

The Basis of Industrial Psychology¹

The Psychology of the Total Situation Is Basic to a Psychology of Management

By ELTON MAYO

Research Associate, Wharton School, University of Pennsylvania²

I. Methods of Psychological Inquiry

IN AN address delivered before this Society in April,³ Dr. H. S. Person examined the existing relationship of psychology and industry. He pointed to the need of a closer relation between the two. He showed not only that industry stands in need of expert psychological investigation but also that the present defects of psychology are largely traceable to the absence of facilities for investigation of the adult mind as it manifests itself in its daily activities. Dr. Person listed four types of psychological methods and their attendant theories. He pointed out the ways in which these approaches had aided or might aid industry. But he also evidently felt that they individually and collectively left something to be desired, for he concluded, "If life be an integral whole, if the behavior of men in industrial relations be in any considerable degree the result of stimuli received elsewhere than in office and factory, then industrial psychology must have for us a new and larger meaning."

It is the purpose of the present paper to show that Dr. Person's criticism is fundamental not only for industrial psychology but for general psychology as well. It is true that life is an integral whole, and that the worker in the plant and the citizen in the home are essentially the same individual. The actions of any such individual in

plant or home cannot be understood as things in themselves; they are incidents to be studied and interpreted as parts of an individuality that is the subject of a continually developing awareness of surrounding. The only adequate basis for psychology, either in industry or elsewhere, is one that will admit this as its essential fact and will work out the implications of this admission in all fields. Such a study we may refer to as a *psychology of total situation*.

Let me explain what this means more concretely by reference to a single simple instance. A worker was sent to us for observation and inquiry because he was suffering disabilities with respect to his work that he was unable to explain. He was highly regarded by the management, his domestic situation was satisfactory, and the conditions of his work had recently been bettered. We found that for four years it had been his habit, as he worked, to reflect upon his more unpleasant experiences when in the fighting line in France. Being a person of average normality, he was able to give up this type of thinking when its dangerous consequences were indicated. And his capacity for happiness and work showed an immediate and remarkable improvement. Now my point is that no investigation of his concentrated thinking would have revealed the situation. He did not concentrate upon these topics at any time; he rather avoided doing so. Nor would any investigation of his adaptation to his job or of his general intelligence have given the correct clue. A psychiatric clinic would probably have discovered what was wrong, but he was not likely ever to have become sufficiently emotional to have been sent to a psychiatrist. This sort of situation is constantly arising in every department of human relations and is not effectively dealt with because there is at present no psychological technique which takes account of the individual's total atti-

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²Formerly Professor of Psychology in the University of Queensland. Spent a number of years as lecturer and research scholar, Universities of Adelaide and Queensland. From 1916-23 did research work in psychopathology, civilian and military, which resulted in the founding in the University of Queensland of a special research chair in Medical Psychology. Had leading part in establishing psychopathological research in Australia. Author, "Democracy and Freedom"; "Australia—Social and Political Essays"; "Psychology and Religion."

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tude to life and work. Various methods take account of various aspects of the individual's mentality as if they were things in themselves, and the result is that there is no psychological criterion by which the respective importance of various facts revealed can be adequately assessed. In the case specified above, the worker concerned was adjudged normal by factory and dispensary alike.

Of the various methods at present employed, one may specify three in order to show that they are unsatisfactory in the last resort. One psychology examines the inner articulation of concentrated thinking and makes small effort to discover why an individual should concentrate in this or that direction, or how it is he achieves the mental tension necessary. Another psychology examines the inner articulation of obsessions in a somewhat similar manner. The third type concerns itself with industrial production and limits its inquiry to those aspects of productive activity it considers to be relevant to its problem. All three fail because they have no investigation of total situation to assess and direct their inquiries. They cannot even correlate the different methods they employ.

Directly one takes account of the individual's total situation, a very different result follows. One finds that lesser differences of method are superseded—the one technique is capable of an infinite diversity of applications in factory, school and clinic. In a large factory in the Middle West my attention was recently called to certain interesting illustrations of this fact. Three women worked side by side at a bench; the productive capacity of two suddenly diminished remarkably, the capacity of the third improved. Inquiry showed that the third had recently been very happily married. Of the two whose efficiency diminished, one had had her son arrested by the police for failing to support his family, the other was in process of divorcing her husband. Productive efficiency, like capacity for concentration, is a product or expression of a total mental situation. No mere investigation of productive method or intelligence is enough. In the same factory many other illustrations offered. One girl was in the habit of lying down during the rest periods; her efficiency was much above the average. Certain girl workers were under weight and were put upon a regime which included a fifteen minute period of

rest upon a couch in the morning and afternoon. Their productive capacity was greatly increased. Generally it may be said that no psychological method which fails to take account of total situation can hope to be satisfactory either to industry or to psychology itself. What is wanted is a co-ordinated study of human nature and human behavior capable of being applied in any field.

The question as to what this technique or method should be presents, on the first glance, considerable difficulties. Dr. Person, like the late Dr. Stanley Hall in his last published book, is forced to face the fact that we apparently have not one psychology but many psychologies, not one technique but a diversity of techniques with no obvious common basis. At the very outset of the inquiry, one is compelled to ask the status of these various investigations and especially to ask the nature of the human facts at which each investigation is pointed. Discovery of the relation between the various areas of fact investigated is the only means of discovering the relation between the various methods of inquiry.

There are at present two general forms of psychology in the field—the academic and the medical. I do not propose in this paper to give any special attention to behaviorism in the strict sense, first, because it is an outgrowth of the academic psychology and, second, because it still bears the marks of its physiological origin. In thus discarding it as irrelevant to my present purpose, I must not be supposed to be hostile to or doubtful of the value of physiological investigation. Physiology is at least as important as psychology in the understanding of man; but behaviorism is as yet a physiological rather than a psychological development. At any rate, insofar as behaviorism is psychological, the general outline of my discussion will apply.

II. The Academic Psychology

The academic psychology has been developed mainly in universities, the medical mainly in psychopathological clinics and hospitals. In respect of logic and scientific method, the advantage rests with the academic; in respect of the area of fact surveyed, the advantage rests with the medical. There has been a certain carelessness in the use of words in the clinic; phrases have been admitted to common use which may have a definite reference in case work, but possess no precise logical

meaning. On the other hand, the need of dealing with individual situations has forced the clinic to take account of factors which the laboratory can discard. The hope of an adequate psychology must be conceived as dependent on the extension of logical method to cover the whole area of relevant human fact.

The undue restriction of the academic investigation is consequent upon, first, the so-called sensationist tradition in psychology and, second, that limitation of opportunity so well described by Dr. Person. The former of these I cannot do more than mention in this place. The latter is a fact that is becoming increasingly evident and calls for alteration. At no time have clinics and factories been freely open to psychological observation and research. To this alone is due the fact that the demand of the present for expert assistance remains unsatisfied. It is not possible to reproduce in the laboratory normal conditions of human life and work. This the English investigators of industrial "fatigue" have discovered.⁴ It was possible to reproduce in a darkened laboratory room the physical surroundings of the coal miner, but it was not possible to reproduce under such artificially contrived conditions an identical mental attitude. By reason of his tradition and his limited opportunity, the laboratory psychologist has tended to take account only of what we may describe as concentrated thinking; his theory implies that concentration is the only form of mental process in which psychology is officially interested. Laboratory experiments have usually demanded not merely concentration but special efforts of concentration; this applies equally to psychological tests and to inquiries such as that of Kraepelin into the nature of mental fatigue. I must not be supposed to deny the high value which such researches undoubtedly possess; my claim is rather that this alone is not enough. That the waking life of the individual is not wholly given to concentrated thinking is admitted by every psychologist of note. There is need that psychology should study dispersed thinking or reverie and sleep. Every psychopathological investigation of the past fifty years has tended to the conclusion that the major decisions of a lifetime are made in mental moods of relaxation rather than tensity.

⁴"Fourth Annual Report," Industrial Fatigue Research Board, 1923.

But limited opportunity and laboratory procedure have had another consequence for academic theory. Pierre Janet⁵ has shown that capacity for mental tension or concentration consists not merely of a facilitation of the dominant thought process but also of an inhibition of other responses to the existing situation. Capacity to think about the subject of this lecture, for instance, involves not merely a consent and an effort to listen; it involves also a refusal to listen to noises in the street outside, a refusal to reflect upon the nature of the audience, one's personal comfort or discomfort and matters equally irrelevant. Yet one is as conscious of these other things as of the topic of the lecture; the difference is that one refuses to think about them. This distinction between the larger object one is conscious of and the lesser object one is thinking about is unduly neglected by psychology. Description of "mental process" in terms of concentrated attention has led too many psychologists to disregard the wider hinterland of awareness which surrounds, as it were, the dominant thought activity of any given moment. The fact is of course admitted, but its importance as determining the nature of and capacity for concentration has apparently been realized by Janet alone. C. Lloyd Morgan⁶ and G. F. Stout⁷ mention this wider awareness, then describe it as "subconscious" and take no further account of it. Bosanquet⁸ comes much nearer to the truth. He begins by pointing out that the "presentations at the focus" of consciousness are "probably the smallest part of what the mind has present to it." His criticism of sensationism is that sensationist theory takes account only of "the focus" of consciousness—that is to say, of the object of immediate concentration. Yet in spite of this claim, he proceeds to follow the same road as Stout and Lloyd Morgan and fails utterly to develop his assertion that the course followed by any concentrated thought is largely determined by "presentations which are not in focus." He also falls into the trap which the word subconscious prepares for the unwary psychologist.

⁵"Les Névroses," E. Flammarion, Paris, 1909, 1917, pp. 346-367.

⁶"Introduction to Comparative Psychology," W. Scott, Ltd., London, 1894; Scribner's, N. Y.

⁷"Manual of Psychology," University Correspondence College Press, London, 1899; Hinds and Noble, New York.

⁸"Psychology of the Moral Self," Macmillan.

It may seem at this point that I am deliberately involving myself in unnecessary technicality. I should like to assure my audience that this is not so; my object is to show that laboratory procedure has permitted the academic psychologist to disregard an important fact which hospital practice has made the central thesis and research of medical psychology. One more illustration and I shall have completed this part of my discussion. E. B. Titchener⁹ some years ago called attention to the excessive abstractness and consequent falsity of psychological descriptions of consciousness. He was at some trouble, indeed, to name a number of the lesser awarenesses which accompany and co-exist with any act of concentration. He would probably have succeeded in re-stating psychological theory but for the fact that he conceived consciousness as a multiplicity of processes rather than a single total awareness. His doctrine is that the consciousness of any given moment consists of a sum of simultaneous processes which run their course in time together. This unwarranted equalization of the various parts of the conscious field involves him in confusion. The dominant thought of any moment is a process, a development of experience and knowledge; the surrounding awareness involves no learning—it is not process in the same sense. In spite of his clearer vision, Titchener is forced by his conception of mental process as the fundamental fact of psychology to attach a superior reality to concentrated thinking. He tries to describe a marginal and inhibited awareness as though it were facilitated; and he fails consequently to see that the fundamental fact for psychology is not mental process but a wide awareness of which the dominant process is a product or expression. He still retains the species of double vision to which his doctrine leads. In a recently republished book¹⁰ he maintains that psychology is the study of mental processes, that mental processes do not intrinsically mean anything and¹¹ that “meaning is always context.” This assertion of what is almost the truth becomes especially interesting when compared with the method and theory of medical psychology.

Generally, it may be said of the academic psy-

⁹“Outline of Psychology”; Macmillan, 2d edition (1901), pp. 9-11.

¹⁰“Beginner’s Psychology,” Macmillan, 1915, 1922, pp. 26 ff.

¹¹P. 118.

chology that, by reason of its tradition and restricted laboratory procedure, it has tended to neglect unduly moods of mental relaxation, to regard concentrated thinking as the only fact for psychological investigation and to disregard the wider awareness, or total situation, of which concentration is at all times the expression or product. The method of medical psychology, imposed upon it by hospital practice, is directly contrary.

III. The Medical Psychology

The two aspects of the medical psychology which I wish particularly to call to your attention are, first, the direction of the inquiry, and second, the method it employs. The direction of the inquiry is especially illuminating in view of what I have said in criticism of the conventional academic method. When a patient is brought into a clinic his thinking is obsessional in character and of value mainly as a symptom. Considered as a dominant thought process after the academic fashion it is chiefly remarkable for its utter irrelevance to reality. Yet it is as unmistakably “there” as any reasoned idea in the normal. Certain instances occur to me in illustration. A girl of 25 was much troubled by the idea that she was “going mad.” Two men of my acquaintance “wanted another war.” I knew one in a Queensland military hospital, the other in a Philadelphia factory. Both had arrived at this obsession by the same road—long meditations in moods of mental relaxation upon the more ghastly experiences of the war. A professional man took to his bed and refused to get up fearing that he might be “hit by a meteorite.” Another professionally trained man constantly expected “an explosion,” and was not clear as to whether he or his surrounding was about to explode. All these individuals were in a sense rational; that is to say, they were perfectly well aware of the absurdity and irrationality of the obsessing idea; their complaint was that they were unable to escape thinking it. Now all the various schools of psychopathological investigation proceed on the assumption that these obsessions are the product of long trains of dispersed rather than concentrated thought, originating usually in infancy. An unsuitable environment in infancy has bred an attitude that has persisted into adulthood, long after the infantile surrounding has ceased to be. The obsession can indeed be understood as an

adequate response to reality once one knows the patient's intimate history and total attitude to life. Four of the five cases specified above recovered their mental normality comparatively quickly, once their total situation was systematically investigated. This statement of the direction of the inquiry explains the essentials of the method.

The methods—and they are many—employed by psychopathologists are all variants of Pierre Janet's "method of distraction." The methods best known are hypnosis, the hypnoid investigation of Sidis, Jung's association test and Freud's dream interpretation by free association. One might add to the list crystal gazing and automatic writing. All these methods are variants of the methods of distraction, because they involve a looking away from the dominant or obsessing idea towards the total situation which has produced it. The early history of the patient, the incidents of his upbringing and education, his adaptation to his surroundings, his dominant trends of reverie or day dream in moods of mental relaxation—these items are found to bear an important relation to his total attitude to life at any present time. As compared with the academic, the medical psychology is less logical in method but it has opened up for survey and consideration a much wider area of facts directly relevant to successful thinking and living. In particular, it has drawn attention to, first, the technique of thinking, and second, the content of thinking as affected by the individual's total situation. The chief representative of the former inquiry is Pierre Janet. Janet, working with Charcot, succeeded in demonstrating that the difference between normality and abnormality, rationality and irrationality, may be described as a difference of relation between concentration and dispersed thinking or reverie. In the normal person reverie illuminates concentration, concentration supplies the material of observation and brings the inspiration of reverie to the test of empirical fact. In the abnormal person, concentration and reverie are pointed in different directions; the result is that mental condition which is described as divided or alternating personality. In all such cases, there are two or more total situations in the one individual, both defective but each with its distinctive attitude and memory.¹³

¹³"Les Névroses," pp. 39, 345, 367.

The chief representative of the inquiry into the content of thinking is Freud. In the early stages of his investigation, Freud found difficulties with hypnosis and was accordingly led to substitute for it an inquiry into the content of the psychoneurotic mind. He has held at various times three different theories, only one of which, the sex theory, is apparently generally known. The essential of the Freudian discovery is the irrelevance of the syntheses which constitute primitive knowledge. The child, the savage and the neurotic do not explicitly criticize the meanings they derive from experience. A soldier suffers cerebro-spinal meningitis and recovers. Subsequently he hears gossip to the effect that a local paralysis will surely follow. After three years of "submerged" meditation upon this, he develops a hysterical inability to use his left hand and forearm. Instances can be multiplied indefinitely; the magical procedures of savage tribes are as excellent an illustration as any psychoneurotic history. The primitive mind has no logical criterion available by means of which it may sift the reasoned from the unreasoned in its thinking. An African tribesman breaks a piece off an anchor washed up on the beach; subsequently he dies. For generations the anchor becomes a fetish for his tribe.¹⁴ "Irrelevant synthesis" is the chief character of primitive thinking.

The effect of this upon the individual's attitude to life is that all kinds of irrelevant and unjustified meanings are dominant in his total situation. His own capacity to analyze and reconsider is small because he has, for the most part, forgotten the events from which the defective ideas were derived. But there need be no mystery with respect to "hysterical amnesia"; whether normal or abnormal, we all tend to forget events and to retain their meaning. A mathematician demonstrating the binomial theorem would be puzzled to describe the events in which his mathematical knowledge began. As we come to understand, we re-interpret the world about us in the light of our new knowledge. It is the world, or rather our total situation, which carries meaning for us. The events which gave us the meaning are forgotten. For a normal person the world has no terrors; for a hysteric, the world is full of terrors which justify his fearful attitude and behavior. Primitive and neurotic

¹⁴Haddon, "Magic and Fetishism," Open Court Publishing Co., Detroit, 1908, p. 85.

meanings are based upon experiences uncritically interpreted; the psychopathologist seeks to revive and to re-interpret the experiences from which such meanings have been derived.

IV. Conclusions from the Medical Investigation

It is unfortunate that a clumsy and unnecessary terminology should have collected about the researches of the psychopathologist. Terms such as subconscious, unconscious, foreconscious, co-conscious do little but cause confusion and take attention away from the really important aspects of the investigation. If we put all this on one side and look at the facts elicited by clinical research we find:

1. That it calls attention to the existence of four mental states—concentration, dispersed attention or reverie, hypnoid states and sleep.

2. That it shows the importance of dispersed thinking in education and in all determination of personal attitudes.

3. That it demonstrates total situation to be the fundamental fact for psychological study.

1. Until quite recently, it was customarily assumed that during the 24 hours of the day, an individual is either awake and conscious or asleep and unconscious. It is now possible to distinguish the four general mental states specified above. The point of chief interest, however, is not that four states are distinguished in place of two; it is rather that the distinction must be stated in terms of attention and inattention. All four are states of consciousness; even sleep must be described as inattentive consciousness. Concentration is the state of greatest mental tensivity, sleep is the condition of greatest relaxation. But a passive awareness of the surrounding persists in sleep. This is illustrated by the fact that it is not the intensity of a stimulus—for example a sound—that wakes a sleeper but rather its meaning for him. In the maternity hospital the loud clang and crash of the trolley car outside does not wake the mother, but at the slightest stir in the cot by her side, she sits up in bed. A "shell-shocked" soldier was afraid of the dark but slept well at night if the lights were left on. Directly the lights were turned out, he wakened. Telegraph operators in the country districts of Pennsylvania are allowed to sleep on night duty. They all hear the call for every station, but all alike develop a capacity for waking

immediately when their station is called and for sleeping through other signals. Illustrative facts could be multiplied indefinitely. The whole study of what is usually termed suggestion is a study of the passive responses of dispersed thinking, hypnoid states and sleep.

2. The importance of dispersed thinking is chiefly that described by Janet. The direct relevance of this French psychopathology to factory investigation is astonishing. Janet speaks of neurotic agitation as due to crises of reverie; he also points out the difficulty of maintaining mental tensivity or concentration, and consequent temporary disintegration, when fatigue has set in.¹⁴ With respect to mental normality as implying a cooperative relation between concentration and reverie, it may be said that the same fact is observable in the factory and in business generally. Those whose reveries are relevant to their work are the successful men; the reveries of the unsuccessful men seem to be irrelevant to what they are doing for the most part. This is not, of course, their fault nor are they in any sense to blame.

3. Total situation is the fundamental fact for psychology. Medical researches into the nature of sleep and dispersed thinking give us a new conception of the mental life of man. We have to distinguish between that conscious awareness of, or orientation to, our surroundings which is a steadily persistent character of our mental life, and the act of attention to some particular thing—an active "thinking about" things which is only fitfully present. The conscious awareness of surrounding which begins with infancy persists practically uninterrupted through sleep and waking until the hour of death. Its general character changes slowly as successive experiences or acts of attention establish new meanings or new individual attitudes. But at every point or moment its general character determines the type and quality of the attention or thought that can be given to any aspect of the surrounding. There need be no difficulty with this conception; the same truth holds, for example, of our muscular apparatus. One who has been athletic in youth has established a working relation between his "contractile" muscular fibres which adapt a limb to a new position and his "plastic" muscular fibres which hold that posi-

¹⁴"Les Névroses," p. 358.

tion. Long after he has given up games this relation between muscular contractility and plasticity persists and shows itself in every least or trivial movement. So with our mental attitude; the general significance of the world, determined by earlier thought and education, informs and fixes later capacity for thinking. For every individual the world is primarily meaning derived from former thought and experience. This meaning forms the background against which the particular events of the day, week and year are displayed; it varies with the individual and is perpetually present in his mental attitudes. This is the significance of total situation; we cannot understand why an individual suffers an obsession or leaves his job or, it may be, thinks logically, until we know the background against which for him the events of life are played.

And in considering this it is important to realize that this total attitude is not by any means the product only of concentration or logical thinking. In the average instance, revery—and most frequently revery of an irrational type—has done even more to determine attitude than concentrated thinking. In the total situation of the average individual consequently, both rationality and irrationality play a part. A steady period of work may be succeeded or interrupted by an unexplained flare of emotion, astonishing even to the individual himself. No psychological method can hope to contribute anything to the understanding of incidents of this kind, or to the general understanding of individual attitudes, unless it takes account of total situation. Methods which look only at concentrated thinking or at adaptation to work or at obsessive thinking as if these were facts in themselves, are in the position of an engineer who looks at the apex of a pyramid and neglects to examine its base. The apex is supported by its base; every act of concentration is the product or expression of a total mental situation.

Pierre Janet's point is well taken; capacity for concentration, or the explicit perception of realities, or work, is to be understood as capacity for mental tension. Whenever the total attitude is ill-organized or unduly compounded of the irrational products of irrelevant revery, then concentration is difficult or impossible to achieve. And since it is by concentration that we achieve an explicit hold upon the reality about us, it follows that in all

such cases the hold upon reality is tenuous in the extreme. Any condition of living which makes for too much revery thinking of an irrelevant type tends to diminish the individual's hold upon reality. Concentration is possible only when supported by a well-ordered total situation. It is the business of total situation psychology in industry to investigate and to eliminate conditions which lead to disharmony in the individual's mental background, and to promote that orientation which alone makes reasoned adjustment to the job possible. Disturbances may originate either in the personal history of the individual or in the present conditions of his work or both at once.

V. The Approach to the Factory

I am well aware that at this point many members of my audience will be asking, perhaps with some alarm, what I propose to do—whether industry is to be asked to submit its entire personnel to the ministrations of the psycho-pathologist. I can at once reassure those who have such questions in mind. There are at present, in every economic organization of any size, personnel managers and psychologists whose business it is to handle the human problems of industry. My whole claim is that such experts should be trained in the type of psychology I have briefly described. The responses of every individual to the associations and opportunities of the factory or office are, for the most part, determined by causes in his personal history and total situation which lie beyond the immediate control of the management. If the personnel manager or industrial psychologist be trained to take account of his total situation in dealing with an individual, it will involve no more work than at present and the work will be infinitely more effective. There are in particular two reasons why training of this type is becoming increasingly necessary to successful management. The first is that modern methods of industrial organization tend to impose on the average individual long periods of revery thinking. Machine operation, once the worker is habituated to it, does not demand a high degree of concentrated thought. On the other hand, it is impossible for him to concentrate his mind upon anything else. One finds in actual practice, therefore, that the mental mood which accompanies work is very frequently a low-grade revery of a pessimistic order. In one in-

stance we discovered a worker who, during part at least of his working day, fell into the hypnotic somnambulant condition. Now the danger of this general condition of things both to the individual worker and to industry is obvious to anyone acquainted with psychopathological work. All the authorities agree that an adult nervous breakdown originates in earlier pessimistic reveries—one authority indeed specifies feminine handwork as offering much opportunity for the development of a hysterical mentality. Insofar as this general state of affairs exists and remains uncontrolled, we may expect an increasing condition of emotional unrest manifesting itself in the periodic "crises of revery" so well described by Janet.

The second reason why psychological investigation is necessary to industry is that these pessimistic reveries which culminate in disorder and unrest (absenteeism, high labor turnover, strikes) are relatively easily controlled provided that the management has a means of discovering the nature of the cause. It is in respect of this control that the factory differs from the hospital and clinic. A psychoneurotic is little benefited by a change of his conditions of living or working; the relatively normal worker in a factory responds at once to any betterment of his total situation. An individual's occupation is at least half his life; if his occupation is interesting and stimulating, he can support a burden of domestic and private difficulties which would otherwise tend to depress or break him down. Our inquiries seem to show that the usual form which pessimistic revery takes in the factory is that of depressed reflection upon personal and intimate affairs. It is important for management to realize that the conditions of work or occupation can exaggerate or minimize this tendency.

In passing, I should like to call attention to the fact that in discussing these two reasons I have been discussing the vexing question of monotony and boredom as distinguished from physiological fatigue. Monotony in itself is apparently a matter of no great moment; the definition of what constitutes monotony will, in fact, be found to vary with every individual. Monotony becomes a problem for the management of a concern only when it is obviously giving rise to pessimistic revery, not merely in individuals but over wide areas of the personnel.

The psychological approach to the factory, defined as I have defined it, does not involve at the

outset any elaborate confusions of card indexing or numerous additions to the office staff. It takes existing problems and re-states them in terms of total situation in individuals and in the factory itself. Its object is better understanding, improved control, and an increase of human happiness.

VI. A Case in Point

I can best explain by an illustration, after which I shall have done. Rather more than a year ago the Industrial Research Department of the University of Pennsylvania was asked to make what contribution it could to the solution of certain problems in a textile mill. The problems, briefly stated, were:

1. A high labor turnover and low productivity in a spinning department;
2. Absenteeism and "eye-strain" in a sorting department;
3. Low productivity in a pickering department;
4. Absenteeism in a winding department.

The only investigation actually proposed to us was that of the high labor turnover in the spinning department; the other problems were discovered as we worked.

1. The spinning-mule investigation has been reported and discussed at length elsewhere,¹⁵ and I do not propose to renew the discussion here. Our findings, briefly stated, were that the conditions of work involved a considerable degree of postural fatigue. This fatigue was complicated and increased by an almost universal incidence of pessimistic revery. To remedy this, the management introduced rest-pauses, four in a ten-hour day, in which the men were asked to lie down and were instructed in the best method of relaxation. Since the institution of this system the labor turnover has become negligible, the evidences of general pessimism have diminished or disappeared, and the productivity of the department has increased by approximately 15 per cent.

2. The sorting of white wool and cotton was done entirely by women of varying ages. There was a tradition in the department that the work caused eye-strain and indigestion. This tradition appeared in the reveries of the workers as an expectation of these ills; every worker in the department gave evidence of such expectation. In

¹⁵*Journal of Personnel Research*, Vol. III, No. 8, December, 1924.

this and other departmental investigations, we have had the most excellent backing and collaboration from the Graduate Medical School of the University. Care of the physical welfare of the individual being thus assured, we tried the experiment of interrupting the sorting by six ten-minute rest-periods in a ten-hour day. In this instance, as with the spinners, workers were given individual instruction in the best methods of rest. The effect has been to eliminate altogether the periodic emotional crises which used to characterize the work of the department. There have been no complaints of eye-strain or indigestion for six months; absenteeism and evidences of pessimistic thinking have disappeared. There is in this instance no means of measuring productive output, but the management is entirely satisfied that there has been no diminution.

3. The situation in the pickering department has at no time been made the object of active investigation. The management some months ago adapted the procedure in the spinning department to the picker house. Since that time those employed in pickering have earned bonuses of from 5 to 14 per cent. Previously, they had earned no bonuses.

4. The winding department is interesting chiefly because it illustrates a variation of method. Cone-winding is piece-work, and supply is sometimes irregular; workers are therefore unwilling to take regular rest-periods. The workers are women and the relatively high rate of absenteeism was found to be largely due to a tradition of incapacitation by menstrual "cramps." In one month, for instance, one-half the departmental strength absented itself for a day or more for this reason. In this instance, as with the sorters, it was discovered that the tradition of the department appeared as a revery of expectation in the individual. The work involves postural fatigue, the reveries tend to be pessimistic, and the occasional recurrence of the tradition in such reflections acts as what used to be called a suggestion. Investigation was made medically and also by the dispensary nurse. It seemed entirely possible that physical fatigue might contribute to the causation of dysmenorrhoea. We were somewhat astonished to discover that the physical causes are apparently negligible as compared with the mental. I am expertly informed that the medical help given is not more than "an aid to suggestion"; but the individual attack upon the revery and tra-

ditional expectation by the nurse in charge has had the effect of almost entirely removing this cause of absenteeism. In one period of four months, for example, there was no time lost by reason of this ill.

VII. Total Situation and the Individual

This paper would not be complete without some reference, however brief, to our method of approaching the individual and to the content of the pessimistic reveries in particular cases. The individual has to be approached with care, but once he understands that his happiness and well-being are our concern, and that confidences are not divulged to his fellows or the management, he is usually willing to help the investigation. Given this collaboration, our endeavor is to discover:

1. His physical condition and medical history;
2. His personal history, including his dominant reveries;
3. His domestic situation;
4. His adaptation to his work.

This investigation of individual situations is more interesting than the inquiry into general or departmental situations. It will in the end probably yield more in the way of definite knowledge as to what is happening in industry and in the detail of civilized life. In by far the greater number of cases there is some unsatisfactory circumstance, usually of personal history or private life, which is a habitual topic of dispersed thinking or revery. Any monotony of occupation or unpleasantness in work tends to extend and emphasize this thinking. We have under investigation several hundred individuals of average normality and I give one or two instances which must not be supposed to be specially selected; they are taken more or less at random and are typical.

A girl of twenty-seven has been engaged upon a machine operation for nine years. She began work in adolescence to support her mother and four brothers and sisters after the father's unexpected death. For five years she was the sole support of the family; in the last four years a brother has helped. For seven years she was the best worker in the department; latterly her production has been less. Two years ago a young man wished to marry her and she had, so she says, a nervous breakdown. She is much opposed to marriage; she has developed in revery an ex-

pectation that if she marries her adolescent experience may be repeated and a young family require her sole support. Many discussions gave her an opportunity for expressing her reveries for the first time and her production has recently improved. She is still opposed to marriage.

A clerk in charge of deliveries, approximately twenty-eight, occasionally absents himself from the factory and stays in bed for a day or two. After the war he was unable to work for two years; he suffered what he describes as "neurasthenia." He is happily married and has four children. He is highly esteemed as a worker by the management and as a man by his fellow-workers. He contributes cartoons and humorous columns occasionally to publications and earns small sums thus. He suffers financial anxieties on his children's account. He habitually indulged in anxious or gloomy reflection as he worked until the unwisdom of this practice was pointed out to him. Since then his health and outlook have much improved. He has more intelligence and ability than his work demands; he cannot easily find a quiet corner in his home. His periods in bed are crises of reverie; they are diminishing in frequency as he learns how to control reverie. He should have more interesting work.

A machine operative of thirty-six is married to a woman much older than himself. They have no children and both regret it. He is highly skilled and is valued by the management. He complains of "neuritis" in his back which his medical attendant cannot diagnose. His wife has spinal curvature.

A man of thirty, married and with several children, is engaged upon a monotonous and unpleasant job. He suffers occasional emotional crises in which he is afflicted with panic for no very obvious reason. These crises were difficult to handle until it was discovered that at the suggestion of rest he would drop into a condition of hypnotic somnambulism. Inquiry shows that his work has played some part in developing this capacity in him.

A girl in the early twenties is engaged upon a monotonous machine operation for ten hours daily. She partly supports her mother and a large family. The father lives with them but has been demented for some years. A certain proportion of her work time is given to speculation upon the possibility of a similar development in herself.

When individual situations are thus described, I have no doubt that they have an air of being specially selected and unusual. The point I wish to make is that these are fair average samples taken from the several hundred cases we have under investigation. It is only rarely that we discover an individual entirely free from irrational or pessimistic or irrelevant reverie thinking. There is of course an immense difference according to the suitability or unsuitability to him personally of the work upon which he is engaged. If the conditions of work are good or the work interesting, then his job acts as a corrective of any tendency to pessimism or as an antidote to any actual difficulties or problems. On the other hand whenever pessimistic reflection emerges, the effect upon productive efficiency is striking and immediate. This I have illustrated not only by cases taken from Philadelphia but also by those instances of workers in the Middle West cited in my opening paragraphs. Productive capacity, like capacity for concentration, is symptomatic merely of the total situation of the individual. When the total situation is adversely affected by any cause whether within or without the factory, a diminished capacity for work will always be one among other symptoms.

It is easy, therefore, to exaggerate the effects upon the individual of a traditional discontent within a factory or of so-called "agitation." It is altogether probable that such traditional expressions of emotional attitude have no effect upon individuals except when they afford a means of expressing individual discontents. Our experience with such traditions of discontent has been that the actual individual situation is different in every case; the traditional complaint is no more than a common vehicle of expression.

This type of investigation is not unknown in the United States. The need for it was expressed by Simon Patten of the University of Pennsylvania. The form it should take was explicitly stated by the late Dr. E. E. Southard of the Boston Psychopathic Hospital. In a sense, the work involves an extension of that begun by the pioneer by whose name this Society is honored. Taylor confined his attention, upon the whole, to the problem of irrelevant synthesis or mistaken coordination in our muscular apparatus; there is urgent need to extend this inquiry to discover what irrelevant syntheses of emotions and ideas are imposed upon

workers by indifferent education and unsuitable conditions of work. I use the term "workers" here to include proprietors and managers as well as machine operatives. Over the whole field of industry dispersed thinking and emotions bred of revery are making for unrest and breakdown rather than content. Many investigators are needed, but since few opportunities have been offered to the Universities, the inquiry is slow to begin. Industrial psychology is but one aspect of a research into the nature of man. Without such research civilization cannot endure.

The Achievements of Motion Psychology¹

By Frank B. and Lillian M. Gilbreth

Consulting Engineers, Montclair, N. J.

IT IS now almost thirteen years since the importance of this relationship of psychology to management was stressed before those interested in scientific management, at the Dartmouth Conference.² For seven years before that time, steady progress had been made in correlating psychology and management, but from that time on the correlation was placed upon a scientific basis. As an account of the "state of the art" of applying psychology to management, Dr. Person's paper on industrial psychology³ is both timely and interesting.

We agree with Dr. Person as to the need to recognize the limitations and to estimate the achievement of psychologists, especially in the field of industry; the need to recognize that they cannot at once, even though afforded all possible opportunities, solve all pressing industrial problems, and the necessity for the manager in industry to prepare opportunities for psychologists, to offer facilities for their investigations and to cooperate in every possible way. We agree also as to the problems that might profitably be considered;—but before future developments in industrial psychology can

¹Discussion of paper "Industrial Psychology" by H. S. Person at meeting of Taylor Society, Cambridge, Mass., April 25, 1924. This was the last manuscript to receive Mr. Gilbreth's editorial attention before his death.

²Scientific Management, Addresses and Discussions at the Tuck School Conference, October, 1911, published by Dartmouth College, page 356.

³*Bulletin of the Taylor Society*, Vol. IX, No. 4, August, 1924.

be profitably considered, it is necessary to estimate past and present conditions adequately.

In attempting to present in a few words the progress which has actually taken place in correlating psychology and management during the past twenty years, it is necessary to note that while the first step was to compare and harmonize the vocabulary and methods of management and psychology, from the start psychology has been defined, both by the psychologists and managers interested, as the science of behavior, or the science of motions. Behavior psychology, or motion psychology, has resulted.

In finding and teaching The One Best Way to Do Work, we prefer to use the phrase Motion Psychology for two reasons:

1. Every mental process has outward visible and recordable motions.

2. Every opportunity should be used to get the entire organization to think of all management planning and performing in terms of the *elements of motions*.

It has been recognized that the chief necessity for both psychologists and managers is for units, methods and devices for recording behavior. These enable all to have at their disposal indisputable permanent records of what actually takes place,—to be studied, analyzed, measured, synthesized and standardized. This need has been met, and there now exist and have been in successful daily use for twelve years units, methods and devices that fulfill every need. These are being applied with success in every field of activity and from their profitable use is resulting a mass of data,—accurate, cumulative, correlated and now solving industrial and other scientific problems.

Finding The One Best Way to Do Work signifies the application of the scientific method to the investigation of records of every motion made, in every line of activity. While no two cycles of motions have ever been made exactly alike as to paths in three dimensions, relative speed, exact speed, direction, etc., the sequences of their bligs or elements of cycles of motions are so comparatively few that any accurate data regarding the activity of the best man obtainable demonstrating the best that he can offer or has been taught, are usable forever on all other work. We have precision

(Continued on page 283)