempt is made to clear up those situations which block back the legitimate ambitions and hopes of employees, much of the present antagonisms and frustrations would evaporate. Management and workers could then go forward on a basis of true employer-employee cooperation such as very few companies have yet been able to achieve. Socially we would then approach nearer to an ideal in which the worker enjoys working life and develops in it. The companies that have pioneered in this field of application have found their efforts well spent. An address by vice-president Robbins of General Foods to all General Food's people best illustrates the present-day recognition of the importance of counseling:

> We are more than just an aggregation of people thrown together. We're part of a team with common interests and goals. If you have any reason for unhappiness here, there are ways to make that unhappiness known. Talk it out with your supervisor. Your problem will be, it has to be worked out.[4]

There seems to be little doubt that the future will see a rapid development in the technique of personnel counseling. Both management and workers stand to profit by this technique.

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[4]W. M. Robbins. "What's Your Job Worth," General Foods News Letter, X (April, 1949), p.2.

CHAPTER XVI

THE CLINICAL APPROACH TO MANAGEMENT'S PROBLEMS

Recognition of the value of human personality has become a scientific principle, a key factor to be considered in the attainment of any objective. Management is slowly recognizing the subtle interplay of the many psychological and sociological factors and the importance of maintaining a proper balance among their physical, economic, and human resources. The greatest untapped natural resource available to mankind is the intelligence, the skill, the knowledge, and the interests of people.[1] However, it will remain hidden in the worker group for productive purposes so long as management resists making the change necessary in its own attitudes and neglects to operate within the framework of acknowledged scientific laws of human behavior. And who is it that has formulated these scientific laws of human behavior? The psychologists, of course.

That psychology has been partially accepted by management as a tool is confirmed by the fact that many companies employ psychologists on a full-time basis while others utilize their services on a consulting basis. Those employed on a full-time basis maintain a staff functional relationship similar to that of many engineers. They are investigators, analysts, umpires, and advisors, seldom tied to classified production or administrative positions.[2] Their field of general usefulness covers workers, work, and work efficiency throughout the organization. When called in as consultants, these

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[1]Evelyn Buckler, "A Dynamic Approach to Management," Advanced Management, XII (December, 1947), p. 169.

[2]B. H. Hopkins, "Timmie Versus Industrial Psychology," Chemical and Metallurgical Engineering, LIII (February, 1946), p. 148.

psychologists may become as fixed a corporate appendage as a law firm, charging about $100 a day for their services. They still are concerned with improvement and development of the previously discussed management techniques, but their approach to industrial problems has been modified in one significant manner. The present-day approach involves the psychological diagnosis of management itself. It is true that management men may not have needed an industrial psychologist to tell them that many of their business troubles stemmed directly from their own personalities, but by undertaking to expose themselves to psychological diagnosis, many are learning not only what their troubles are, but also how to make the most of their abilities. This approach is justified by the fact that management's philosophy starts with these men; a philosophy which ultimately determines the behavior and attitudes of the entire organization. The higher a man is in an organization, the more important he becomes to the psychologist. They realize that if the president of the company will undergo treatment, his subordinates will follow suit. Before considering this clinical approach, it would be advisable to examine some of the attitudes, philosophies, and characteristics of executives in an attempt to account for the behavior that makes psychological diagnosis necessary.

Executive Complexes.

It is not necessary to be a psychologist to know that what people do is conditioned by how they feel, their attitudes, interests, and abilities. What people do is in reality dependent on their general mental health. It was with this in mind that the president of a well-known company made the observation that the financial statement which he presents monthly to his board reflects the quality and quantity of the judgments of his employees, especially his key executives; it reflects the ability of his personnel to initiate action, and it reflects their skill in human relations. In reality

it reflects that state of their mental health.[3]

Analysis of executives reveals a wide range of attitudes, philosophies, and characteristics.[4] Many executives exhibit attitudes of suspicion and fear, have limited imagination or vision and, in general, completely disregard their social responsibilities. Others utilize their positions solely for the purpose of satisfying their desire for power. Still others may find compensation for their shortcomings and frustrations by being overly despotic in their treatment of subordinates. All of these attitudes, philosophies, and characteristics of executives only engender chaotic employee relations. The executive function is indeed a complex one and can only be endured by those possessing a commensurate ability.[5]

Frictions arise most frequently where authority and responsibility are either indefinite or misplaced.[6] In their work, psychologists have found few presidents who give themselves time enough for thinking, usually through failure to delegate responsibility. (Two or more phones and a communications set on the presidents's desk are a danger sign to a Rohrer psychologist.)[7] When those at the top of an organization refuse to both delegate and define job categories carefully, discontent, undercurrents of friction, and disloyalty cannot be avoided. Executives cannot do their best work nor feel free to offer needed criticism when they are concerned

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[3]J. Watson Wilson,"A Psychologist Looks at Management Problems," Iron Age, CLIX (April 17, 1947), p. 47.

[4]Morris S. Viteles, Industrial Psychology, p. 615.

[5]Chester I. Barnard, The Functions of the Executive, p. 276.

[6]Asa S. Knowles and Robert D. Thomson, Industrial Management, pp. 295-296.

[7]Wilson, op. cit., p. 107.

with their own status in relation to associates or even to job security. When one's authority is well defined and understood, there is usually little cause to exercise it. Both subordinates and associates know where they stand and act accordingly.

Gow cites the case of another type of executive of marked knowledge and ability who was never able to gain the loyalty or affection of his subordinates.[8] He was invariably unpopular with them, although other people usually liked him. His one big fault was the fact that no one could ever do anything just right for him. He did not impose unjust punishment on his subordinates but simply failed to appreciate effort on their part and give them encouragement. He ignored the merits of their work and emphasized every slightest oversight or omission. Such chronic caviling not only alienates friendship, and breaks down the loyalty of one's subordinates, but it makes people suspicious of their judgment and sense of proportion.

Only the president of a company can know the lonely load of full responsibility, and he must be able to live with it. The man next in line to the president cannot know this isolation, no matter how close to it he may seem to be. Another presidential burden is that having reached the top by beating out other executives, he has to unlearn these competitive habits and concentrate almost wholly on getting cooperation from others. "The most general strategic factor in human cooperation," writes Barnard, "is executive capacity."[9]

As the executive grows older, he faces other pitfalls: he may grow

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[8]Charles R. Gow, Elements of Human Engineering, pp. 49-50.

[9]Barnard, op. cit., p. 282.

bored and begin to needle his interest with unnecessary mergers, trade-association work or various "isms." Or he may get the patriarchal urge to build a corporate monument to himself.[10]

Most people have a natural urge to dominate, and because of this, admire the trait in others. Although people want to lead, they also like and want to be led if the leader has other qualities which command respect, admiration, and friendly regard. The executive who can transpose the need to dominate into a capacity for sympathetic and tactful leadership does much to make work human for those persons whose work activities he directs or supervises. This definitely implies a distinct executive responsibility; a responsibility which must be projected beyond the immediate self-centered desires of the executives. The needs, desires, hopes, and attitudes of those he directs must be given full consideration. Again referring to Barnard, we may sum this up as follows:

> Executive responsibility, then, is that capacity of leaders by which reflecting attitudes, ideals, hopes, derived largely from without themselves, they are compelled to bind the wills of men to the accomplishment of purposes beyond their immediate ends, beyond their times.[11]

The clinical approach is the technique used to diagnose and develop management to a better understanding of itself and those it must direct.

The Clinical Approach.

The clinical approach was almost unheard of ten years ago when the management engineering firm of Stevenson, Jordan, and Harrison, in "a hesitant and doubtful spirit," set up a psychological division.[12] By 1945 the

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[10]"The Tests of Management," Fortune, XLII (July, 1950), p. 107.

[11]Barnard, op. cit., p. 283.

[12]Fortune, op. cit., pp. 92-107.

man who had sold the firm the idea, a Chicago court psychologist, Perry L. Rohrer, headed up a staff of thirty colleagues, and was doing such a lucrative business that he resigned and with eighteen of his staff established the firm of Rohrer, Hibler, and Replogie. Today this firm has 175 clients to whom they feel close indeed. Their speciality is the diagnosis and development of management, from the president through the foremen.

The firm assigns a psychologist to each job, and he begins by taking a detailed personal history of each executive. Then he gives a few tests, (intelligence, problem-solving, and personality-inventory), and the behavior symptoms thus uncovered are probed, through personal interviews, until the causes are clear. Once the diagnosis is complete, the development, or therapy, beings. The man cannot be left unaided after he has bared his problems because such a condition would only invite frustration and confusion. Rohrer's men therefore spend hours getting their clients to confide their troubles, perhaps during a golf game or over a glass of beer. The aim is to help them gradually to see themselves as they are. In order to better illustrate this approach, it would be well to consider the cases of two individuals; one a supervisor at the foreman level, and the other a department head.

The Case of the Supervisor.

In a recent routine evaluation of a fiery-eyed, badly organized, highly emotional supervisor begged the psychologist to recommend his removal. Between tears and curses he admitted his incompetency to run a division of the company in which more than 1000 persons were employed. The day before, for example, he had been found by an associate in the empty cafeteria raving at an audience of tables and chairs about what he was going to do to those "so and sos" if they did not get a particular part fabricated. Two days before he had called all the members of one department together and showed them

signed dismissal slips they would receive if production was not up to standard in four hours. Because of neurotic actions such as this, four of his foremen and one general foreman had resigned in a period of two weeks. Yet he was an intelligent person with sixteen years of invaluable experience in the company.

Instead of recommending, as the man had requested, that he be removed, the psychologist recommended that he be given a two weeks vacation beginning that afternoon. Further he decided that this man was frustrated because of unsolved problems. Rather than get rid of the man, a much better plan seemed to be that of helping him to solve the problems.

When the man returned to work, therapy was begun. First, the problems were isolated, defined, and classified as to importance. This particular man did not miss a bet. We have already noted his work problems. In addition, he was wrestling with home problems, social problems, and health problems.

A predisposition to emotional instability underlaid his present difficulties. Home problems started this particular downward trend. It began with the usual housing problem. A miscarriage by his wife pyramided his anxiety and caused him to become physically, as well as emotionally, upset. This had an adverse effect on his work. He made a critical error in his planning. Its correction cost the company six months of time and thousands of dollars. It was this mistake, as yet unknown to anyone but himself, which precipitated the emotional outburst in the office of the psychologist.

Before he and the psychologist became acquainted, he had already cost the company thousands of dollars. Had his problem not been uncovered at that time, he would have cost the company additional thousands. What is more important, that man is now, six months later, one of the most able

supervisors in that plant. He is still working with the psychologist, but he has already proved the prediction that he could be rehabilitated.

Here was a man of superior intellectual ability. Despite this, his judgments were unsound and the action which he initiated contributed to the frustrations of his associates and his subordinates. His problem was one of focusing his ability in a way which would enable him to solve problems rather than to be frustrated by them. He was emotionally unstable. His skill in human relations was momentarily a minus quantity.

The Case of The Department Head.

An average department head, who was an unusually able man, lacked administrative ability and insight. Week after week he talked with the psychologist, but nothing seemed to happen. Finally, one of his subordinates sought out the psychologist with a problem which he stated in the form of a question. "Did you ever go day after day trying to stretch an hour's work into a whole day?"

The resolution of this subordinate's problem demanded that something be done about his boss. It demanded, for example, that the boss relinquish some of the detail that was bogging down the department. It demanded that he delegate responsibility and that he give his subordinates an opportunity to go ahead. It demanded that he pay more attention to people and less attention to things.

A few days later at a meeting of top executives, the conversation turned to ways and means of recruiting more personnel. This gave the psychologist an opportunity to question whether the company needed to hire more men or whether it needed to use its present manpower more effectively. Being careful to omit names and department affiliations, the psychologist told of the incident and questioned how general the situation might be. One

the basis of this incident, it was decided that each department head might well take stock.

The department head at whom the barb was directed saw himself for the first time. Accordingly, instead of hounding the personnel department for new men who would increase his budget nearly $100,000, he sought help from the psychologist in developing his ability to organize and direct the work of others for maximum effectiveness. Over a period of time, he became an administrator rather than a detailist; a supervisor rather than a worker who acted as a bottleneck for the whole department.

A modified form of this clinical approach is used by the Revlon Company. Martin Revson, sales vice-president of the company, feels that salesmen may not be as good as they appear to be outwardly.[13] He feels that when their sales are not good, they have to be analyzed, and until they are analyzed, they don't recognize what is wrong with them. Instead of firing men---men with brains and intelligence---the company has salvaged them merely by sitting a man down and reviewing with him all the things that are wrong with him even though the man may be in his 40's.

Once a year at their sales meetings, the salesmen are personally interviewed with the district supervisors. Action scenes and motion pictures of live actors, depicting the mental blocks that arise in a salesman's mind, are shown and an attempt made to remove those mental blocks. It is felt that if a man has the proper amount of intelligence and drive, and he wants to go out and work and does work, and if he is not a success, there must be mental blocks. In other words, he is not closing a sale, he is not imposing

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Martin Revson, "Smart Words, Quality, and Freud," Business Week, (August 12, 1950), pp. 70-76.

his will sufficiently upon the customer, and the interviewers probe into what the reasons are--whether he has trouble at home or whether he doesn't feel that he should be that strong--whether he feels that he may be hurting people by being that strong.

The Worried Worker.

Perhaps the greatest problem confronting both management and the psychologist is the case of the worried worker. This type of individual is characterized by the supervisor previously considered. Psychologists and psychiatrists have invaluably assisted management in recognizing the worried worker in industry. Following are some of the symptoms to watch for: sudden change of behavior; irritability; sudden sadness; preoccupation; too many mistakes; increased accidents; increased absenteeism; increased fatigue; excessive use of alcohol.[14] As management views those individuals, they are production problems, or chronic health problems, or attendance problems, or serious attitude problems, or marked disciplinary cases, and the like, and from management's viewpoint the company is better off without them.[15]

As the psychologist and psychiatrist see them, they all present distinguishing physical and mental characteristics that underlie and explain not only their job maladjustments, but faulty adjustive efforts and failures in other life situations. In studying the life histories of these individuals, and in analyzing their careers, there is one outstanding common factor presented in nearly all cases--a personality makeup that is either

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[14] "Helping the Worried Worker," Personnel, XXI (September, 1944), pp. 84-91.

[15] V. V. Anderson, "The Problem Employee--His Study and Treatment," Personnel Journal, VII (October, 1928), pp. 203-225.

unsuited to the job itself, or to the particular department, or to the standards of the organization, or to successful work achievement in general under almost any efficient business conditions.

Summary.

For psychological ailments such as those previously discussed, the skill of the clinician appears to be the only technique now available. But it will probably be a long time before enough industrial psychologists are available to treat all the executives and employees who may need it. The shortage of industrial psychologists can be attributed to the fact that most psychologists are highly trained specialists and are unfamiliar with industrial conditions which are matters of everyday experience to the industrialist.[16] The psychologist's time has been consumed principally by study of his chosen field, psychology, and by his high degree of specialization within his field. His lack of familiarity with industrial conditions must be remedied. This can be achieved through appropriate guidance and development within the firm and industry in which he serves. On the other hand, the need for treatment may decrease as the screening and training processes are further improved by these same psychologists.

The psychologist has a financial contribution to make any company. For example, a war plant organized in 1942 floundered until early 1943 when a new manager sought assistance of a psychologist in resolving the companies problems.[17] The work of the psychologist included evaluation, developmental work with top executives, plus work in recruiting, selecting, training, and placing factory help.

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[16]Louis L. McQuitty, "Psychologists in Industry," Personnel Journal, XXVI (November, 1947), p. 180.

[17]Wilson, op. cit., p. 49.

In a year, the year during which the psychologists did their most intensive work, manufacturing costs reduced 10%; non-manufacturing costs 33%; and sales costs 3%. Profits before taxes were increased 250%, even after voluntary cash refunds and price reductions of more than a third of a million were made. Labor turnover at all levels was reduced by two-thirds, and the overall efficiency of the plant increased from a bottom of 95% to a top of 175%.

The psychologists make their greatest contribution by aiding the executives to improve their effectiveness in many areas. They do this by helping them use their mental abilities more effectively, and by assisting them to achieve more adequate emotional stability and control. They do this by aiding them to develop their skill in dealing with others in face-to-face situations, and by helping them to refine their skill in organizing and directing the activities of others. And, they do this by helping them to maintain their new effectiveness through the development of insight into their own behavior and that of others.

The significance of this clinical approach is tremendous, and management cannot afford to overlook this psychological contribution.

CHAPTER XVII

SUMMARY AND CONCLUSIONS

Perhaps the most striking psychological problem of all arises from the fact that magnificient industrial and technical development has not resulted in equally magnificient emotional satisfactions for many citizens. Engineers, scientists, and inventors have produced a technological age which is truly marvelous, but which has not always satisfied the hearts and minds of the men who operate its machines, or of the customers who benefit from its products.

There seems to be no doubt that selfish interests first led management to focus attention on the human element in industry. It is also probably true "that employers who start to care for the health or wellbeing of their employees, because it pays to do so become as much interested in this new enterprise that they eventually do it because they like to do it."[1] This solicitude for the individual worker, however, has been unquestionably furthered by the changing social philosophy--by the growing insistence that individual welfare be made the central objective of social activities, whether they be industrial, political, or educational in character.[2] This social philosophy was stated as early as 1913 when Munsterberg first outlined his psychological program.

> We must not forget that the increase of industrial efficiency by future psychological adaptation and by improvement of the psycho-physical conditions is not only in the interest of the employers,

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[1] H. A. Overstreet, "The Philisophic Foundations: Is a New Business Philosophy Forming?" As quoted in H. C. Metcalf, "Scientific Foundations of Business Administration," Human Relations, Series IV (1926), p. 316.

[2] Morris S. Viteles, Industrial Psychology, p. 23.

> but still more of the employees; their working time can be reduced, their wages increased, their level of life raised. And above all, still more important than the naked commercial profit on both sides, is the cultural gain which will come to the total economic life of the nation, as sson as every one can be brought to the place where his best energies may be unfolded and his greatest personal satisfaction secured. The economic experimental psychology offers no more inspiring idea than this adjustment of work and psyche by which mental dissatisfaction in the work, mental depression and discouragement, may be replaced in our social community by overflowing job and perfect inner harmony.[3]

Although this philosophy has been stated and recognized, few managements have synthesized their many techniques and procedures to create an environment within which the workers and the managers can achieve a mutual and dynamic equilibrium with its by-products of mental and emotional health—an environment in which the natural forces, the energies and the interest of the workers, are released to supplement and enhance the mechanical forces of production. The organization of industry by specialists, which reduces each job to a few simple skills, provides a continuous flow of materials, and introduces assembly line procedures, is excellent from the standpoint of fabrication of materials. In that respect, nothing better appears to be in prospect, yet those procedures, unrelieved by some means of bringing personalized satisfaction in work to the worker, tend to produce fatigue, occasionally give rise to nervous disorders, and generally build up a background of destructive emotional repressions. There is definitely a need for more careful study of the human element in establishing production procedures. Failure of management to recognize the human element has been the primary source of dissatisfaction in work.

With a few exceptions, most of the early scientific managers and the majority of the present-day managers have completely neglected the human

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[3]Hugo Munsterbertg, Psychology and Industrial Efficiency, p. 320.

being in their studies. True, the physical, motor activities of workers have been studied and restudied. The motions of their hands, arms, and bodies have been observed with stop watches and micro-motion films. Their desire to excel and their energy have been crudely stimulated through incentive systems (primarily financial), and their great reservoir of inspiration, ideas, and interest has been tapped by means of suggestion systems. The real person that the worker is—the human being—has, on the whole, been completely neglected.[4]

The impression grows that neither management nor unions are facing the facts. They seem to be trying to cure the patient by dosing him with outmoded specifics of cafeterias, washrooms, and recreational activities on one side; seniority, shorter hours, better working conditions, and higher pay on the other. The simple fact is that the worker wants to be treated like a human being. He wants to be able to hope for advancement, to have honest effort recognized, to have an outlet for personal initiative, to have his many needs and desires satisfied, and to experience emotional security and happiness.

Management has certain social responsibilities which it must meet if the system of private enterprise is to operate unhampered by governmental restrictions, or even to survive at all. Management must, therefore, understand these responsibilities and take a long-range point of view. It must recognize the fact that unintelligent exploitation of the worker defeats its own purposes. It defeats purposes by failing to take into account the fact that, in human relations, management is dealing with a total personality,

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[4]Evelyn Buckley, "A Dynamic Approach to Management," Advanced Management, XII (December, 1947), p. 166.

not just that part of the worker management wishes to direct, control, or utilize. Human activity always involves a constellation of capacities. Man responds as a total personality to persons and things about him; he responds neither as a mechanical robot nor as a loosely associated set of capacities. Since he does not respond as a mechanical robot, he can not be treated as such. As Immanuel Kant writes: "Persons are not purely subjective ends, whose existence has a value for us as the effect of our actions, but they are objective ends, or beings whose existence is an end in itself, for which no other end can be substituted."[5] Individuals respond as a total personality because they are continually striving for and seeking the indispensable condition of self-realization. The achievement of this goal is best expressed by Cleeton:

> The ultimate goal of self-realization is unity and balance of personality. The capacity for unification makes possible the development of the individual into an integrated, well-organized personality. Such a person is stable and capable of self-direction and self-control in the never-ending search for ways and means of expressing inherent capacities for movement, assimilation, adaptation, coordination, analysis, synthesis, and social responsiveness and in the satisfaction of the basic desires. Work should contribute to personal unification rather than disunity.[6]

Many managers and executives assume that too much interest in the employee's welfare will ultimately lead to unreasonable demands on his part, and that soon the employer will have no rights at all. This fear is unfounded and has no support from psychology or sociology. This argument is likely to be put forth by those individuals who believe that "sparing the rod spoils the child." No child has ever been helped by the rod; moreover, modern educational methods achieve far more by positive motivation. It is

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[5]Immanuel Kant, "Fundamental Principles of the Metaphysics of Morality," Readings in Ethics ed. by Gordon H. Clark and T.V. Smith, (New York, 1935), p. 275.

[6]Glen U. Cleeton, Making Work Human, p. 74.

likewise true that a child is not spoiled by the fact that his parents are interested in his welfare. Rather, the problem child is created in the home which fails to show a vital interest in his well-being. The secure and happy child wishes to cooperate with his parents and to please them. He acquires their social attitude and grows with the trust and responsibility that his parents place in him. With the proper kind of consideration, he does not demand that which his parents cannot give him. This trend in the development of social values is characteristic of human nature; and workers, like the child and the employer, are human beings.

The Maladjusted Worker.

Throughout this thesis, the emotional and mental health of the employee has been continually emphasized. This is perhaps the greatest social responsibility of management, and its significance cannot be over-emphasized. The tendency has been for management to neglect this social responsibility feeling that: "We are not running a charitable institution. Why should we feel any responsibility in this matter?"[7] The point is that management can no longer afford to neglect this social responsibility if industry is to survive at all. As Anderson has stated:

> And then who will say, after all, that business and industry are going to escape the definite social obligations involved in their increasing contribution to that large army of misfits who are bandied about the community from one store to another, or from one industry to another; out of work a large proportion of the time; partly supported by family, or friends, or churches, or social agencies, or institutions, (and furnishing the richest possible soil for the development and growth of delinquency, dependency and mental disease), conditions that become the joint burden and responsibility of the community as a whole; conditions often traceable to factors that on the job render the individual an unsatisfactory employee and lead to resignations and lay-off?[8]

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[7] V.V. Anderson, "The Problem Employee--His Study and Treatment," Personnel Journal, VII (October, 1928), p. 204.

[8] Ibid., p. 204.

When considering the emotional and mental health of employees, attention must be given to the effect that these factors have on the physical health of individuals as well. The occurrence of emotions, even in the milder forms, is a severe drain on the energy reserves of the organism. This is true because there is a direct tie-up between emotional arousal and that part of the nervous system which lies outside the great central system and controls the internal organs of digestion, the heart, the circulation, breathing, sweating, and the endocrine glands. This system, known as the autonomic because under ordinary conditions it operates with relative freedom from the central system, is not under voluntary control to any extent; it carries on the vital functions automatically. But when one is emotionally aroused, it receives exciting impulses which cause a violent change in the actions of all the vital organs. The heart beats faster, the breathing changes, digestion is interfered with, increased sweating occurs, and the glands become active, particularly the adrenals, which inject chemical substances into the blood stream capable of causing the pancreas to give up its stored sugar, and other metabolic changes to occur. The presence of excessive sugar points to overactive adrenals and to a drain on the reserves of stored energy. The belief is growing among medical men that anxiety can itself cause diabetes in the absence of a defect in the insulin-secreting gland or some related endocrine organ.[9] Functional heart ailments are also believed to be attributable to long continued anxiety. Peptic ulcers, which defy other methods of treatment, sometimes benefit by removal of emotional strain. It is suspected that, if the emotional conflict perpetuates them,

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[9]Arthur G. Bills, The Psychology of Efficiency, pp. 187-189.

it may have caused them in the first place.

Since the changes which have been described as taking place in the vital processes during worry and anxiety and anger are almost entirely outside of voluntary control, there is no way to avert them except to prevent the emotions from occurring. Mere voluntary suppression of the outward expression of emotion is ill-advised because more cases of chronic disturbance occur among those who suppress their emotions than among persons who allow them free rein. The obvious answer to the problem is to uncover the factors in the industrial environment which are irritating, and either remove them or, if possible, attempt to readjust individual attitudes toward them so that they call out agreeable rather than disagreeable reactions. It is not the author's contention that all of the irritating factors can be removed, but it is possible for management to greatly reduce the number of these factors so that their influence on the emotional and physical health of the employee is negligible.

What is Mental Health?

A distinguished psychiatrist, in attempting to define mental health, took occasion to state that this was a relative term and difficult to define.[10] Mental health, broadly considered, and like physical health, consists in a certain harmonious and efficient organization of the total personality. This is necessary so that there may be an adjustment to environment and a maintenance of a suitable emotional balance in situations that may arise. Mental health, therefore, is concerned with the internal organization of the personality and its adjustment to relative environmental factors.

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[10] "What is Mental Health," Safety Engineering, IXC (April, 1946), pp. 79-80.

In the ideal state of mental health the personality is well integrated; there is little disharmony; energy is not spent in fighting against itself; and the individual maintains a stable equilibrium. In his adjustment to his environment, the mentally healthy individual is able to bring his intelligence to bear, to exercise some control over his emotions, and to govern his behavior in a satisfactory manner. However, since there are various cultural standards of proper and improper behavior, it is not always easy to decide whether reactions of some persons are normal or abnormal. With the end of World War II and a growing realization and understanding of the part that the human mind plays in all conduct patterns, it is necessary for all who deal with workers to have a clear point of view on these matters. Many men were rejected by Selective Service Boards, by Army and Navy physicians because of their abnormal mental reactions. They are in our communities, in our homes, workshops, factories, offices, and education institutions. They must be understood by those in industry who have some responsibility toward them.

The biggest restraining factor is that the maladjusted workers in industry have not been sufficiently identified to make clear descriptions possible. Since maladjusted persons do not fall into a specific type classification, it would require an extensive array of descriptions to identify them. They are most commonly recognized as those workers who are called "problem cases" or "troublemakers" by employers. The number of those workers in industry is a matter of guess, but reasonable estimates place the figure at approximately 20 per cent of the employed group.[11] Roughly, then, it may be said that one out of every five employees needs personal

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[11]Cleeton, op. cit., p. 125.

help beyond that given others in making a satisfactory work adjustment.

As has been pointed out, the tendency on the part of most managers is to believe that providing special aid for maladjusted workers is not their responsibility and that discharge is the only resort. This viewpoint, in addition to being socially unsound, is shortsighted because it usually costs as much or more to train a replacement as it does to salvage a so-called problem case. The significance of the financial and non-financial costs of labor turnover have been previously illustrated in the chapter on "Labor Turnover and Unemployment." Companies which have used a plan for helping unadjusted workers to make a better adjustment have found that 70 to 80 per cent of such persons can be redirected to become satisfactory employees.[12] When rehabilitated, such workers usually become extremely loyal in their support of company policies and practices.

For the non-adjustive employees, clinical psychological aid has proved very helpful. Such aid involves careful analysis of outside social forces to which the individual is subjected and therapy counseling with reference to personality coordinations. Some companies have made staff provisions for such clinical assistance while others utilize the services of outside consultants. Regardless of the provision made for handling problem cases, the important point is that of recognizing that certain employees require special assistance in making adjustment. If assistance is not provided, such employees will do damage to the whole work situation and prove detrimental to themselves, their employers, and fellow workers—not to mention the community and the nation itself.

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[12] Ibid., pp. 125-126.

Summary.

As Bellows has stated: "The goal of management is the maximum use of personnel accompanied by maximum worker satisfaction."[13] However, there are no fixed and final solutions to human relations problems, nor are such solutions likely to be inclusively or exclusively definite. This is true because the worker performs his duties in a highly complex situation in which he is stimulated by a wide variety of environmental factors of a physical nature, and more subtle environmental factors of a social nature. These situations differ from one place of work to another, and from time to time in the same work environment. A solution which would function satisfactorily in one place or at a given time might function with less effectiveness in relation to another time or place. Furthermore, since individuals differ, solutions which would be appropriate for the majority of individuals concerned often do not serve for certain persons in the group. As Cleeton has stated:

> Achieving solutions to human relations problems which are satisfactory in 70% to 85% of instances is cause for gratification. However, it is not justification for complacency. Rather, our current inability to reach satisfactory solutions in a higher proportion of instances demonstrates the need for continuing effort through the application of research and the use of sound judgment to reach solutions which will make work more human.[14]

It is the author's contention that more efficient utilization of human efforts and greater satisfaction will accrue through the application of principles of psychology and sociology in work situations. The theories and principles of psychology and sociology have not, however, reached the advanced stage of acceptance as is true of our physical sciences. Many of

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[13]Roger M. Bellows, Psychology of Personnel in Business and Industry, p.3.

[14]Cleeton, op. cit., p. 280.

the potential applications of these social sciences remain to be made. It is found therefore, that common sense is still a frequent substitute for scientific psychology and sociology in dealing with the problems having to do with people. There is evidence, however, of a growing interest among management people in the subject matter of psychology and sociology because management is realizing that "the scientific method or the use of social science or psychology begins where common sense methods end or fail."[15] This growing interest in the subject matter of psychology and sociology is substantiated by a recent survey conducted by the author.

This survey covered fifty companies[16] employing a total of approximately 2½ million people. The survey was conducted through the medium of correspondence, and although some of the replies may not indicate the full extent of psychological and sociological applications, the replies are indicative of the growing interest in the subject matter of psychology and sociology. Only five of the fifty companies definitely asserted that they had made no application of psychology or sociology in their organization. These five companies represent about 7% of the total number of employees involved in this survey. That 90% of the companies surveyed are utilizing the principles and concepts of psychology and sociology is indeed an encouraging sign.

The application of these sciences to the techniques of management has received its greatest impetus in the past few years. In fact, 20% of the companies interviewed have just recently begun extensive research in these fields. The general opinion is that the psychological and sociological

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[15]Alfred J. Marrow, "Group Meetings Pay Off," Business Week, (May 20, 1950), p. 84.

[16]For the list of companies, see Appendix I, pp. 148-149.

aspects of management procedures and controls of all kinds will receive increasing emphasis in the future. At present, only seven of the companies employ a psychologist on a full-time basis, while five of the companies stated that they utilized the services of a psychologist on a consultant or part-time basis. The majority of the companies have interested themselves in psychology and sociology as a result of the many experiments and research work conducted in various industrial organizations. Here lies the key to the acceptance of psychology and sociology by management. This acceptance will be increased only when research is carried on in the industrial setting and not through a purely academic approach. That the subject matter of psychology and sociology is being transferred to the industrial setting is attested to by the following list of factors presently being experimented with by psychologists, sociologists, and management in those companies interviewed:

1. The importance of morale and attitudes.
2. Matching ability to jobs.
3. Training to improve skill.
4. Employee rating systems.
5. Color application.
6. Psychological testing.
7. Preparation of materials for giving information to employees about the company.
8. Preparation of materials for and evaluation of supervisory training programs.
9. Consultation on problems involving the reaction of workers to various proposed changes.
10. Study of absenteeism and its causes.
11. Visual problems.
12. Accidents and accident prevention.

13. Employee counseling.

14. How family status affects vocational adjustment.

15. The problem drinker in industry.

The psychological and sociological principles and concepts involved in the majority of these factors has been previously discussed. The last factor on this list is most significant in that it represents the increasing tendency on the part of management to recognize its social responsibilities, not only to the employee, but the community as well. One company has established an elaborate alcoholic program for the treatment of the problem drinker and the results of this program have been very gratifying.[17] This company realizes that quite often the problem drinker has many personal problems and that these personal problems affect his work. These personal problems include broken homes, loss of jobs, debts, sickness, housing, and loss of self-respect. As these problems become greater in the mind of the chronic drinker, the amount of work he produces will suffer. There are also the problems centering in supervision, discipline, and the safety of fellow workers that must be considered. Many of these alcoholics have been with this company a good many years. Various studies have shown that the effects of heavy and continually heavier drinking do not begin to show seriously for as many as 10 years. By this time the employee may have developed highly specialized skills. To lose such a worker is a definite loss to any company, and this company prefers to rehabilitate the man with an alcoholic problem, rather than to fire him and hire a new untrained man who may unknowningly be a potential alcoholic.

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[17] The Problem Drinker in Industry, Allis-Chalmers Manufacturing Company, (March 15, 1950), pp. 3-18.

The social importance of this problem is the fact that these people touch all lives and affect industry. The economic loss because of problem drinking also touches everyone. Much of the cost has to be absorbed by the taxpayer through increased taxes. He also pays increased prices for the things he buys because that is the only place industry can absorb the economic loss caused by the problem drinker. The cost, however, cannot be measured in dollars and cents. The greatest costs are in the human intangibles—the things that cannot be measured. When one looks at the over-all cost, both in money and human values, he can see why there has been a scientific research approach to the problem in recent years.

When the various frustrations and worries can be directly attributable to existing conditions in an industrial environment, then management can no longer neglect or shun this social responsibility. Experimental studies in psychology and sociology have demonstrated the existence of certain basic principles of human nature. If these principles are recognized and applied in establishing better over-all conditions of work, the individual can make a better adjustment. What management needs is not a more thorough indoctrination in the harsh principles of the commodity theory of labor, but greater understanding of the motives, interests, needs, capacities, and the personal problems of workers as individuals. They need to know that the worker is striving to carve out a place for himself in a chaotic and confused world; that he is searching for a way to plan a future for himself and his family. He is faced with the reality of having to spend much of his life working at his present job or a similar one, and he is unable to make any show of strength as an individual unless he joins forces with his fellow workers and seeks his own leaders. He is desperately hungry for human understanding and will respond to any relationship which brings to him the warmth of feeling

accruing from recognition of individual importance and dignity. This greater understanding of the worker as an individual will only come about by recognition and utilization of the many concepts and principles of psychology and sociology—concepts and principles that have made tremendous contributions in the solution of management's and industry's problems.

Recently, Dr. Marrow summed up the relationship of psychology and industry as:

> Since the subject matter of psychology is behavior, it is inseparably a part of all areas which involve man's working with man. But this is also the domain of the foreman, the engineer, and the executive who are seeking to influence behavior.
>
> In advertising, selling, management, engineering, there are psychological problems which occur constantly and which are being handled by people with no psychological experience. Industry wants help from psychology. Psychologists will be more effective in meeting this challenge and opportunity if they are as well trained both in industrial fundamental and psychology.[18]

There are now hundreds of firms, many universities, and countless individuals making psychology available to industry, and most of them offer a wide variety of wares. The Psychological Corporation, for example, which last year sold more than $600,000 worth of psychological services to industry, advises management on all manner of personnel problems—attitude and morale surveys, development and training programs, appraisal of executives, supervisors, and salesmen, and hiring and upgrading procedures.[19] This growing acceptance of psychology is further evidenced by a survey recently conducted by Business Week.[20] This survey included a group of 38

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[18]"Industrial Psychology Pays in This Plant," Modern Industry, XVI (July 15, 1948), pp. 67-78.

[19]Twenty-Eighth Annual Report of The Psychological Corporation for 1949, The Psychological Corporation, (1949), pp. 3-24.

[20]"Who's a Labor Relations Man?", Business Week, (August 12, 1950), pp. 94-95.

business executives whose primary responsibility is labor relations and who rate among the top men in their field. On fields in which these men read, the subject in which interest appeared to be most wide-spread was psychology. Their interest in psychology was further reflected in a demand that their potential successor have some academic training in this field.

Although there is no published material available regarding the acceptance of sociology in industry, the majority of those companies interviewed by the author have expressed a growing interest in this subject. The science of sociometry, however, is still in its infancy, and the majority of companies interviewed had never even heard of this science. All indications are that this science, like psychology, will experience a more rapid acceptance in industry only when more research is carried on in the industrial setting.

This growing trend toward a scientific study of labor-management problems makes necessary a thorough knowledge of the psychological and sociological aspects of human behavior in industry on the part of those charged with the responsibility of administering personnel. These sciences bring to industry great resources in scientific methodology and the ability to investigate competently many of the practical situations from which personnel problems emerge. From such investigations solutions will be forthcoming that will benefit both management and the workers. The application of these sciences may be expected to prove advantageous by reducing industrial strife and unrest. In the long run, more efficient production will result; a healthier mental state of the employee group will be achieved; and the work of management will become more satisfying to those who are managers.

It is apparent then, since we have been considering the industrial

engineer primarily in the role of management, that the industrial engineer must never lose sight of the fact that the most important element in business and industry is people. Whatever psychology and sociology an industrial engineer can absorb that will aid him in steadfastly maintaining this concept will be most worthwhile for his own progress and value.

APPENDIX I

COMPANY	LOCATION
Air Reduction Company, Inc.	New York, New York
Allis-Chalmers Manufacturing Company	Milwaukee, Wisconsin
Aluminum Company of America	Pittsburg, Pennsylvania
American Optical Company	Southbridge, Massachusetts
Americal Psychological Association	Washington, D.C.
Beech-Nut Packing Company	Canojoharie, New York
B. F. Goodrich Company	Akron, Ohio
Caterpillar Tractor Company	Peoria, Illinois
Chrysler Corporation	Detroit, Michigan
Coca-Cola Company	New York, New York
Colgate-Palmolive-Peet Company	Jersey City, New Jersey
Crane Company	Chicago, Illinois
Eastman Kodak Company	Rochester, New York
E.I. duPont de Nemours & Company	Wilmington, Delaware
Ford Motor Company	Dearborn, Michigan
General Electric Company	Schenectady, New York
General Foods Corporation	New York, New York
General Mills, Inc.	South Minneapolis, Minnesota
General Motors Corporation	Detroit, Michigan
Gillette Safety Razor Company	Boston, Massachusetts
Harwood Manufacturing Corporation	Marion, Virginia
International Business Machines Corporation	New York, New York
International Harvester Company	Chicago, Illinois
International Nickel Company, Inc.	New York, New York

COMPANY	LOCATION
Jack & Heiztz Precision Industries, Inc.	Cleveland, Ohio
J.D. Woods & Gordon Limited	Toronto, Canada
John A. Roebling's Sons Company	Trenton, New Jersey
Johns-Manville Corporation	New York, New York
Johnson & Johnson	New Brunswick, New Jersey
Libbey-Owens-Ford Glass Company	Toledo, Ohio
Lockheed Aircraft Corporation	Burbank, California
National Cash Register Company	Dayton, Ohio
Owens-Illinois Glass Company	Toledo, Ohio
Pennsylvania Company	Philadephia, Pennsylvania
Psychological Corporation	New York, New York
Radio Corporation of America	Camden, New Jersey
Riegel Textile Corporation	New York, New York,
Sears, Roebuck & Company	Chicago, Illinois
Shell Oil Company	New York, New York
Standard Oil of California	San Francisco, California
Standard Oil of New Jersey	New York, New York
Studebaker Corporation	South Bend, Indiana
Swift and Company	Chicago, Illinois
Thompson Products, Inc.	Cleveland, Ohio
Union Carbide & Carbon Corporation	New York, New York
United States Steel Corporation	New York, New York
U.S. Rubber Company	New York, New York
Western Electric Company, Inc.	New York, New York
Westinghouse Electric Company	Pittsburg, Pennsylvania
Wilson & Company	Chicago, Illinois

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